**UNITED STATES**
**SECURITIES AND EXCHANGE COMMISSION**
**Washington, D.C. 20549**

# FORM 10-K

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the fiscal year ended December 31, 2018**

**OR**

o **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

**For the transition period from to**

**Commission File Number 1-71**

# HEXION INC.

**(Exact name of registrant as specified in its charter)**

| New Jersey | 13-0511250 |
|---|---|
| (State of incorporation) | (I.R.S. Employer Identification No.) |
| 180 East Broad St., Columbus, OH 43215 | 614-225-4000 |
| (Address of principal executive offices) | (Registrant's telephone number) |

**SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:**

| Title of each class | Name of each exchange on which registered |
|---|---|
| None | None |

**(Former name, former address and fiscal year, if changed since last report)**

**SECURITIES REGISTERED PURSUANT TO SECTION 12(g) OF THE ACT: NONE**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes o No x.

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes o No x.

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes o No x.

Explanatory Note: While the registrant is not subject to the filing requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, it has filed all reports required to be filed by such filing requirements during the preceding 12 months.

Indicate by check mark whether the registrant has submitted electronically, if any, every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes x No o.

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer, a smaller reporting company or an emerging growth company. See definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

| | | | |
|---|---|---|---|
| Large accelerated filer | o | Accelerated filer | o |
| Non-accelerated filer | x | | |
| | | Smaller reporting company | o |
| | | Emerging growth company | o |

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. o

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes o No x.

At December 31, 2018, the aggregate market value of voting and non-voting common equity of the Registrant held by non-affiliates was zero.

Number of shares of common stock, par value $0.01 per share, outstanding as of the close of business on April 1, 2019: 82,556,847

**Documents incorporated by reference. None**

**HEXION INC.**

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**PART I**

(dollars in millions)

**Forward-Looking and Cautionary Statements**

Certain statements in this report, including without limitation, certain statements made under Item 1, “Business,” and Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” are forward-looking statements within the meaning of and made pursuant to the safe harbor provisions of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. In addition, our management may from time to time make oral forward-looking statements. All statements, other than statements of historical facts, are forward-looking statements. Forward-looking statements may be identified by the words “believe,” “expect,” “anticipate,” “project,” “might,” “plan,” “estimate,” “may,” “will,” “could,” “should,” “seek” or “intend” and similar expressions. Forward-looking statements reflect our current expectations and assumptions regarding our business, the economy and other future events and conditions and are based on currently available financial, economic and competitive data and our current business plans. Actual results could vary materially depending on risks and uncertainties that may affect our operations, markets, services, prices and other factors as discussed in the Risk Factors section of this report and our other filings with the Securities and Exchange Commission (the “SEC”). While we believe our assumptions are reasonable, we caution you against relying on any forward-looking statements as it is very difficult to predict the impact of known factors, and it is impossible for us to anticipate all factors that could affect our actual results. Important factors that could cause actual results to differ materially from those in the forward-looking statements include, but are not limited to, our ability to obtain the approval of the Bankruptcy Court (defined below) with respect to motions filed in the Chapter 11 cases and the outcomes of Bankruptcy Court rulings and the Chapter 11 cases in general, the effectiveness of the overall restructuring activities pursuant to the Chapter 11 filings and any additional strategies that we may employ to address our liquidity and capital resources, the actions and decisions of creditors, regulators and other third parties that have an interest in the Chapter 11 cases, restrictions on us due to the terms of the credit facilities that we entered into in connection with the Chapter 11 cases and restrictions imposed by the Bankruptcy Court, our ability to effectuate the Chapter 11 plan of reorganization described in the restructuring support agreement with certain of our equityholders and creditors, our ability to continue as a going concern, effects of disruption from the Chapter 11 cases and any restructuring transactions, the timing for resolving and any impact of the network security incident, a weakening of global economic and financial conditions, interruptions in the supply of or increased cost of raw materials, the loss of, or difficulties with the further realization of, cost savings in connection with our strategic initiatives, the impact of our substantial indebtedness, our failure to comply with financial covenants under our credit facilities or other debt, pricing actions by our competitors that could affect our operating margins, changes in governmental regulations and related compliance and litigation costs and the other factors listed in the Risk Factors section of this report. For a more detailed discussion of these and other risk factors, see the Risk Factors section of this report and our most recent filings made with the SEC. All forward-looking statements are expressly qualified in their entirety by this cautionary notice. The forward-looking statements made by us speak only as of the date on which they are made. Factors or events that could cause our actual results to differ may emerge from time to time. We undertake no obligation to publicly update or revise any forward-looking statement as a result of new information, future events or otherwise, except as otherwise required by law.

**ITEM 1 - BUSINESS**

**Overview**

Hexion Inc. (“Hexion” or the “Company”), a New Jersey corporation with predecessors dating from 1899, is one of the world’s largest producers of thermosetting resins, or thermosets, and a leading producer of adhesive and structural resins and coatings. Thermosets are a critical ingredient in most paints, coatings, glues and other adhesives produced for consumer or industrial uses. The type of thermoset used, and how it is formulated, applied and cured, determines its key attributes, such as durability, gloss, heat resistance, adhesion or strength of the final product. Thermosetting resins include materials such as phenolic resins, epoxy resins, polyester resins, acrylic resins and urethane resins.

Our direct parent is Hexion LLC, a holding company and wholly owned subsidiary of Hexion Holdings LLC (“Hexion Holdings”), the ultimate parent entity of Hexion. Hexion Holdings is controlled by investment funds managed by affiliates of Apollo Management Holdings, L.P. (together with Apollo Global Management, LLC and its subsidiaries, “Apollo”).

Our business is organized based on the products we offer and the markets we serve. At December 31, 2018, we had three reportable segments: Epoxy, Phenolic and Coating Resins; Forest Products Resins; and Corporate and Other.

**Bankruptcy Filing**

On April 1, 2019, the Company, Hexion Holdings LLC, Hexion LLC and certain of the Company’s subsidiaries (collectively, the “Debtors”), filed voluntary petitions (the “Bankruptcy Petitions”) for reorganization under Chapter 11 of the U.S. Bankruptcy Code (the “Bankruptcy Code” or “Chapter 11”) in the United States Bankruptcy Court for the District of Delaware (the “Bankruptcy Court”). The Chapter 11 proceedings are being jointly administered under the caption *In re Hexion Holdings LLC, No. 19-10684* (the “Chapter 11 Cases”). The Debtors will continue to operate their businesses as “debtors-in-possession” under the jurisdiction of the Bankruptcy Court and in accordance with the applicable provisions of the Bankruptcy Code and orders of the Bankruptcy Court. The Bankruptcy Petitions constitute an event of default that accelerated our obligations under our senior secured asset-based revolving loan facility (the “ABL Facility”) and 6.625% First-Priority Senior Secured Notes, 10.00% First-Priority Senior Secured Notes, 10.375% First-Priority Senior Secured Notes, 13.75% Senior Secured Notes, 9.00% Second-Priority Senior Secured Notes, 9.2% debentures and 7.875% debentures (collectively, the “Notes”).

In connection with the Bankruptcy Petitions, the Debtors entered into a Restructuring Support Agreement (the "Support Agreement") with equityholders that beneficially own more than a majority of the Company's outstanding equity (the "Consenting Sponsors") and creditors holding more than two-thirds of the aggregate outstanding principal amount of each tranche of our Notes (the "Consenting Creditors" and, together with the Consenting Sponsors, the "Consenting Parties"). The Support Agreement incorporates economic terms regarding a restructuring of the Debtors agreed to by the parties reflected in a term sheet attached as Exhibit A to the Support Agreement. Pursuant to the Support Agreement, the Consenting Parties and the Debtors made certain customary commitments to each other, including the Consenting Parties committing to support and vote for restructuring transactions to be effectuated through a plan of reorganization that incorporates the economic terms included in the Support Agreement (the "Plan") to be proposed by the Debtors.

Also in connection with the Bankruptcy Petitions, Hexion LLC, the Company and certain subsidiaries of the Company entered into an agreement with certain lenders providing for a $350 senior secured asset-based revolving term loan facility (the "DIP ABL Facility"), and Hexion LLC, the Company and Hexion International Holdings B.V., a wholly owned Dutch subsidiary of the Company (the "Dutch Borrower"), entered into an agreement providing for a $350 senior secured term loan (the "DIP Term Loan Facility" and, together with the DIP ABL Facility, the "Credit Facilities"). The Company received interim approval from the Bankruptcy Court to access $600 of the $700 permitted under the Credit Facilities. The proceeds of the DIP Term Loan Facility were used by the Dutch Borrower to make an intercompany loan to the Company, which the Company and certain of its subsidiaries used to repay amounts outstanding under the ABL Facility to and for general corporate purposes. Availability under the DIP ABL Facility will be used to support outstanding letters of credit and ongoing working capital requirements.

**Going Concern**

We have concluded our financial condition and our projected operating results, the defaults under our debt agreements, and the risks and uncertainties surrounding our Chapter 11 proceedings raise substantial doubt as to our ability to continue as a going concern. Accordingly, the audit report issued by our independent registered public accounting firm contains an explanatory paragraph expressing substantial doubt about our ability to continue as a going concern.

We have $1.9 billion of First Priority Senior Secured Notes maturing in April 2020. If 91 days prior to the scheduled maturity of these notes, more than $50 aggregate principal amount is outstanding, the ABL Facility would have accelerated and become immediately due and payable. Additionally, we have $0.6 billion of Second Priority Notes maturing in November 2020. Based on our current liquidity position, the acceleration of the ABL Facility and our Chapter 11 Cases, our current projections of operating results, cash flows and liquidity over the next twelve months are not expected to be sufficient to fund our most significant cash obligations necessary to continue as a going concern.

**Products and Markets**

We have a broad range of thermoset resin technologies, with high quality research, applications development and technical service capabilities. We provide a broad array of thermosets and associated technologies, and have significant market positions in each of the key markets that we serve.

Our products are used in thousands of applications and are sold into diverse markets, such as forest products, architectural and industrial paints, packaging, consumer products, composites and automotive coatings. Major industry sectors that we serve include industrial/marine, construction, consumer/durable goods, automotive, wind energy, aviation, electronics, architectural, civil engineering, repair/remodeling and oil and gas field support. The diversity of our products limits our dependence on any one market or end-use. We have a history of product innovation and success in introducing new products to new markets, as evidenced by more than 750 granted patents, the majority of which relate to the development of new products and manufacturing processes, and we are constantly looking at ways to introduce new products in our currently established markets.

As of December 31, 2018, we had 47 active production sites around the world. Through our worldwide network of strategically located production facilities, we serve more than 3,100 customers in approximately 85 countries. Our position in certain additives, complementary materials and services further enables us to leverage our core thermoset technologies and provide our customers with a broad range of product solutions. As a result of our focus on innovation and a high level of technical service, we have cultivated long-standing customer relationships. Our global customers include leading companies in their respective industries, such as 3M, Akzo Nobel, BASF, Bayer, Dow, Louisiana Pacific, Monsanto, Owens Corning, PPG Industries, Valspar and Weyerhaeuser.

**Industry & Competitors**

We are a large participant in the specialty chemicals industry. Thermosetting resins are generally considered specialty chemical products because they are sold primarily on the basis of performance, technical support, product innovation and customer service. However, as a result of the impact of the ongoing global economic uncertainty and overcapacity in certain markets, certain of our competitors have focused more on price to retain business and market share, which we have selectively followed in certain markets to maintain market share and remain a market leader.

We compete with many companies in most of our product lines, including large global chemical companies and small specialty chemical companies. No single company competes with us across all of our segments and existing product lines. The principal competitive factors in our industry include technical service, breadth of product offerings, product innovation, product quality and price. Some of our competitors are larger, have greater financial resources and may be able to better withstand adverse changes in industry conditions, including pricing, and the economy as a whole. Further, our competitors may have more resources to support continued expansion than we do. Some of our competitors also have a greater range of products and may be more vertically integrated than we are within specific product lines or geographies.

We believe that the principal factors that contribute to success in the specialty chemicals market, and our ability to maintain our position in the markets we serve, are (i) consistent delivery of high-quality products; (ii) favorable process economics; (iii) the ability to provide value to customers through both product attributes and strong technical service and (iv) an international footprint and presence in growing and developing markets.

**Our Businesses**

The following is a discussion of our reportable segments, their corresponding major product lines and the primary end-use applications of our key products as of December 31, 2018.

**Epoxy, Phenolic and Coating Resins Segment**
**2018 Net Sales: $2,115**

***Epoxy Specialty Resins***

We are a leading producer of epoxy specialty resins, modifiers and curing agents in Europe and the United States with a global reach to our end markets, which include emerging regions such as China and Latin America. Epoxy resins are the fundamental component of many types of materials and are often used in the automotive, construction, wind energy, aerospace and electronics industries due to their superior adhesion, strength and durability. We internally consume approximately 30% of our liquid epoxy resin ("LER") production in specialty composite, coating and adhesive applications, which ensures a consistent supply of our required intermediate materials. Our position in basic epoxy resins, along with our technology and service expertise, has enabled us to offer formulated specialty products in certain markets. In composites, our specialty epoxy products are used either as replacements for traditional materials such as metal, wood and ceramics, or in applications where traditional materials do not meet demanding engineering specifications.

We are a leading producer of resins that are used in fiber reinforced composites. Composites are a fast growing class of materials that are used in a wide variety of applications ranging from aircraft components and wind turbine blades to sports equipment, and increasingly in automotive and transportation. We supply epoxy resin systems to composite fabricators in the wind energy, automotive and pipe markets.

Epoxy specialty resins are also used for a variety of high-end coating applications that require the superior adhesion, corrosion resistance and durability of epoxy, such as protective coatings for industrial flooring, pipe, marine and construction applications and automotive coatings. Epoxy-based surface coatings are among the most widely used industrial coatings due to their long service life and broad application functionality combined with overall economic efficiency. We also leverage our resin and additives position to supply custom resins to specialty coatings formulators.

| Products | Key Applications |
| --- | --- |
| **Adhesive Applications:** | |
| Civil Engineering | Building and bridge construction, concrete enhancement and corrosion protection |
| Adhesives | *Automotive*: hem flange adhesives and panel reinforcements |
| | *Construction*: ceramic tiles, chemical dowels and marble |
| | *Aerospace*: metal and composite laminates |
| | *Electronics*: chip adhesives and solder masks |
| **Electrical Applications:** | |
| Electronic Resins | Unclad sheets, paper impregnation and electrical laminates for printed circuit boards |
| Electrical Castings | Generators and bushings, transformers, medium and high-voltage switch gear components, post insulators, capacitors and automotive ignition coils |

**Principal Competitors**: Olin, Nan Ya, Huntsman, Spolchemie, Leuna Harze and Aditya Birla (Thai Epoxy)

| Products | Key Applications |
| --- | --- |
| **Composites:** | |
| Composite Epoxy Resins | Pipes and tanks, automotive, sports (ski, snowboard, golf), boats, construction, aerospace, wind energy and industrial applications |

**Principal Competitors**: Olin, Cytec-Solvay Group, BASF, Aditya Birla (Thai Epoxy), Gurit, Huntsman and Swancor

| Products | Key Applications |
|---|---|
| **Coating Applications:** | |
| Floor Coatings (LER, Solutions, Performance Products) | Chemically resistant, antistatic and heavy duty flooring used in hospitals, the chemical industry, electronics workshops, retail areas and warehouses |
| Ambient Cured Coatings (LER, Solid Epoxy Resin (“SER”) Solutions, Performance Products) | Marine (manufacturing and maintenance), shipping containers and large steel structures (such as bridges, pipes, plants and offshore equipment) |
| Waterborne Coatings (EPI-REZ™ Epoxy Waterborne Resins) | Substitutes of solvent-borne products in both heat cured and ambient cured applications |

**Principal Competitors:** Olin, Huntsman, Nan Ya, Air Products, Cytec-Solvay Group and Allnex

***Basic Epoxy Resins and Intermediates***

We are one of the world’s largest suppliers of basic epoxy resins, such as SER and LER. These base epoxies are used in a wide variety of industrial coatings applications. In addition, we are a major producer of bisphenol-A (“BPA”) and epichlorohydrin (“ECH”), key precursors in the downstream manufacture of basic epoxy resins and epoxy specialty resins. We internally consume the majority of our BPA, and all of our ECH, which ensures a consistent supply of our required intermediate materials.

| Products | Key Applications |
|---|---|
| Electrocoat (LER, SER, BPA) | Automotive, general industry and white goods (such as appliances) |
| Powder Coatings (SER, Performance Products) | White goods, pipes for oil and gas transportation, general industry (such as heating radiators) and automotive (interior parts and small components) |
| Heat Cured Coatings (LER, SER) | Metal packaging and coil-coated steel for construction and general industry |

**Principal Competitors:** Olin, Huntsman, Nan Ya and the Formosa Plastics Group, Leuna Harze, Kukdo and other Korean producers

***Versatic Acids and Derivatives***

We are the world’s largest producer of Versatic acids and derivatives. Versatic acids and derivatives are specialty monomers that provide significant performance advantages for finished coatings, including superior adhesion, hydrolytic stability, water resistance, appearance and ease of application. Our products include basic Versatic acids and derivatives sold under the Versatic™, VEOVA™ vinyl ester and CARDURA™ glycidyl ester names. Applications for these specialty monomers include decorative, automotive and protective coatings, as well as other uses, such as adhesives and intermediates.

| Products | Key Applications |
|---|---|
| CARDURA™ glycidyl ester | Automotive repair/refinishing, automotive original equipment manufacturing (“OEM”) and industrial coatings |
| Versatic™ Acids | Chemical intermediates (e.g., for peroxides, pharmaceuticals and agrochemicals) and adhesion promoters (e.g., for tires) |
| VEOVA™ vinyl ester | Architectural coatings, construction and adhesives |

**Principal Competitors:** ExxonMobil and Hebei Shield Excellence Technology

***Phenolic Specialty Resins and Molding Compounds***

We are one of the leading producers of phenolic specialty resins, which are used in applications that require extreme heat resistance and strength, such as after-market automotive and OEM truck brake pads, filtration, aircraft components and foundry resins. These products are sold under globally recognized brand names such as BORDEN, BAKELITE, DURITE and CELLOBOND. Our phenolic specialty resins are known for their binding qualities and are used widely in the production of mineral wool and glass wool used for commercial and domestic insulation applications.

| Products | Key Applications |
|---|---|
| **Phenolic Specialty Resins:** | |
| Composites and Electronic Resins | Aircraft & rail components, ballistic applications, industrial grating, pipe, jet engine components, computer chip encasement and photolithography |
| Automotive Phenol Formaldehyde Resins | Acoustical insulation, engine filters, brakes, friction materials, interior components, molded electrical parts and assemblies |
| Construction Phenol Formaldehyde Resins and Urea Formaldehyde Resins | Fiberglass insulation, floral foam, insulating foam, lamp cement for light bulbs, molded appliance and electrical parts, molding compounds, sandpaper, fiberglass mat and coatings |
| **Molding Compounds:** | |
| Phenolic, Epoxy, Unsaturated Polyesters | High performance automotive transmissions and under-hood components, heat resistant knobs and bases, switches and breaker components, pot handles and ashtrays |
| Glass | High load, dimensionally stable automotive underhood parts and commutators |

**Principal Competitors:** Sumitomo (Durez), SI Group, Plenco, Dynea International, Arclin, Georgia-Pacific and Shenquan

***Phenolic Encapsulated Substrates***

We are a leading producer of phenolic resin encapsulated sand and ceramic substrates that are used in oil field applications. Our highly specialized compounds and resins are designed to perform well under extreme conditions, such as intense heat, high-closure stress and corrosive environments, that characterize oil and gas drilling. Our resin encapsulated proppants are also used to enhance oil and gas recovery rates and extend well life.

| Products | Key Applications |
|---|---|
| **Oil & Gas Stimulation Services Applications:** | |
| Resin Encapsulated Proppants | Oil and gas fracturing |

**Principal Competitors:** Covia Holdings Corporation, Preferred Sands, Badger Mining Corporation, and Carbo Ceramics

**Forest Products Resins Segment**
**2018 Net Sales: $1,682**

***Formaldehyde Based Resins and Intermediates***

We are the leading producer of formaldehyde-based resins for the North American forest products industry, and also hold significant positions in Latin America, Australia, New Zealand, and Europe. Formaldehyde-based resins, also known as forest products resins, are a key adhesive and binding ingredient used in the production of a wide variety of engineered lumber products, including medium-density fiberboard (“MDF”), particleboard, oriented strand board (“OSB”) and various types of plywood and laminated veneer lumber (“LVL”). These products are used in a wide range of applications in the construction, remodeling and furniture industries. Forest products resins have relatively short shelf lives, and as such, our manufacturing facilities are strategically located in close proximity to our customers.

In addition, we are a significant producer of formaldehyde, a key raw material used to manufacture thousands of other chemicals and products, including the manufacture of methylene diphenyl diisocyanate (“MDI”) and butanediol (“BDO”). Nearly all of our formaldehyde requirements for the production of forest products resins are provided by internal production, giving us a competitive advantage versus our non-integrated competitors.

| Products | Key Applications |
| --- | --- |
| **Forest Products Resins:** | |
| Engineered Wood Resins | Softwood and hardwood plywood, OSB, LVL, particleboard, MDF and decorative laminates |
| Specialty Wood Adhesives | Laminated beams, cross-laminated timber, structural and nonstructural fingerjoints, wood composite I-beams, truck-decking, cabinets, doors, windows, furniture, molding and millwork and paper laminations |
| Wax Emulsions | Moisture resistance for panel boards and other specialty applications |
| **Formaldehyde Applications:** | |
| Formaldehyde | MDI, BDO, herbicides and fungicides, scavengers for oil and gas production, fabric softeners, urea formaldehyde resins, phenol formaldehyde resins, melamine formaldehyde resins, hexamine and other catalysts |

**Principal Competitors:** Arclin, Georgia-Pacific, Huntsman, BASF, Covestro and Foremark Performance Chemicals

**Corporate and Other Segment**

Our Corporate and Other segment primarily includes corporate general and administrative expenses that are not allocated to the other segments, such as shared service and administrative functions, foreign exchange gains and losses and legacy company costs.

For additional information about our segments, see Note 15 to our Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K.

**Marketing, Customers and Seasonality**

Our products are sold to industrial users worldwide through a combination of a direct sales force that services our larger customers and third-party distributors that more cost-effectively serve our smaller customers. Our customer service and support network is made up of key regional customer service centers. We have global account teams that serve the major needs of our global customers for technical service and supply and commercial term requirements. Where operating and regulatory factors vary from country to country, these functions are managed locally.

In 2018, our largest customer accounted for approximately 2% of our net sales, and our top ten customers accounted for approximately 15% of our net sales. Neither our overall business nor any of our reporting segments depends on any single customer or a particular group of customers; therefore, the loss of any single customer would not have a material adverse effect on either of our two reporting segments or the Company as a whole. Our primary customers are manufacturers, and the demand for our products is seasonal in certain of our businesses, with the highest demand in the summer months and lowest in the winter months. Therefore, the dollar amount of our backlog orders as of December 31, 2018 is not significant. Demand for our products can also be cyclical, as general economic health and industrial and commercial production levels are key drivers for our business.

**International Operations**

Our non-U.S. operations accounted for 56%, 58% and 60% of our sales in 2018, 2017 and 2016, respectively. While our international operations may be subject to a number of additional risks, such as exposure to foreign currency exchange risk, we do not believe that our foreign operations, on the whole, carry significantly greater risk than our operations in the United States. Information about sales by geographic region for the past three years and long-lived assets by geographic region for the past two years can be found in Note 15 in Item 8 of Part II of this Annual Report on Form 10-K. More information about our methods and actions to manage exchange risk and interest rate risk can be found in Item 7A of Part II of this Annual Report on Form 10-K.

**Raw Materials**

In 2018, we purchased approximately $2.4 billion of raw materials, representing approximately 75% of our cost of sales. The three largest raw materials that we use are phenol, methanol and urea, which collectively represented approximately 50% of our total raw material expenditures in 2018. The majority of raw materials that we use to manufacture our products are available from more than one source, and are readily available in the open market. We have long-term purchase agreements for certain raw materials that ensure the availability of adequate supply. These agreements generally have periodic price adjustment mechanisms and do not have minimum annual purchase requirements. Smaller quantity materials that are single sourced generally have long-term supply contracts to maximize supply reliability. Prices for our main feedstocks are generally driven by underlying petrochemical benchmark prices and energy costs, which are subject to price fluctuations. Although we seek to offset increases in raw material prices with increases in our product prices, we may not always be able to do so, and there are periods when price increases lag behind raw material price increases.

**Research and Development**

Our research and development activities are geared towards developing and enhancing products, processes and application technologies so that we can maintain our position as the world's largest producer of thermosetting resins. We focus on:

- developing new or improved applications based on our existing product lines and identified market trends;
- developing new resin products and applications for customers to improve their competitive advantage and profitability;
- providing premier technical service for customers of specialty products;
- providing technical support for manufacturing locations and assisting in optimizing our manufacturing processes;
- ensuring that our products are manufactured consistent with our global environmental, health and safety policies and objectives;
- developing lower cost manufacturing processes globally; and
- expanding our production capacity.

We have over 360 scientists and technicians worldwide. Our research and development facilities include a broad range of synthesis, testing and formulating equipment and small-scale versions of customer manufacturing processes for applications development and demonstration.

More recently, we have focused research and development resources on the incorporation of green chemistry principles into technology innovations to remain competitive and to address our customers' demands for more environmentally preferred solutions. Our efforts have focused on developing resin technologies that reduce emissions, maximize efficiency and increase the use of bio-based raw materials. Some examples of meaningful results of our investment in the development of green products include:

- EPIKOTE™ / EPIKURE™ epoxy systems for wind energy applications, which provide superior mechanical and process properties, reducing air emissions when hours of energy are created;
- EPIKOTE™ and Bakelite® resin systems for automotive applications, which produce lightweight automotive composite components and other automotive parts that allow customers to build cars with better mileage, reducing air emissions without sacrificing performance;
- EcoBind™ Resin Technology, an ultra low-emitting binder resin used to produce engineered wood products,
- Epi-Rez™ Epoxy Waterborne Resins, which provide for lower volatile organic compounds, reducing air emissions; and
- VeoVa™ vinyl ester, a Versatics acid and derivatives product, which is an isocyanate-free resin.

In 2018, 2017 and 2016, our research and development and technical services expense was $53, $58 and $59, respectively ($3 in 2016 related to divested businesses). We take a customer-driven approach to discovering new applications and processes and providing customer service through our technical staff. Through regular direct contact with our key customers, our research and development associates can become aware of evolving customer needs in advance, and can anticipate their requirements to more effectively plan customer programs. We also focus on continuous improvement of plant yields and production capacity and reduction of fixed costs.

**Intellectual Property**

As of December 31, 2018, we own, license or have rights to over 750 granted patents and over 1,100 registered trademarks, as well as various patent and trademark applications and technology licenses around the world, which we currently use or hold for use in our operations. A majority of our patents relate to developing new products and processes for manufacturing and will expire between 2019 and 2036. We renew our trademarks on a regular basis. While we view our patents and trademarks to be valuable, because of the broad scope of our products and services, we do not believe that the loss or expiration of any single patent or trademark would have a material adverse effect on our results of operations, financial position or the continuation of our business.

**Industry Regulatory Matters**

Domestic and international laws regulate the production and marketing of chemical substances. Almost every country has its own legal procedures for registration and import. Of these, the laws and regulations in the European Union, the United States (Toxic Substances Control Act) and China are the most significant to our business. Additionally, other laws and regulations may also limit our expansion into other countries. Chemicals that are not included on one or more of these, or any other country's chemical inventory lists, can usually be registered and imported, but may first require additional testing or submission of additional administrative information.

The European Commission enacted a regulatory system in 2006, known as Registration, Evaluation, Authorization and Restriction of Chemical substances ("REACH"), which requires manufacturers, importers and consumers of certain chemicals to register these chemicals and evaluate their potential impact on human health and the environment. As REACH matures, significant market restrictions could be imposed on the current and future uses of chemical products that we use as raw materials or that we sell as finished products in the European Union. Other countries may also enact similar regulations.

**Environmental Regulations**

Our policy is to operate our plants in a manner that protects the environment, health and safety of our employees, customers and communities. We have implemented company-wide environmental, health and safety policies managed by our Environmental, Health and Safety ("EH&S") department and overseen by the EH&S Committee of Hexion Holdings' Board of Managers. Our EH&S department provides support and oversight to our operations worldwide to ensure compliance with environmental, health and safety laws and regulations. This responsibility is executed via training, communication of EH&S policies, formulation of relevant policies and standards, EH&S audits and incident response planning and implementation. Our EH&S policies include systems and procedures that govern environmental emissions, waste generation, process safety management, handling, storage and disposal of hazardous substances, worker health and safety requirements, site security, emergency planning and response and product stewardship.

Our operations involve the use, handling, processing, storage, transportation and disposal of hazardous materials, and we are subject to extensive environmental regulation at the federal, state and international levels. We are also exposed to the risk of claims for environmental remediation or restoration. Our production facilities require operating permits that are subject to renewal or modification. Violations of environmental laws or permits may result in restrictions being imposed on operating activities, substantial fines, penalties, damages or other costs. In addition, statutes such as the federal Comprehensive Environmental Response, Compensation and Liability Act and comparable state and foreign laws impose strict, joint and several liability for investigating and remediating the consequences of spills and other releases of hazardous materials, substances and wastes at current and former facilities, as well as third-party disposal sites. Other laws permit individuals to seek recovery of damages for alleged personal injury or property damage due to exposure to hazardous substances and conditions at our facilities or to hazardous substances otherwise owned, sold or controlled by us. Therefore, notwithstanding our commitment to environmental management and environmental health and safety, we may incur liabilities in the future, and these liabilities may result in a material adverse effect on our business, financial condition, results of operations or cash flows.

Although our environmental policies and practices are designed to ensure compliance with international, federal and state laws and environmental regulations, future developments and increasingly stringent regulation could require us to make additional unforeseen environmental expenditures. In addition, our former operations, including our ink, wallcoverings, film, phosphate mining and processing, thermoplastics and food and dairy operations, may give rise to claims relating to our period of ownership.

We expect to incur future costs for capital improvements and general compliance under environmental, health and safety laws, including costs to acquire, maintain and repair pollution control equipment. In 2018, we incurred related capital expenditures of $19. We estimate that capital expenditures in 2019 for environmental controls at our facilities will be between $25 and $30. This estimate is based on current regulations and other requirements, but it is possible that a material amount of capital expenditures, in addition to those we currently anticipate, could be necessary if these regulations or other requirements or other facts change.

**Employees**

At December 31, 2018, we had approximately 4,000 employees. Approximately 40% of our employees are members of a labor union or are represented by workers' councils that have collective bargaining agreements, including most of our European employees. We believe that we have good relations with our union and non-union employees.

Our Board of Directors and sole shareholder expect honest and ethical conduct from every employee. We strive to adhere to the highest ethical standards in the conduct of our business and to comply with all laws and regulations that are applicable to the business. Each employee has a responsibility to maintain and advance the ethical values of the Company. In support of this, our employees receive training to emphasize the importance of compliance with our Code of Conduct.

**Where You Can Find More Information**

The public may read and copy any materials that we file with the Securities and Exchange Commission (the "SEC") on the SEC's website at www.sec.gov. In addition, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to these reports are available free of charge to the public through our internet website at www.hexion.com under "Investor Relations - SEC Filings".

## ITEM 1A - RISK FACTORS

Following are our principal risks. These factors may or may not occur, and we cannot express a view on the likelihood that any of these may occur. Other factors may exist that we do not consider significant based on information that is currently available or that we are not currently able to anticipate. Any of the following risks could materially adversely affect our business, financial condition or results of operations and prospects.

### Risks Related to Our Chapter 11 Proceedings

***Our filing of voluntary petitions for relief under Chapter 11 and our ability to successfully emerge as a stronger, leaner company is subject to a number of risks and uncertainties***

We are subject to risks and uncertainties associated with the Chapter 11 Cases. For the duration of the Chapter 11 Cases, our operations and our ability to execute our business strategy will be subject to risks and uncertainties associated with bankruptcy. These risks include:

- our ability to continue as a going concern;
- our ability to obtain Bankruptcy Court approval with respect to motions filed in the Chapter 11 proceedings and the outcomes of Bankruptcy Court rulings of the proceedings in general;
- our ability to develop, execute, confirm and consummate a plan of reorganization with respect to the Chapter 11 Cases, views and objections of creditors and other parties in interest that may make it difficult to develop and consummate a plan in a timely manner;
- the ability of third parties to seek and obtain Bankruptcy Court approval to terminate or shorten the exclusivity period for us to propose and confirm a plan of reorganization, to appoint a U.S. trustee or to convert the Chapter 11 Cases to cases under Chapter 7 of the Bankruptcy Code (“Chapter 7”);
- risks associated with third party motions in Chapter 11 proceedings and our ability to successfully emerge,
- our ability to manage contracts, obtain and maintain normal payment and other terms with customers, vendors, and service providers;
- our ability to obtain Bankruptcy Court approval to access the full amount of the Credit Facilities;
- increased costs related to the bankruptcy filing and other litigation;
- our ability to maintain contracts that are critical to our operations;
- our ability to attract, motivate and retain management and other key employees;
- our ability to retain key vendors or secure alternative supply sources;
- whether our foreign subsidiaries continue to operate their business in the normal course;
- our ability to maintain existing customers, vendor relationships and expand sales to new customers;
- our ability to fund and execute our business plan; and
- our ability to obtain acceptable and appropriate financing.

***The Chapter 11 proceedings may disrupt our business and may materially and adversely affect our operations.***

We have attempted to minimize the adverse effect of our Chapter 11 reorganization on our relationships with our customers, suppliers, employees and other parties. Nonetheless, our relationships with our customers, suppliers and employees may be adversely impacted and our operations could be materially and adversely affected. In addition, the continuation of our reorganization could negatively affect our ability to attract new employees and retain existing high performing employees.

***The Chapter 11 proceedings limit the flexibility of our management team in running our business.***

While we operate our businesses as debtor-in-possession under supervision by the Bankruptcy Court, we are required to obtain the approval of the Bankruptcy Court, and in some cases certain lenders, prior to engaging in activities or transactions outside the ordinary course of business. Bankruptcy Court approval of non-ordinary course activities entails preparation and filing of appropriate motions with the Bankruptcy Court, negotiation with the various creditors' committees and other parties-in-interest and one or more hearings. The creditors' committees and other parties-in-interest may be heard at any Bankruptcy Court hearing and may raise objections with respect to these motions. This process delays major transactions and limits our ability to respond quickly to opportunities and events in the marketplace. Furthermore, in the event the Bankruptcy Court does not approve a proposed activity or transaction, we would be prevented from engaging in activities and transactions that we believe are beneficial to us.

***We may not be able to obtain Bankruptcy Court confirmation of the Plan or may have to modify the terms of the Plan.***

Pursuant to the Support Agreement, we have agreed, among other things, to file the Plan with the Bankruptcy Court. Even if the Plan is approved by each class of holders of claims and interests entitled to vote (a “Voting Class”), the Bankruptcy Court, which, as a court of equity, may exercise substantial discretion, may choose not to confirm the Plan. Bankruptcy Code Section 1129 requires, among other things, a showing that confirmation of the Plan will not be followed by liquidation or the need for further financial reorganization for us, and that the value of distributions to dissenting holders of claims and interests will not be less than the value such holders would receive if we, the Debtors, liquidated under Chapter 7 of the Bankruptcy Code. Although we believe that the Plan will satisfy such tests, there can be no assurance that the Bankruptcy Court will reach the same conclusion.

Confirmation of the Plan will also be subject to certain conditions. These conditions may not be met and there can be no assurance that the Consenting Creditors will agree to modify or waive such conditions. Further, changed circumstances may necessitate changes to the Plan. Any such modifications could result in less favorable treatment of any non-accepting class, as well as any classes junior to such non-accepting class, than the treatment currently anticipated to be included in the Plan based upon the agreed terms of the Support Agreement. Such less favorable treatment could include a distribution of property (including the new common stock) to the class affected by the modification of a lesser value than currently anticipated to be included in the Plan or no distribution of property whatsoever under the Plan. Changes to the Plan may also delay the confirmation of the Plan and our emergence from bankruptcy, which could result in, among other things, incurred costs and expenses to the estates of the Debtors.

***We may be unable to comply with the financial maintenance or other covenants in our Credit Facilities, which could result in an event of default under the credit agreements governing such facilities that, if not cured or waived, would have a material adverse effect on our business, financial condition and results of operations.***

In addition to standard financing covenants and events of default, the Credit Facilities also provide for (i) periodic deliveries by us of various financial statements set forth in the credit agreements for each of the Credit Facilities, (ii) specific milestones that we must achieve by
specific target dates and (iii) certain baskets and exceptions to the negative covenants, such as debt and investments, not being available before the plan of reorganization is confirmed. We are also required to comply with a minimum liquidity covenant of $35 tested at the close of each business day. If we breach any such covenants and such breach is not cured or waived, the lenders under such Credit Facilities:

• would not be required to lend any additional amounts to us;
• could elect to declare all borrowings outstanding under such Credit Facilities, together with accrued and unpaid interest and fees, due and payable and could demand cash collateral for all letters of credit issued thereunder; and/or
• could apply all of our available cash that is subject to the cash sweep mechanism of such Credit Facilities to repay these borrowings;

any or all of which would have a material adverse effect on our business, financial condition and results of operations.

***Termination of our exclusive right to file a Chapter 11 plan and the exclusive right to solicit acceptances could result in competing plans of reorganization, which could have less favorable terms or result in significant litigation and expenses.***

We currently have the exclusive right to file a Chapter 11 plan through and including July 30, 2019, and the exclusive right to solicit acceptances of any such plan through September 28, 2019. Such deadlines may be extended from time to time “for cause” (as permitted by section 1121(d) of the Bankruptcy Code) with the approval of the Bankruptcy Court. However, it is also possible that (a) parties in interest could seek to shorten or terminate such exclusive plan filing and solicitation periods “for cause” (as permitted by section 1121(d) of the Bankruptcy Code)) or (b) that such periods could expire without extension.

If our exclusive plan filing and solicitation periods expire or are terminated, other parties in interest will be permitted to file alternative plans of reorganization. There can be no assurances that recoveries under any such alternative plan would be as favorable to creditors as the Plan. In addition, the proposal of competing plans of reorganization may entail significant litigation and significantly increase the expenses of administration of the Debtors’ cases, which could deplete creditor recoveries under any plan.

***If the Support Agreement is terminated, our ability to confirm and consummate the Plan could be materially and adversely affected.***

The Support Agreement contains a number of termination events, upon the occurrence of which certain parties to the Support Agreement may terminate the agreement. If the Support Agreement is terminated as to all parties thereto, each of the parties thereto will be released from its obligations in accordance with the terms of the Support Agreement. Such termination may result in the loss of support for the Plan by the parties to the Support Agreement, which could adversely affect our ability to confirm and consummate the Plan. If the Plan is not consummated, there can be no assurance that the Chapter 11 Cases would not be converted to Chapter 7 liquidation cases or that any new Plan would be as favorable to holders of claims against the Debtors as contemplated by the Support Agreement.

***We may have insufficient liquidity for our business operations during the Chapter 11 proceedings.***

Although we believe that we will have sufficient liquidity to operate our business during the pendency of the Chapter 11 proceedings, the Credit Facilities remain subject to the issuance of a final order by the Bankruptcy Court. There can be no assurance that the cash made available to us under the Credit Facilities or otherwise in its restructuring process and revenue generated by our business operations will be sufficient to fund our operations, especially as we expect to incur substantial professional and other fees related to our restructuring. In the event that revenue flows and other available cash are not sufficient to meet our liquidity requirements, we may be required to seek additional financing. There can be no assurance that such additional financing would be available or, if available, offered on terms that are acceptable. If, for one or more reasons, we are unable to obtain such additional financing, we could be required to seek a sale of the company or certain of our material assets or our businesses and assets may be subject to liquidation under Chapter 7 of the Bankruptcy Code, and we may cease to continue as a going concern.

**Risks Related to Our Business**

***If global economic conditions are weak or deteriorate, it will negatively impact our business operations, results of operations and financial condition.***

Changes in global economic and financial market conditions could impact our business operations in a number of ways including, but not limited to, the following:

- reduced demand in key customer segments, such as building, construction, wind energy, oil and gas, automotive and electronics, compared to prior years;
- weak economic conditions in our primary regions of operations: U.S., Europe, and Asia;
- payment delays by customers and reduced demand for our products caused by customer insolvencies and/or the inability of customers to obtain adequate financing to maintain operations
- insolvency of suppliers or the failure of suppliers to meet their commitments resulting in product delays;
- more onerous credit and commercial terms from our suppliers such as shortening the required payment period for outstanding accounts receivable or reducing or eliminating the amount of trade credit available to us; and
- potential delays in accessing our ABL Facility or obtaining new credit facilities on terms we deem commercially reasonable or at all, and the potential inability of one or more of the financial institutions included in our syndicated ABL Facility to fulfill their funding obligations. Should a bank in our syndicated ABL Facility be unable to fund a future draw request, we could find it difficult to replace that bank in the facility.

Due to worldwide economic volatility and uncertainty, the short-term outlook for our business is difficult to predict.

***Fluctuations in direct or indirect raw material costs could have an adverse impact on our business.***

Raw materials costs made up approximately 75% of our cost of sales in 2018. The prices of our direct and indirect raw materials have been, and we expect them to continue to be, volatile. If the cost of direct or indirect raw materials increases significantly and we are unable to offset the increased costs with higher selling prices, our profitability will decline. Increases in prices for our products could also hurt our ability to remain both competitive and profitable in the markets in which we compete.

Although some of our materials contracts include competitive price clauses that allow us to buy outside the contract if market pricing falls below contract pricing, and certain contracts have minimum-maximum monthly volume commitments that allow us to take advantage of spot pricing, we may be unable to purchase raw materials at market prices. In addition, some of our customer contracts have fixed prices for a certain term, and as a result, we may not be able to pass on raw material price increases to our customers immediately, if at all. Due to differences in timing of the pricing trigger points between our sales and purchase contracts, there is often a “lead-lag” impact. In many cases this “lead-lag” impact can negatively impact our margins in the short term in periods of rising raw material prices and positively impact them in the short term in periods of falling raw material prices. Future raw material prices may be impacted by new laws or regulations, suppliers’ allocations to other purchasers, changes in our supplier manufacturing processes as some of our products are byproducts of these processes, interruptions in production by suppliers, natural disasters, volatility in the price of crude oil and related petrochemical products and changes in exchange rates.

***An inadequate supply of direct or indirect raw materials and intermediate products could have a material adverse effect on our business.***

Our manufacturing operations require adequate supplies of raw materials and intermediate products on a timely basis. The loss of a key source or a delay in shipments could have a material adverse effect on our business. Raw material availability may be subject to curtailment or change due to, among other things:

- new or existing laws or regulations;
- suppliers’ allocations to other purchasers;
- interruptions in production by suppliers; and
- natural disasters.

Many of our raw materials and intermediate products are available in the quantities we require from a limited number of suppliers. Should any of our key suppliers fail to deliver these raw materials or intermediate products to us or no longer supply us, we may be unable to purchase these materials in necessary quantities, which could adversely affect our volumes, or may not be able to purchase them at prices that would allow us to remain competitive. During the past several years, certain of our suppliers have experienced force majeure events rendering them unable to deliver all, or a portion of, the contracted-for raw materials. On these occasions, we have been forced to limit production or were forced to purchase replacement raw materials in the open market at significantly higher costs or place our customers on an allocation of our products. In the past, some of our customers have chosen to discontinue or decrease the use of our products as a result of these measures. We have experienced force majeure events by certain of our suppliers which have had significant negative impacts on our business. For example, in 2014, Shell notified us of a supply interruption event at its Moerdijk, Netherlands facility, which provides key raw materials to us, and this event resulted in us allocating certain products to our customers through mid-2015, at which point the disruption was resolved. Additionally, we cannot predict whether new regulations or restrictions may be imposed in the future which may result in reduced supply or further increases in prices. We cannot assure investors that we will be able to renew our current materials contracts or enter into replacement contracts on commercially acceptable terms, or at all. Fluctuations in the price of these or other raw materials or intermediate products, the loss of a key source of supply or any delay in the supply could result in a material adverse effect on our business.

***Our production facilities are subject to significant operating hazards which could cause environmental contamination, personal injury and loss of life, and severe damage to, or destruction of, property and equipment.***

Our production facilities are subject to hazards associated with the manufacturing, handling, storage and transportation of chemical materials and products, including human exposure to hazardous substances, pipeline and equipment leaks and ruptures, explosions, fires, inclement weather and natural disasters, mechanical failures, unscheduled downtime, transportation interruptions, remedial complications, chemical spills, discharges or releases of toxic or hazardous substances or gases, storage tank leaks and other environmental risks. Additionally, a number of our operations are adjacent to operations of independent entities that engage in hazardous and potentially dangerous activities. Our operations or adjacent operations could result in personal injury or loss of life, severe damage to or destruction of property or equipment, environmental damage, or a loss of the use of all or a portion of one of our key manufacturing facilities. Such events at our facilities, or adjacent third-party facilities, could have a material adverse effect on us.

We may incur losses beyond the limits or coverage of our insurance policies for liabilities that are associated with these hazards. In addition, various kinds of insurance for companies in the chemical industry have not been available on commercially acceptable terms, or, in some cases, have been unavailable altogether. In the future, we may not be able to obtain coverage at current levels, and our premiums may increase significantly on coverage that we maintain.

***Environmental obligations and liabilities could have a substantial negative impact on our financial condition, cash flows and profitability.***

Our operations involve the use, handling, processing, storage, transportation and disposal of hazardous materials and are subject to extensive and complex U.S. federal, state, local and non-U.S. supranational, national, provincial, and local environmental, health and safety laws and regulations. These environmental laws and regulations include those that govern the discharge of pollutants into the air and water, the generation, use, storage, transportation, treatment and disposal of hazardous materials and wastes, the cleanup of contaminated sites, occupational health and safety and those requiring permits, licenses, or other government approvals for specified operations or activities. Our products are also subject to a variety of international, national, regional, state, and provincial requirements and restrictions applicable to the manufacture, import, export or subsequent use of such products. In addition, we are required to maintain, and may be required to obtain in the future, environmental, health and safety permits, licenses, or government approvals to continue current operations at most of our manufacturing and research facilities throughout the world.

Compliance with environmental, health and safety laws and regulations, and maintenance of permits, can be costly and complex, and we have incurred and will continue to incur costs, including capital expenditures and costs associated with the issuance and maintenance of letters of credit, to comply with these requirements. In 2018, we incurred capital expenditures of $19 to comply with environmental, health and safety laws and regulations and to make other environmental improvements. If we are unable to comply with environmental, health and safety laws and regulations, or maintain our permits, we could incur substantial costs, including fines and civil or criminal sanctions, third party property damage or personal injury claims or costs associated with upgrades to our facilities or changes in our manufacturing processes in order to achieve and maintain compliance, and may also be required to halt permitted activities or operations until any necessary permits can be obtained or complied with, or decide to close the impacted facility. In addition, future developments or increasingly stringent regulations could require us to make additional unforeseen environmental expenditures, which could have a material adverse effect on our business.

Environmental, health and safety requirements change frequently and have tended to become more stringent over time. We cannot predict what environmental, health and safety laws and regulations or permit requirements will be enacted or amended in the future, how existing or future laws or regulations will be interpreted or enforced or the impact of such laws, regulations or permits on future production expenditures, supply chain or sales. Our costs of compliance with current and future environmental, health and safety requirements could be material. Such future requirements include legislation designed to reduce emissions of carbon dioxide and other substances associated with climate change (“greenhouse gases”). The European Union has enacted greenhouse gas emissions legislation and continues to expand the scope of such legislation. The U.S. Environmental Protection Agency (the “USEPA”) has promulgated regulations applicable to projects involving greenhouse gas emissions above a certain threshold, and the United States and certain states within the United States have enacted, or are considering, limitations on greenhouse gas emissions. These requirements to limit greenhouse gas emissions could significantly increase our energy costs, and may also require us to incur material capital costs to modify our manufacturing facilities.

In addition, we are subject to liability associated with hazardous substances in soil, groundwater and elsewhere at a number of sites. These include sites that we formerly owned or operated and sites where hazardous wastes and other substances from our current and former facilities and operations have been sent, treated, stored, or recycled or disposed of, as well as sites that we currently own or operate. Depending upon the circumstances, our liability may be strict, joint and several, meaning that we may be held responsible for more than our proportionate share, or even all, of the liability involved regardless of our fault or whether we are aware of the conditions giving rise to the liability. Even where liability has been allocated among parties, we may be subject to material changes in such allocation in the future for a number of reasons, including the discovery of new contamination, the insolvency of a responsible party, or a heightened nexus to the remediation site. Environmental conditions at these sites can lead to environmental cleanup liability and claims against us for personal injury or wrongful death, property damages and natural resource damages, as well as to claims and obligations for the investigation and cleanup of environmental conditions. The extent of any of these liabilities is difficult to predict, but in the aggregate such liabilities could be material.

We have been notified that we are or may be responsible for environmental remediation at a number of sites in North America, Europe and South America. We are also performing a number of voluntary cleanups. The most significant sites at which we are performing or participating in environmental remediation are sites formerly owned by us in Geismar, Louisiana and Plant City, Florida. As the result of former, current or future operations, there may be additional environmental remediation or restoration liabilities or claims of personal injury by employees or members of the public due to exposure or alleged exposure to hazardous materials in connection with our operations, properties or products. Sites sold by us in past years may have significant site closure or remediation costs and our share, if any, may be unknown to us at this time. These environmental liabilities or obligations, or any that may arise or become known to us in the future, could have a material adverse effect on our financial condition, cash flows and profitability.

***Future chemical regulatory actions may decrease our profitability.***

Several governmental agencies have enacted, are considering or may consider in the future, regulations that may impact our ability to sell certain chemical products in certain geographic areas. The European Registration, Evaluation and Authorization of Chemicals (“REACH”) regulation requires manufacturers, importers and consumers of certain chemicals manufactured in, or imported into, the European Union to register such chemicals and evaluate their potential impacts on human health and the environment. REACH may result in certain chemicals being further regulated, restricted or banned from use in the European Union. In addition, the Frank R. Lautenberg Chemical Safety for the 21st Century Act (“LCSA”) was signed into law on June 22, 2016, and updates and revises the Toxic Substances Control Act. LCSA requires the implementing agency to conduct risk evaluations on high priority chemicals, which could include chemical products we manufacture. Other countries have implemented, or are considering implementation of, similar chemical regulatory programs. When fully implemented, REACH, LCSA and other similar regulatory programs may result in significant adverse market impacts on the affected chemical products. If we fail to comply with REACH, LCSA or other similar laws and regulations, we may be subject to penalties or other enforcement actions, including fines, injunctions, recalls or seizures, which would have a material adverse effect on our financial condition, cash flows and profitability. Additionally, studies conducted in association with these regulatory programs, or otherwise conducted through trade associations, may result in new information regarding the health effects and environmental impact of our products and raw materials. Such studies could result in future regulations restricting the manufacture or use of our products, liability for adverse environmental or health effects linked to our products, and/or de-selection of our products for specific applications. These restrictions, liability, and product de-selection could have a material adverse effect on our business, our financial condition and/or liquidity.

Because of certain government public health agencies’ concerns regarding the potential for adverse human health effects, formaldehyde is a regulated chemical and public health agencies continue to evaluate its safety. A division of the World Health Organization, the International Agency for Research on Cancer, or IARC, and the National Toxicology Program, or NTP, within the U.S. Department of Health and Human Services, have classified formaldehyde as being carcinogenic to humans. The USEPA, under its Integrated Risk Information System, or IRIS, released a draft of its toxicological review of formaldehyde in 2010, stating that formaldehyde meets the criteria to be described as “carcinogenic to humans.” The National Academy of Sciences peer reviewed the draft IRIS toxicological review and issued a report in April 2011 that criticized the draft IRIS toxicological review and stated that the methodologies and the underlying science used in the draft IRIS review did not clearly support a conclusion of a causal link between formaldehyde exposure and leukemia. USEPA may issue a revised draft IRIS toxicological review to reflect the NAS findings, including the conclusions regarding a causal link between formaldehyde exposure and leukemia. Effective January 1, 2016, ECHA classified formaldehyde as a Category 2 Mutagen, but rejected reclassification as a Category 1A Carcinogen. It is possible that new regulatory requirements could be promulgated to limit human exposure to formaldehyde, that we could incur substantial additional costs to meet any such regulatory requirements, and that there could be a reduction in demand for our formaldehyde-based products. These additional costs and reduced demand could have a material adverse effect on our operations and profitability.

BPA, which is manufactured and used as an intermediate at our Deer Park, Texas and Pernis, Netherlands manufacturing facilities, and is also sold directly to third parties, is currently considered under certain state and international regulatory programs as a reproductive toxicant and an “endocrine disrupter,” meaning BPA could disrupt normal biological processes. BPA continues to be subject to scientific, regulatory and legislative review and negative media attention. In Europe, the EU Committee for Risk Assessment adopted an opinion to change the existing harmonized classification and labeling of BPA from a category 2 reproductive Toxicant to a category 1B reproductive Toxicant. This classification change was effective beginning March 1, 2018. The EU Member State Committee agreed to add BPA to the Substance of Very High Concern (“SVHC”) candidate list based upon its classification as a reproductive toxicant, as well as for its endocrine disrupting properties to both human health and the environment. The REACH Risk Management Option Analysis (RMOA) was released July 6, 2017, in which BPA is identified as an endocrine disruptor for the environment with no safe threshold, and REACH restrictions are identified as the preferred risk management measure. The California Environmental Protection Agency’s Office of Environmental Health Hazard Assessment (“OEHHA”) listed BPA under Proposition 65 as a developmental and reproductive toxicant, requiring warning labels unless BPA exposures are shown to be less than a risk-based level (the maximum allowable dose level (“MADL”)). As of May 11, 2016, products containing BPA sold into California must comply with Proposition 65’s requirements. Despite these hazard designations and listings, the US Food and Drug Administration (“FDA”) is also

actively engaged in the scientific and regulatory review of BPA and, in a letter submitted to OEHHA dated April 6, 2015, reaffirmed that BPA is safe as currently permitted in FDA-regulated food contact uses and concluded that FDA's National Center for Toxicological Research study did not support the listing of BPA as a reproductive toxicant. In December 2012, France enacted a law that bans direct contact of packaging containing BPA with food and consumer products. In January 2015, the European Food Safety Authority ("EFSA") concluded that BPA poses no health risk to consumers of any age group (including unborn children, infants and adolescents) at currently permitted exposure levels. EFSA confirmed this conclusion in October 2016. Regulatory and legislative initiatives such as these, or product de-selection resulting from such regulatory actions, may result in a reduction in demand for BPA and our products containing BPA and could also result in additional liabilities as well as an increase in operating costs to meet more stringent regulations. Such increases in operating costs and/or reduction in demand could have a material adverse effect on our operations and profitability.

Scientists periodically conduct studies on the potential human health and environmental impacts of chemicals, including products we manufacture and sell. Also, nongovernmental advocacy organizations and individuals periodically issue public statements alleging human health and environmental impacts of chemicals, including products we manufacture and sell. Based upon such studies or public statements, our customers may elect to discontinue the purchase and use of our products, even in the absence of any government regulation. Such actions could significantly decrease the demand for our products and, accordingly, have a material adverse effect on our business, financial condition, cash flows and profitability.

***We are subject to certain risks related to litigation filed by or against us, and adverse results may harm our business.***

We cannot predict with certainty the cost of defense, of prosecution or of the ultimate outcome of litigation and other proceedings filed by or against us, including penalties or other civil or criminal sanctions, or remedies or damage awards, and adverse results in any litigation and other proceedings may materially harm our business. Litigation and other proceedings may include, but are not limited to, actions relating to intellectual property, international trade, commercial arrangements, product liability, environmental, health and safety, joint venture agreements, labor and employment or other harms resulting from the actions of individuals or entities outside of our control. In the case of intellectual property litigation and proceedings, adverse outcomes could include the cancellation, invalidation or other loss of material intellectual property rights used in our business and injunctions prohibiting our use of business processes or technology that are subject to third-party patents or other third-party intellectual property rights. Litigation based on environmental matters or exposure to hazardous substances in the workplace or based upon the use of our products could result in significant liability for us, which could have a material adverse effect on our business, financial condition and/or profitability.

***Because we manufacture and use materials that are known to be hazardous, we are subject to, or affected by, certain product and manufacturing regulations, for which compliance can be costly and time consuming. In addition, we may be subject to personal injury or product liability claims as a result of human exposure to such hazardous materials.***

We produce hazardous chemicals that require care in handling and use that are subject to regulation by many U.S. and non-U.S. national, supra-national, state and local governmental authorities. In some circumstances, these authorities must review and, in some cases approve, our products and/or manufacturing processes and facilities before we may manufacture and sell some of these chemicals. To be able to manufacture and sell certain new chemical products, we may be required, among other things, to demonstrate to the relevant authority that the product does not pose an unreasonable risk during its intended uses and/or that we are capable of manufacturing the product in compliance with current regulations. The process of seeking any necessary approvals can be costly, time consuming and subject to unanticipated and significant delays. Approvals may not be granted to us on a timely basis, or at all. Any delay in obtaining, or any failure to obtain or maintain, these approvals would adversely affect our ability to introduce new products and to generate revenue from those products. New laws and regulations may be introduced in the future that could result in additional compliance costs, bans on product sales or use, seizures, confiscation, recall or monetary fines, any of which could prevent or inhibit the development, distribution or sale of our products and could increase our customers' efforts to find less hazardous substitutes for our products. We are subject to ongoing reviews of our products and manufacturing processes.

As discussed above, we manufacture and sell products containing formaldehyde, and certain governmental bodies have stated that there is a causal link between formaldehyde exposure and certain types of cancer, including myeloid leukemia and NPC. These conclusions could adversely impact our business and also become the basis of product liability litigation.

Other products we have made or used have been and could be the focus of legal claims based upon allegations of harm to human health. While we cannot predict the outcome of pending suits and claims, we believe that we maintain adequate reserves, in accordance with our policy, to address currently pending litigation and are adequately insured to cover currently pending and foreseeable future claims. However, an unfavorable outcome in these litigation matters could have a material adverse effect on our business, financial condition and/or profitability and cause our reputation to decline.

***We are subject to claims from our customers and their employees, environmental action groups and neighbors living near our production facilities.***

We produce and use hazardous chemicals that require appropriate procedures and care to be used in handling them or in using them to manufacture other products. As a result of the hazardous nature of some of the products we produce and use, we may face claims relating to incidents that involve our customers' improper handling, storage and use of our products. We have historically faced lawsuits, including class action lawsuits that claim liability for death, injury or property damage caused by products that we manufacture or that contain our components. Additionally, we may face lawsuits alleging personal injury or property damage by neighbors living near our production facilities. These lawsuits, and any future lawsuits, could result in substantial damage awards against us, which in turn could encourage additional lawsuits and could cause us to incur significant legal fees to defend such lawsuits, either of which could have a material adverse effect on our business, financial condition and/or profitability. In addition, the activities of environmental action groups could result in litigation or damage to our reputation.

***Our manufacturing facilities are subject to disruption due to operating hazards***

The storage, handling, manufacturing and transportation of chemicals at our facilities and adjacent facilities could result in leaks, spills, fires or explosions, which could result in production downtime, production delays, raw material supply delays, interruptions and environmental hazards. We have experienced incidents at our own facilities and a raw material supplier located adjacent to our facility that have resulted mostly in short term, but some long term, production delays. Production interruption may also result from severe weather, particularly with respect to our southern U.S. operations near the Gulf Coast. Production lapses caused by any such delays can often be absorbed by our other manufacturing facilities, and we maintain insurance to cover such potential events. However, such events could negatively affect our operations.

***As a global business, we are subject to numerous risks associated with our international operations that could have a material adverse effect on our business.***

We have significant manufacturing and other operations outside the United States. Some of these operations are in jurisdictions with unstable political or economic conditions. There are numerous inherent risks in international operations, including, but not limited to:

- exchange controls and currency restrictions;
- currency fluctuations and devaluations;
- tariffs and trade barriers imposed by the current U.S. administration or foreign governments;
- renegotiation of trade agreements by the current U.S. administration;
- export duties and quotas;
- changes in local economic conditions;
- changes in laws and regulations;
- exposure to possible expropriation or other government actions;
- acts by national or regional banks, including the European Central Bank, to increase or restrict the availability of credit;
- hostility from local populations;
- diminished ability to legally enforce our contractual rights in non-U.S. countries;
- restrictions on our ability to repatriate dividends from our subsidiaries; and
- unsettled political conditions and possible terrorist attacks against U.S. interests.

Our international operations expose us to different local political and business risks and challenges. For example, we may face potential difficulties in staffing and managing local operations, and we may have to design local solutions to manage credit risks of local customers and distributors. In addition, some of our operations are located in regions that may be politically unstable, having particular exposure to riots, civil commotion or civil unrests, acts of war (declared or undeclared) or armed hostilities or other national or international calamity. In some of these regions, our status as a U.S. company also exposes us to increased risk of sabotage, terrorist attacks, interference by civil or military authorities or to greater impact from the national and global military, diplomatic and financial response to any future attacks or other threats.

In addition, intellectual property rights may be more difficult to enforce in non-U.S. or non-Western European countries.

If global economic and market conditions, or economic conditions in Europe, China, Brazil, Australia, the United States or other key markets remain uncertain or deteriorate further, the value of associated foreign currencies and the global credit markets may weaken. Additionally, general financial instability in countries where we do not transact a significant amount of business could have a contagion effect and contribute to the general instability and uncertainty within a particular region or globally. If this were to occur, it could adversely affect our customers and suppliers and in turn have a materially adverse effect on our international business and results of operations.

Our overall success as a global business depends, in part, upon our ability to succeed under different economic, social and political conditions. We may fail to develop and implement policies and strategies that are effective in each location where we do business, and failure to do so could have a material adverse effect on our business, financial condition and results of operations.

***Our business is subject to foreign currency risk.***

In 2018, 56% of our net sales originated outside the United States. In our consolidated financial statements, we translate our local currency financial results into U.S. dollars based on average exchange rates prevailing during a reporting period or the exchange rate at the end of that period. During times of a strengthening U.S. dollar, at a constant level of business, our reported international revenues and earnings would be reduced because the local currency would translate into fewer U.S. dollars.

In addition to currency translation risks, we incur a currency transaction risk whenever we enter into a purchase or a sales transaction or indebtedness transaction using a different currency from the currency in which we record revenues. Given the recent volatility of exchange rates, we may not manage our currency transaction and/or translation risks effectively, and volatility in currency exchange rates may materially adversely affect our financial condition or results of operations, including our tax obligations. Since the vast majority of our indebtedness is denominated in U.S. dollars, a strengthening of the U.S. dollar could make it more difficult for us to repay our indebtedness.

We have entered and expect to continue to enter into various hedging and other programs in an effort to protect against adverse changes in the non-U.S. exchange markets and attempt to minimize potential material adverse effects. These hedging and other programs may be unsuccessful in protecting against these risks. Our results of operations could be materially adversely affected if the U.S. dollar strengthens against non-U.S. currencies and our protective strategies are not successful. Likewise, a strengthening U.S. dollar provides opportunities to source raw materials more cheaply from foreign countries.

***Fluctuations in energy costs could have an adverse impact on our profitability and negatively affect our financial condition.***

Oil and natural gas prices have fluctuated greatly over the past several years and we anticipate that they will continue to do so. Natural gas and electricity are essential to our manufacturing processes, which are energy-intensive. Our energy costs represented approximately 4% of our total cost of sales for the year ended December 31, 2018.

Our operating expenses will increase if our energy prices increase. Increased energy prices may also result in greater raw materials costs. If we cannot pass these costs through to our customers, our profitability may decline. Increased energy costs may also negatively affect our customers and the demand for our products. In addition, as oil and natural gas prices fall, while having a positive effect on our overall costs, such falling prices can have a negative impact on our oilfield business, as the number of oil and natural gas wells drilled declines in response to market condition.

If energy prices decrease, we expect benefits in the short-run with decreased operating expenses and increased operating income, but may face increased pricing pressure from competitors that are similarly impacted by energy prices. As a result, profitability may decrease over an extended period of time of lower energy prices. Moreover, any future increases in energy prices after a period of lower energy prices may have an adverse impact on our profitability for the reasons described above.

***We face increased competition from other companies and from substitute products, which could force us to lower our prices, which would adversely affect our profitability and financial condition.***

Several of the markets that we operate in are highly competitive, and this competition could harm our results of operations, cash flows and financial condition. Our competitors include major international producers as well as smaller regional competitors. We believe that the most significant competitive factor that impacts demand for certain of our products is selling price. We may be forced to lower our selling price based on our competitors' pricing decisions, which would reduce our profitability. Certain markets that we serve have become commoditized in recent years and have given rise to several industry participants, resulting in fierce price competition in these markets. In addition, we face competition from a number of products that are potential substitutes for our products. Growth in substitute products could adversely affect our market share, net sales and profit margins.

Additional trends include current and anticipated consolidation among our competitors and customers which may cause us to lose market share as well as put downward pressure on pricing. There is also a trend in our industries toward relocating manufacturing facilities to lower cost regions, such as Asia, which may permit some of our competitors to lower their costs and improve their competitive position. Furthermore, there has been an increase in new competitors based in these regions.

Some of our competitors are larger, have greater financial resources, have a lower cost structure, and/or have less debt than we do. As a result, those competitors may be better able to withstand a change in conditions within our industry and in the economy as a whole. If we do not compete successfully, our operating margins, financial condition, cash flows and profitability could be adversely affected. Furthermore, if we do not have adequate capital to invest in technology, including expenditures for research and development, our technology could be rendered uneconomical or obsolete, negatively affecting our ability to remain competitive.

***We expect substantial cost savings from our ongoing strategic initiatives, and if we are unable to achieve these cost savings, or sustain our current cost structure, it could have a material adverse effect on our business operations, results of operations and financial condition.***

We have not yet realized all of the cost savings and synergies we expect to achieve from our ongoing strategic initiatives. A variety of risks could cause us not to realize the expected cost savings and synergies, including but not limited to, higher than expected severance costs related to staff reductions; higher than expected retention costs for employees that will be retained; higher than expected stand-alone overhead expenses; delays in the anticipated timing of activities related to our cost-savings plans; and other unexpected costs associated with operating our business. During 2018, we achieved $48 in cost savings related to our cost reduction programs and as of December 31, 2018, we have approximately $9 of additional in-process cost savings.

If we are unable to achieve these cost savings or synergies it could adversely affect our profitability and financial condition. In addition, while we have been successful in reducing costs and generating savings, factors may arise that may not allow us to sustain our current cost structure. As market and economic conditions change, we may also make changes to our operating cost structure.

***Our success depends in part on our ability to protect our intellectual property rights, and our inability to enforce these rights could have a material adverse effect on our competitive position.***

We rely on the patent, trademark, copyright and trade-secret laws of the United States and the countries where we do business to protect our intellectual property rights. We may be unable to prevent third parties from using our intellectual property without our authorization. The unauthorized use of our intellectual property could reduce any competitive advantage we have developed, reduce our market share or otherwise harm our business. In the event of unauthorized use of our intellectual property, litigation to protect or enforce our rights could be costly, and we may not prevail.

Many of our technologies are not covered by any patent or patent application, and our issued and pending U.S. and non-U.S. patents may not provide us with any competitive advantage and could be challenged by third parties. Our inability to secure issuance of our pending patent applications may limit our ability to protect the intellectual property rights these pending patent applications were intended to cover. Our competitors may attempt to design around our patents to avoid liability for infringement and, if successful, our competitors could adversely affect our market share. Furthermore, the expiration of our patents may lead to increased competition.

Our pending trademark applications may not be approved by the responsible governmental authorities and, even if these trademark applications are granted, third parties may seek to oppose or otherwise challenge these trademark applications. A failure to obtain trademark registrations in the United States and in other countries could limit our ability to protect our products and their associated trademarks and impede our marketing efforts in those jurisdictions.

In addition, effective patent, trademark, copyright and trade secret protection may be unavailable or limited in some foreign countries. In some countries we do not apply for patent, trademark or copyright protection. We also rely on unpatented proprietary manufacturing expertise, continuing technological innovation and other trade secrets to develop and maintain our competitive position. While we generally enter into confidentiality agreements with our employees and third parties to protect our intellectual property, these confidentiality agreements are limited in duration and could be breached, and may not provide meaningful protection of our trade secrets or proprietary manufacturing expertise. Adequate remedies may not be available if there is an unauthorized use or disclosure of our trade secrets and manufacturing expertise. In addition, others may obtain knowledge about our trade secrets through independent development or by legal means. The failure to protect our processes, apparatuses, technology, trade secrets and proprietary manufacturing expertise, methods and compounds could have a material adverse effect on our business by jeopardizing critical intellectual property.

Where a product formulation or process is kept as a trade secret, third parties may independently develop or invent and patent products or processes identical to our trade-secret products or processes. This could have an adverse impact on our ability to make and sell products or use such processes and could potentially result in costly litigation in which we might not prevail.

***We could face intellectual property infringement claims that could result in significant legal costs and damages and impede our ability to produce key products, which could have a material adverse effect on our business, financial condition and results of operations.***

Our production processes and products are specialized; however, we could face intellectual property infringement claims from our competitors or others alleging that our processes or products infringe on their proprietary technology. If we were subject to an infringement suit, we may be required to change our processes or products, or stop using certain technologies or producing the infringing product entirely. Even if we ultimately prevail in an infringement suit, the existence of the suit could cause our customers to seek other products that are not subject to infringement suits. Any infringement suit could result in significant legal costs and damages and impede our ability to produce key products, which could have a material adverse effect on our business, financial condition and results of operations.

***We depend on certain of our key executives and our ability to attract and retain qualified employees.***

Our ability to operate our business and implement our strategies depends, in part, on the skills, experience and efforts of key members of our leadership team. We do not maintain any key-man insurance on any of these individuals. In addition, our success will depend on, among other factors, our ability to attract and retain other managerial, scientific and technical qualified personnel, particularly research scientists, technical sales professionals, and engineers who have specialized skills required by our business and focused on the industries in which we compete. Competition for qualified employees in the chemicals industry is intense and the loss of the services of any of our key employees or the failure to attract or retain other qualified personnel could have a material adverse effect on our business or business prospects. Further, if any of these executives or employees joins a competitor, we could lose customers and suppliers and incur additional expenses to recruit and train personnel, who require time to become productive and to learn our business.

***Our majority shareholder’s interest may conflict with or differ from our interests.***

Apollo controls our ultimate parent company, Hexion Holdings LLC, or Hexion Holdings, which indirectly owns 100% of our common equity. In addition, Apollo has significant representation on Hexion Holdings’ Board of Managers. As a result, Apollo can significantly influence our ability to enter into significant corporate transactions such as mergers, tender offers and the sale of all or substantially all of our assets. The interests of Apollo and its affiliates could conflict with or differ from our interests. For example, the concentration of ownership held by Apollo could delay, defer or prevent a change of control of our company or impede a merger, takeover or other business combination which may otherwise be favorable for us.

Additionally, Apollo is in the business of making investments in companies and may, from time to time, acquire and hold interests in businesses that compete, directly or indirectly with us. Apollo may also pursue acquisition opportunities that may be complementary to our business, and as a result, those acquisition opportunities may not be available to us. Additionally, even if Apollo invests in competing businesses through Hexion Holdings, such investments may be made through a newly-formed subsidiary of Hexion Holdings. Any such investment may increase the potential for the conflicts of interest discussed in this risk factor.

So long as Apollo continues to indirectly own a significant amount of the equity of Hexion Holdings, even if such amount is less than 50%, they will continue to be able to substantially influence or effectively control our ability to enter into any corporate transactions.

Because our equity securities are not and will not be registered under the securities laws of the United States or in any other jurisdiction and are not listed on any U.S. securities exchange, we are not subject to certain of the corporate governance requirements of U.S. securities authorities or to any corporate governance requirements of any U.S. securities exchanges.

***If we fail to extend or renegotiate our collective bargaining agreements with our works councils and labor unions as they expire from time to time, if disputes with our works councils or unions arise, or if our unionized or represented employees were to engage in a strike or other work stoppage, our business and operating results could be materially adversely affected.***

As of December 31, 2018, approximately 40% of our employees were unionized or represented by works councils that were covered by collective bargaining agreements. In addition, some of our employees reside in countries in which employment laws provide greater bargaining or other employee rights than the laws of the United States. These rights may require us to expend more time and money altering or amending employees’ terms of employment or making staff reductions. For example, most of our employees in Europe are represented by works councils, which generally must approve changes in conditions of employment, including restructuring initiatives and changes in salaries and benefits. A significant dispute could divert our management’s attention and otherwise hinder our ability to conduct our business or to achieve planned cost savings.

We may be unable to timely extend or renegotiate our collective bargaining agreements as they expire. We have collective bargaining agreements which will expire during the next two years. We also may be subject to strikes or work stoppages by, or disputes with, our labor unions. If we fail to extend or renegotiate our collective bargaining agreements, if disputes with our works councils or unions arise or if our unionized or represented workers engage in a strike or other work stoppage, we could incur higher labor costs or experience a significant disruption of operations, which could have a material adverse effect on our business, financial position and results of operations.

***Our pension plans are unfunded or under-funded and our required cash contributions could be higher than we expect, each of which could have a material adverse effect on our financial condition and liquidity.***

We sponsor various pension and similar benefit plans worldwide.

Our U.S. and non-U.S. defined benefit pension plans were under-funded in the aggregate by $31 and $179, respectively, as of December 31, 2018. We are legally required to make contributions to our pension plans in the future, and those contributions could be material.

In 2019, we do not expect to make any contributions to our U.S. defined benefit pension plan and we expect to contribute approximately $24 to our non-U.S. defined benefit pension plans, which we believe is sufficient to meet the minimum funding requirements as set forth in employee benefit and tax laws.

Our future funding obligations for our employee benefit plans depend upon the levels of benefits provided for by the plans, the future performance of assets set aside for these plans, the rates of interest used to determine funding levels, the impact of potential business dispositions, actuarial data and experience, and any changes in government laws and regulations. In addition, certain of our funded employee benefit plans hold a significant amount of equity securities. If the market values of these securities decline, our pension expense and funding requirements would increase and, as a result, could have a material adverse effect on our business.

Any decrease in interest rates and asset returns, if and to the extent not offset by contributions, could increase our obligations under these plans. If the performance of assets in the funded plans does not meet our expectations, our cash contributions for these plans could be higher than we expect, which could have a material adverse effect on our financial condition and liquidity.

***Natural or other disasters have, and could in the future, disrupt our business and result in loss of revenue or higher expenses.***

Any serious disruption at any of our facilities or our suppliers’ facilities due to hurricane, fire, earthquake, flood, terrorist attack or any other natural or man-made disaster could impair our ability to use our facilities and have a material adverse impact on our revenues and increase our costs and expenses. If there is a natural disaster or other serious disruption at any of our facilities or our suppliers’ facilities, it could impair our ability to adequately supply our customers and negatively impact our operating results. For example, our manufacturing facilities in the U.S. Gulf Coast region were impacted by Hurricane Harvey in 2017. In addition, many of our current and potential customers are concentrated in specific geographic areas. A disaster in one of these regions could have a material adverse impact on our operations, operating results and financial condition. Our business interruption insurance may not be sufficient to cover all of our losses from a disaster, in which case our unreimbursed losses could be substantial. Some of our operations are located in regions with particular exposure to natural disasters such as storms, floods, fires and earthquakes. It would be difficult or impossible for us to relocate these operations and, as a result, any of the aforementioned occurrences could materially adversely affect our business.

***Cyber security attacks and other disruptions to our information systems could interfere with our operations, and could compromise our information and the information of our customers and suppliers, which would adversely affect our relationships with business partners and harm our brands, reputation and financial results.***

In the ordinary course of business, we rely upon information systems, some of which are managed by third parties, to process, transmit and store digital information, and to manage or support a variety of business processes and activities, including supply chain, manufacturing, distribution, invoicing, and collection of payments from customers. We use information systems to record, process and summarize financial information and results of operations for internal reporting purposes and to comply with regulatory financial reporting, legal and tax requirements. Additionally, we collect and store sensitive data, including intellectual property, proprietary business information, the proprietary business information of our customers, suppliers and Momentive Performance Materials Inc. ("MPM") under the Shared Services Agreement, as well as personally identifiable information of our customers, suppliers and employees and MPM. The secure operation of our systems, and the processing and maintenance of this information is critical to our business operations and strategy. Despite actions to mitigate or eliminate risk, our information systems may be vulnerable to damage, disruptions or shutdowns due to the activity of hackers, employee error or malfeasance, or other disruptions including, power outages, telecommunication or utility failures, natural disasters or other catastrophic events. The occurrence of any of these events could compromise our systems and the information stored there could be accessed, publicly disclosed, lost or stolen. Any such access, disclosure or other loss of information could result in legal claims or proceedings, liability or regulatory penalties under laws protecting the privacy of personal information, disrupt operations, and damage our reputation which could adversely affect our business, financial condition and results of operations.

In March 2019, we experienced a network security incident that prevented access to certain information technology systems and data within our network. We took immediate steps to isolate the issue and have implemented our technical recovery plan. Since the time of the incident, our manufacturing sites, which rely on different networks, have continued to operate safely and with limited interruption. The network security incident primarily impacted our corporate functions. We are currently evaluating the impact of this incident, including assessing any available insurance coverage. We are not yet able to determine the financial impact of this incident, which may be material. Any impacts from this incident may result in an adverse effect on our business, financial condition and results of operations.

***Divestitures that we pursue may present unforeseen obstacles and costs and alter the synergies we expect to continue to achieve from our ongoing cost reduction programs. Acquisitions and joint ventures that we pursue may present unforeseen integration obstacles and costs, increase our leverage and negatively impact our performance.***

We have selectively made, and may in the future, pursue divestitures of certain of our businesses as one element of our portfolio optimization strategy. Divestitures may require us to separate integrated assets and personnel from our retained businesses and devote our resources to transitioning assets and services to purchasers, resulting in disruptions to our ongoing business and distraction of management. Divestitures may alter synergies we expect to continue to achieve from our ongoing cost reduction programs. In the event of a large divestiture, we could use a significant amount of net operating losses which could result in our U.S. Company incurring future cash taxes. In addition, divestitures may result in the retention of certain current and future liabilities as well as obligations to indemnify or reimburse a buyer for certain liabilities of a divested business. These potential obligations could have an adverse effect on our results of operations and financial condition if triggered.

In addition, we have made acquisitions of related businesses, and entered into joint ventures in the past and could selectively pursue acquisitions of, and joint ventures with, related businesses as one element of our growth strategy. If such acquisitions are consummated, the risk factors we describe above and below, and for our business generally, may be intensified.

***We could face additional income tax obligations based on tax reform.***

On December 22, 2017, the United States enacted tax reform legislation ("Tax Reform") that included a broad range of business tax provisions, including but not limited to a reduction in the U.S. federal tax rate from 35% to 21% as well as provisions that limit or eliminate various deductions or credits. The legislation also causes U.S. expenses, such as interest and general administrative expenses, to be taxed and imposes a new tax on U.S. cross-border payments. Furthermore, the legislation includes a one-time transition tax on accumulated foreign earnings and profits.

Some aspects of the Tax Reform remain unclear, and although further clarifying guidance was issued and more is expected to be issued in the future (by the Internal Revenue Service ("IRS"), the U.S. Treasury Department or via a technical correction law change), it may not be clarified for some time. In addition, some U.S. states have not updated their laws to take into account the new federal legislation. Aspects of U.S. tax reform may lead foreign jurisdictions to respond by enacting additional tax legislation that is unfavorable to us. As a result, we have not yet been able to determine the full impact of the new laws on our results of operations and financial condition. It is possible that U.S. tax reform, or interpretations under it, could change and could have an adverse effect on us, and such effect could be material.

***If we fail to establish and maintain an effective internal control environment, our ability to both timely and accurately report our financial results could be adversely affected.***

Section 404 of the Sarbanes-Oxley Act of 2002 requires companies to conduct a comprehensive evaluation of their internal control over financial reporting. To comply with this statute, each year we are required to document and test our internal control over financial reporting, our management is required to assess and issue a report concerning our internal control over financial reporting.

The existence of one or more material weaknesses has resulted in, and could continue to result in, errors in our financial statements, and substantial costs and resources may be required to rectify these errors or other internal control deficiencies and may cause us to incur other costs, including potential legal expenses. If we cannot produce reliable financial reports, investors could lose confidence in our reported financial information, and we may be unable to obtain additional financing to operate and expand our business and our business and financial condition could be harmed.

We have an established process to remediate identified control deficiencies timely and we continue to take appropriate actions to strengthen our internal control over financial reporting, but we cannot assure you that the measures we have taken to date, or any measures we may take in the future, will be sufficient to avoid potential future material weaknesses.

**Risks Related to Our Indebtedness**

***We may be unable to generate sufficient cash flows from operations to meet our consolidated debt service payments or unable to refinance our debt obligations on commercially reasonable terms.***

Our ability to generate sufficient cash flows from operations to make scheduled debt service payments, including payments under the Credit Facilities, depends on a range of economic, competitive and business factors, many of which are outside of our control. We maintain normal commercial terms with our major vendors and customers. If certain of our commercial counterparties request changes to our terms, it could put additional pressure on our liquidity position and our business may generate insufficient cash flows from operations to meet our debt service and other obligations, and currently anticipated cost savings, working capital reductions and operating improvements may not be realized on schedule, or at all. Our inability to generate sufficient cash flows to satisfy our outstanding debt obligations, or to refinance our obligations on commercially reasonable terms, would have a material adverse effect on our business, financial condition and results of operations.

Based on current and expected level of operations, we believe cash flow from operations, available cash and available borrowings under the Credit Facilities will be adequate to meet our liquidity needs during the Chapter 11 process. However, we cannot give assurance that our business will generate sufficient cash flow from operations or that future borrowings will be available to us under the Credit Facilities or otherwise in an amount sufficient to enable us to pay our indebtedness or to fund our other liquidity needs.

***Our substantial indebtedness could adversely affect our ability to raise additional capital to fund our operations and limit our ability to react to changes in the economy or our industry.***

Prior to our bankruptcy filing, we were a highly leveraged company. As of December 31, 2018, we had approximately $3.8 billion of consolidated outstanding indebtedness, including payments due within the next twelve months and short-term borrowings. After our expected emergence from bankruptcy we may continue to have a substantial amount of indebtedness.

Our substantial consolidated indebtedness could have other important consequences, including but not limited to the following:

- it may limit our flexibility in planning for, or reacting to, changes in our operations or business;
- we are more highly leveraged than many of our competitors, which may place us at a competitive disadvantage;
- it may make us more vulnerable to downturns in our business or in the economy;
- a substantial portion of our cash flows from operations will be dedicated to the repayment of our indebtedness and will not be available for other purposes;
- it may restrict us from making strategic acquisitions, introducing new technologies or exploiting business opportunities;
- it may make it more difficult for us to satisfy our obligations with respect to our existing indebtedness;
- it may adversely affect terms under which suppliers provide material and services to us; and
- it may limit our ability to borrow additional funds or dispose of assets.

There would be a material adverse effect on our business and financial condition if we were unable to service our indebtedness or obtain additional financing, as needed.

***The terms governing our outstanding debt, including restrictive covenants, may adversely affect our operations.***

The terms governing our outstanding debt contain, and any future indebtedness we incur would likely contain, numerous restrictive covenants that impose significant operating and financial restrictions on our ability to, among other things:

- incur or guarantee additional debt;
- pay dividends and make other distributions to our shareholders;
- create or incur certain liens;
- make certain loans, acquisitions, capital expenditures or investments;
- engage in sales of assets and subsidiary stock;
- enter into sale/leaseback transactions;
- enter into transactions with affiliates; and
- transfer all or substantially all of our assets or enter into merger or consolidation transactions.

If a breach of a covenant is not cured or waived, the lenders under such Credit Facilities:

- would not be required to lend any additional amounts to us;
- could elect to declare all borrowings outstanding under the Credit Facilities, together with accrued and unpaid interest and fees, due and payable and could demand cash collateral for all letters of credit issued thereunder;
- could apply all of our available cash that is subject to the cash sweep mechanism of the Credit Facilities to repay these borrowings; and/or
- could prevent us from making payments on our notes;

any or all of which could have a material adverse effect on our business, financial condition and results of operations.

See "– Risks Related to our Chapter 11 Proceedings – We may be unable to maintain compliance with the financial maintenance or other covenants in our Credit Facilities, which could result in an event of default under the credit agreements governing such facilities that, if not cured or waived, would have a material adverse effect on our business, financial condition and results of operations."

***Repayment of our debt, including required principal and interest payments, depends on cash flows generated by our subsidiaries, which may be subject to limitations beyond our control.***

Our subsidiaries own a significant portion of our consolidated assets and conduct a significant portion of our consolidated operations. Repayment of our indebtedness depends, to a significant extent, on the generation of cash flows and the ability of our subsidiaries to make cash available to us by dividend, debt repayment or otherwise. Our subsidiaries may not be able to, or may not be permitted to, make distributions to enable us to make payments on our indebtedness. Each subsidiary is a distinct legal entity and, under certain circumstances, legal and contractual restrictions may limit our ability to obtain cash from subsidiaries. While there are limitations on the ability of our subsidiaries to incur consensual restrictions on their ability to pay dividends or make intercompany payments, these limitations are subject to certain qualifications and exceptions. In the event that we are unable to receive distributions from our subsidiaries, we may be unable to make required principal and interest payments on our indebtedness.

**ITEM 1B - UNRESOLVED STAFF COMMENTS**

None.

**ITEM 2 - PROPERTIES**

Our headquarters are in Columbus, Ohio and we have executive offices in Rotterdam, Netherlands and Shanghai, China. Our major manufacturing facilities are primarily located in North America and Europe. As of December 31, 2018, we operated 21 domestic production and manufacturing facilities in 12 states and 26 foreign production and manufacturing facilities in Australia, Brazil, Canada, China, Colombia, Finland, Germany, Italy, Korea, Netherlands, New Zealand, Spain, the United Kingdom and Uruguay.

The majority of our facilities are used for the production of thermosetting resins, and most of them manufacture more than one type of thermosetting resin, the nature of which varies by site. These facilities typically use batch technology, and range in size from small sites, with a limited number of reactors, to larger sites, with dozens of reactors. One exception to this is our plant in Deer Park, Texas, the only continuous-process epoxy resins plant in the world, which provides us with a cost advantage over conventional technology.

In addition, we have the ability to internally produce key intermediate materials such as formaldehyde, BPA, ECH, and versatic acid. This backward integration provides us with cost advantages and facilitates our adequacy of supply. These facilities are usually co-located with downstream resin manufacturing facilities they serve. As these intermediate materials facilities are often much larger than a typical resins plant, we can capture the benefits of manufacturing efficiency and scale by selling material that we do not use internally to third parties.

We believe our production and manufacturing facilities are well maintained and effectively utilized and are adequate to operate our business. Following are our more significant production and manufacturing facilities and executive offices:

| Location | Nature of Ownership | Reporting Segment |
|---|---|---|
| Argo, IL* | Owned | Epoxy, Phenolic and Coating Resins |
| Barry, UK* | Owned | Epoxy, Phenolic and Coating Resins |
| Deer Park, TX* | Owned | Epoxy, Phenolic and Coating Resins |
| Duisburg-Meiderich, Germany | Owned | Epoxy, Phenolic and Coating Resins |
| Iserlohn-Letmathe, Germany | Owned | Epoxy, Phenolic and Coating Resins |
| Lakeland, FL | Owned | Epoxy, Phenolic and Coating Resins |
| Louisville, KY | Owned | Epoxy, Phenolic and Coating Resins |
| Moerdijk, Netherlands* | Owned | Epoxy, Phenolic and Coating Resins |
| Onsan, South Korea | Owned | Epoxy, Phenolic and Coating Resins |
| Pernis, Netherlands* | Owned | Epoxy, Phenolic and Coating Resins |
| Solbiate Olona, Italy | Owned | Epoxy, Phenolic and Coating Resins |
| Zhenjiang, China* | Owned | Epoxy, Phenolic and Coating Resins |
| Curitiba, Brazil | Owned | Forest Products Resins |
| Montenegro, Brazil | Owned | Forest Products Resins |
| Edmonton, AB, Canada | Owned | Forest Products Resins |
| Fayetteville, NC | Owned | Forest Products Resins |
| Kitee, Finland | Owned | Forest Products Resins |
| Luling, LA* | Owned | Forest Products Resins |
| Geismar, LA‡ | Owned | Forest Products Resins |
| Gonzales, LA | Owned | Forest Products Resins |
| Hope, AR | Owned | Forest Products Resins |
| Springfield, OR | Owned | Forest Products Resins |
| St. Romuald, QC, Canada | Owned | Forest Products Resins |
| Columbus, OH† | Leased | Corporate and Other |
| Rotterdam, Netherlands† | Leased | Corporate and Other |
| Shanghai, China† | Leased | Corporate and Other |

* We own all of the assets at this location. The land is leased.
‡ A portion of this location is leased.
† Executive offices.

## ITEM 3 - LEGAL PROCEEDINGS

**Legal Proceedings**

The Louisville Air Pollution Control District (the “District”) issued the Company an Agreed Board Order on April 18, 2018 requiring payment of a $0.2 million penalty to resolve alleged violations in 2016, 2017 and 2018 of the District’s air pollution laws and the Company’s air permit. The Company timely made the payment and the Agreed Board Order is resolved.

The USEPA issued the Company a Notice of Intent to File Administrative Complaint related to alleged violations of the Emergency Right-to-Know Act identified in a 2017 voluntary self-disclosure made by the Company. The Notice was issued on October 24, 2018 and seeks a penalty of $0.2 million. The Company does not agree with the penalty and is working cooperatively with the USEPA to resolve this matter.

The USEPA issued the Company a General Notice Letter seeking reimbursement of costs spent by the USEPA on a removal action associated with a site in Houston, Texas. A private party also sought recovery from the Company and several other parties associated with past and future remediation costs at the same site. On November 16, 2018, the Company entered in separate Settlement Agreements with the USEPA and the private party, resolving the alleged liability for less than $0.5 million.

***Other Litigation***

For a discussion of certain other legal contingencies, refer to Note 9 in Item 8 of Part II of this Annual Report on Form 10-K.

## ITEM 4 - MINE SAFETY DISCLOSURES

This item is not applicable to the registrant.

# PART II

(dollars in millions, except per share data, or as otherwise noted)

## ITEM 5 - MARKET FOR THE REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

There is no established public trading market for our common stock. As of April 1, 2019, 82,556,847 common shares were held by our direct parent, Hexion LLC.

We have no compensation plans that authorize issuing our common stock to employees or non-employees. In addition, there have been no sales or repurchases of our equity securities during the past fiscal year. However, we and our direct and indirect parent companies have in the past issued, and may issue from time to time, equity awards that are denominated in or based upon the common units of our direct or ultimate parent to our employees and directors. As the awards were granted in exchange for service to us, these awards are included in our Consolidated Financial Statements. For a discussion of these equity plans, see Note 11 in Item 8 of Part II and Item 11 of Part III of this Annual Report on Form 10-K.

## ITEM 6 - SELECTED FINANCIAL DATA

The following table presents our selected historical consolidated and combined financial data. The following information should be read in conjunction with, and is qualified by reference to, our "Management's Discussion and Analysis of Financial Condition and Results of Operations," and our audited Consolidated Financial Statements, as well as the other financial information included elsewhere herein.

The consolidated balance sheet data at December 31, 2018 and 2017 and the consolidated statement of operations data for the years ended December 31, 2018, 2017 and 2016 have been derived from our audited Consolidated Financial Statements included elsewhere herein. The consolidated balance sheet data at December 31, 2016, 2015 and 2014 and the consolidated statement of operations data for the years ended December 31, 2015 and 2014 have been derived from audited consolidated financial statements not included herein.

| | Year ended December 31, | | | | |
|---|---|---|---|---|---|
| | 2018 | 2017 | 2016 | 2015 | 2014 |
| | (dollars in millions, except per share data) | | | | |
| **Statements of Operations:** | | | | | |
| Net sales | $ 3,797 | $ 3,591 | $ 3,438 | $ 4,140 | $ 5,137 |
| Cost of sales (1) (2) | 3,226 | 3,088 | 3,020 | 3,549 | 4,529 |
| Gross profit | 571 | 503 | 418 | 591 | 608 |
| Selling, general and administrative expense (2) | 295 | 321 | 318 | 316 | 345 |
| Gain on dispositions | (44) | — | (240) | — | — |
| Asset impairments | 28 | 13 | — | 6 | 5 |
| Business realignment costs | 29 | 52 | 55 | 16 | 47 |
| Other operating expense (income), net | 36 | 17 | 13 | 12 | (8) |
| Operating income | 227 | 100 | 272 | 241 | 219 |
| Interest expense, net | 365 | 329 | 310 | 326 | 308 |
| Loss (gain) on extinguishment of debt | — | 3 | (48) | (41) | — |
| Other non-operating (income) expense, net (2) | (12) | (12) | 21 | (22) | 133 |
| Loss before income tax and earnings from unconsolidated entities | (126) | (220) | (11) | (22) | (222) |
| Income tax expense | 40 | 18 | 38 | 34 | 22 |
| Loss before earnings from unconsolidated entities | (166) | (238) | (49) | (56) | (244) |
| Earnings from unconsolidated entities, net of taxes | 3 | 4 | 11 | 17 | 20 |
| Net loss | (163) | (234) | (38) | (39) | (224) |
| Net loss (income) attributable to noncontrolling interest | 1 | — | — | (1) | 1 |
| Net loss attributable to Hexion Inc. | $ (162) | $ (234) | $ (38) | $ (40) | $ (223) |
| **Cash Flows (used in) provided by:** | | | | | |
| Operating activities | $ (23) | $ (153) | $ (20) | $ 213 | $ (50) |
| Investing activities (3) | (40) | (110) | 219 | (163) | (230) |
| Financing activities | 81 | 174 | (235) | 24 | 69 |
| **Balance Sheet Data (at end of period):** | | | | | |
| Cash and cash equivalents | $ 128 | $ 115 | $ 196 | $ 236 | $ 172 |
| Short-term investments | — | — | — | — | 7 |
| Total assets | 1,961 | 2,097 | 2,055 | 2,382 | 2,617 |
| Total debt (4) | 3,815 | 3,709 | 3,504 | 3,778 | 3,777 |
| Total liabilities | 4,875 | 4,839 | 4,594 | 4,859 | 4,967 |
| Total deficit | (2,914) | (2,742) | (2,539) | (2,477) | (2,350) |

(1) Cost of sales for the year ended December 31, 2018, 2017 and 2016 includes accelerated depreciation of $4, $14 and $129, respectively, related to facility rationalizations within the Forest Products Resins segment in 2018 and within the Epoxy, Phenolic and Coatings Resins segment in 2017 and 2016.

(2) "Cost of sales", "Selling, general and administrative expense" and "Other non-operating (income) expense, net" have been adjusted for all periods presented to reflect the adoption of Accounting Standards Board Update No. 2017-07 ("ASU 2017-07"), which reclassified certain components of net periodic pension and postretirement benefit costs from "Cost of sales" and "Selling, general and administrative expense" to "Other non-operating (income) expense, net" within our Consolidated Statements of Operations. See Note 3 in Item 8 of Part II of this Annual Report on Form 10-K.

(3) "Investing activities" within our Consolidated Statement of Cash Flows has been adjusted for all periods presented to reflect the adoption of Accounting Standards Board Update No. 2016-18 ("ASU 2016-18"), which removed the change in restricted cash from "Investing activities" in the Consolidated Statement of Cash Flows. See Note 3 in Item 8 of Part II of this Annual Report on Form 10-K.

(4) Total debt represents the sum of "Debt payable within one year" and "Long-term debt" on the Consolidated Balance Sheets. See Note 8 in Item 8 of Part II of this Annual Report on Form 10-K.

## ITEM 7 - MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion and analysis of our results of operations and financial condition for the years ended December 31, 2018, 2017 and 2016 with the audited Consolidated Financial Statements and related notes included elsewhere herein. The following discussion and analysis contains forward-looking statements that reflect our plans, estimates and beliefs, and which involve numerous risks and uncertainties, including, but not limited to, the risks and uncertainties described in Item 1A, "Risk Factors." Actual results may differ materially from those contained in any forward-looking statements.

### *Bankruptcy Filing and Going Concern*

As a result of the commencement of the Chapter 11 Cases on April 1, 2019, we are operating as a debtor-in-possession pursuant to the authority granted under Chapter 11 of the Bankruptcy Code. Pursuant to the Chapter 11 Cases, we intend to significantly de-leverage our balance sheet and reduce overall indebtedness upon completion of that process. Additionally, as a debtor-in-possession, certain of our activities are subject to review and approval by the Bankruptcy Court, including, among other

things, the incurrence of secured indebtedness, material asset dispositions, and other transactions outside the ordinary course of business. There can be no guarantee that the Chapter 11 Cases will be completed successfully or in the time frame contemplated by the Support Agreement. Refer to Note 2 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K for more information.

We have concluded our financial condition and our projected operating results, the defaults under our debt agreements, and the risks and uncertainties surrounding our Chapter 11 proceedings raise substantial doubt as to our ability to continue as a going concern. Accordingly, the audit report issued by our independent registered public accounting firm contains an explanatory paragraph expressing substantial doubt about our ability to continue as a going concern.

We have $1.9 billion of First Priority Senior Secured Notes maturing in April 2020. If 91 days prior to the scheduled maturity of these notes, more than $50 aggregate principal amount is outstanding, our senior secured asset-based revolving loan facility (the "ABL Facility"), would have accelerated and become immediately due and payable. Additionally, we have $0.6 billion of Second Priority Notes maturing in November 2020. Based on our current liquidity position, the acceleration of the ABL Facility and our Chapter 11 Cases, our current projections of operating results, cash flows and liquidity over the next twelve months are not expected to be sufficient to fund our most significant cash obligations necessary to continue as a going concern.

As a result of these facts and circumstances, we have made certain adjustments to the Consolidated Financial Statements included in Item 8 of Part II of this Annual Report of Form 10-K, including the reclassification of certain outstanding debt to current liabilities and the write-off of unamortized deferred financing costs related to such debt. Refer to Notes 3 and 8 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K for more information.

**Overview and Outlook**

We are a large participant in the specialty chemicals industry, and a leading producer of adhesive and structural resins and coatings. Thermosets are a critical ingredient for most paints, coatings, glues and other adhesives produced for consumer or industrial uses. We provide a broad array of thermosets and associated technologies and have significant market positions in all of the key markets that we serve.

Our products are used in thousands of applications and are sold into diverse markets, such as forest products, architectural and industrial paints, packaging, consumer products and automotive coatings, as well as higher growth markets, such as wind energy and electrical composites. Major industry sectors that we serve include industrial/marine, construction, consumer/durable goods, automotive, wind energy, aviation, electronics, architectural, civil engineering, repair/remodeling and oil and gas drilling. Key drivers for our business include general economic and industrial conditions, including housing starts and auto build rates. In addition, due to the nature of our products and the markets we serve, competitor capacity constraints and the availability of similar products in the market may impact our results. As is true for many industries, our financial results are impacted by the effect on our customers of economic upturns or downturns, as well as by the impact on our own costs to produce, sell and deliver our products. Our customers use most of our products in their production processes. As a result, factors that impact their industries can and have significantly affected our results.

Through our worldwide network of strategically located production facilities we serve more than 3,100 customers in approximately 85 countries. Our global customers include large companies in their respective industries, such as 3M, Akzo Nobel, BASF, Bayer, Dow, Louisiana Pacific, Monsanto, Owens Corning, PPG Industries, Valspar and Weyerhaeuser.

***Business Strategy***

As a significant player in the specialty chemicals industry, we believe we have unique opportunities to strategically grow our business over the long term. We continue to develop new products with an emphasis on innovation and expanding our product solutions for our existing global customer base, while growing our businesses in potential high growth regions in the world, such as Asia-Pacific, Latin America and the Middle East. Through these growth strategies we strive to create shareholder value and generate solid operating cash flow.

***Reportable Segments***

Our business segments are based on the products that we offer and the markets that we serve. At December 31, 2018, we had three reportable segments: Epoxy, Phenolic and Coating Resins; Forest Products Resins; and Corporate and Other. A summary of the major products and items associated with the Company's reportable segments are as follows:

- **Epoxy, Phenolic and Coating Resins:** epoxy specialty resins, phenolic encapsulated substrates, versatic acids and derivatives, basic epoxy resins and intermediates, phenolic specialty resins and molding compounds
- **Forest Products Resins:** forest products resins and formaldehyde applications
- **Corporate and Other:** primarily corporate general and administrative expenses that are not allocated to the other segments, such as shared service and administrative functions, foreign exchange gains and losses and legacy company costs.

***2018 Overview***

Following are highlights from our results of operations for the years ended December 31, 2018 and 2017:

| | 2018 | 2017 | $ Change | % Change |
|---|---|---|---|---|
| **Statements of Operations:** | | | | |
| Net sales | $ 3,797 | $ 3,591 | $ 206 | 6 % |
| Gross profit | 571 | 503 | 68 | 14 % |
| Operating income | 227 | 100 | 127 | 127 % |
| Loss before income tax | (126) | (220) | 94 | 43 % |
| Net loss | (163) | (234) | 71 | 30 % |
| **Segment EBITDA:** | | | | |
| Epoxy, Phenolic and Coating Resins | $ 226 | $ 174 | $ 52 | 30 % |
| Forest Products Resins | 285 | 257 | 28 | 11 % |
| Corporate and Other | (71) | (66) | (5) | (8)% |
| **Total** | $ 440 | $ 365 | $ 75 | 21 % |

- ***Going Concern*** - To address the risk of not being able to continue as a going concern, we have undertaken steps to restructure our balance sheet. In addition, as part of the Chapter 11 Cases, we have entered into the Credit Facilities to provide liquidity throughout the Chapter 11 process and also entered into the Support Agreement to facilitate support for a plan of reorganization. See Note 2 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K for more information regarding the Credit Facilities and the Support Agreement.
- ***Net Sales***—Net sales in 2018 were $3.8 billion, a increase of 6% compared with $3.6 billion in 2017. This increase was primarily driven by pricing, which positively impacted sales by $382 due largely to improved market conditions in our base epoxy resins business and raw material price increases contractually passed through to customers across many of our businesses. The impact of foreign exchange translation positively impacted net sales by $31 due largely to the strengthening of the euro and Chinese yuan against the U.S. dollar. These increases were partially offset by volumes, which negatively impacted net sales by $190 primarily related to volume decreases in our epoxy businesses driven by margin optimization. Additionally, volumes in our oilfield business decreased due to highly competitive market conditions. Lastly, the disposition of our ATG business in the first quarter of 2018 negatively impacted sales by $17.
- ***Net Loss***—Net loss in 2018 was $163, an improvement of $71 as compared with a net loss of $234 in 2017. This improvement was primarily driven by an increase in gross profit due to the margin improvements discussed above and a gain on the sale of our ATG business of $44, partially offset by asset impairments of $28 largely attributed to our oilfield business.
- ***Segment EBITDA***—In 2018, Segment EBITDA was $440, an increase of 21% compared with $365 in 2017. This increase was driven by increased margins in our base epoxy resins and improved performance in our North American formaldehyde business, as well as the impact of our ongoing cost reduction initiatives.
- ***Restructuring and Cost Reduction Programs*****—**During 2018, we achieved $48 in cost savings related to our cost reduction programs. As of December 31, 2018, we have approximately $9 of additional in-process cost savings, the majority of which we expect to realize in the first half of 2019.
- ***Sale of ATG Business*****—**In January 2018, we completed the sale of our ATG business for a purchase price of $49 and recorded a gain on this disposition of $44.

- ***Growth Initiatives*—**We recently committed to the construction of a new application development center in Shanghai, China. The facility, which we expect to occupy in the second half of 2019, will help meet the strong growth and demand for new coatings technologies in the region. We also continue to focus on new product development and have taken steps to improve our analytical and product development services for our global grid, such as the recently announced contract with the Fraunhofer Project Center in Canada to develop lightweight composite technologies and high performance systems for the automotive industry.

***2019 Outlook***

In 2019, we expect demand to continue to drive volume increases in our North American formaldehyde business. Additionally, we expect a small improvement in demand in our North American forest products resins business due to modest growth in U.S. housing starts and remodeling. We also anticipate strong overall improvement in our Latin American business due to ongoing recovery in the Brazilian economy.

Overall, we expect improvement in our epoxy specialty business in 2019 due to the introduction of new products and government supported investment in the China wind energy market. We also expect our epoxy specialty business to benefit from improvements in demand for low solvent coatings over the next few years, primarily in China. While we expect softer market conditions in our base epoxy business, we expect our results to remain favorable compared to historical performance. Lastly, we expect our phenolic resins business to continue to benefit from cost reductions associated with our recently completed grid optimization efforts in Europe.

We also anticipate all of our businesses will continue to benefit from the savings associated with our ongoing restructuring and cost reduction initiatives. Finally, we expect raw material price volatility to continue in 2019.

***Tax Reform Implications***

The 2017 U.S. tax reform reduced the U.S. corporate tax rate and included beneficial depreciation provisions, while other provisions had and continue to have an adverse effect on our results. Specifically, new provisions that cause U.S. expenses, such as interest and general administrative expenses, to be taxed and also imposes taxes on U.S. cross-border payments that adversely impacts our effective tax rate. We continue to evaluate the impacts as additional guidance becomes available. See Note 13 in Item 8 of this Annual Report on Form 10-K for more information.

***Shared Services Agreement***

In October 2010, we entered into a shared services agreement with MPM (which, from October 1, 2010 through October 24, 2014, was a subsidiary of Hexion Holdings), as amended in October 2014 (the “Shared Services Agreement”), pursuant to which we provided to MPM, and MPM provided to us, certain services, including, but not limited to, executive and senior management, administrative support, human resources, information technology support, accounting, finance, legal and procurement services. The Shared Services Agreement was renewed for one year starting October 2018, subject to termination rights of each of the Company or MPM, without cause, on not less than 30 days’ written notice.

On February 11, 2019, MPM provided notice of its intention to terminate the Shared Services Agreement, effective March 14, 2019. The termination triggers a period of up to 14 months during which time the parties will work together to facilitate an orderly transition of services provided under the Shared Services Agreement.

The Shared Services Agreement established certain criteria upon which the costs of such services are allocated between us and MPM and required that the Shared Services Steering Committee formed under the agreement meet no less than annually to evaluate and determine an equitable allocation percentage. The allocation percentages for Hexion and MPM, respectively, were 57% and 43% in 2018 and 56% and 44% in 2017 and 2016. We periodically reviewed the scope of services provided under this agreement.

***Matters Impacting Comparability of Results***

Our Consolidated Financial Statements include the accounts of the Company and its majority-owned subsidiaries in which minority shareholders hold no substantive participating rights. Intercompany accounts and transactions are eliminated in consolidation.

**Raw Material Prices**

Raw materials comprised approximately 75% of our cost of sales in 2018. The three largest raw materials used in our production processes are phenol, methanol and urea. These materials represented approximately 50% of our total raw material costs in 2018. Fluctuations in energy costs, such as volatility in the price of crude oil and related petrochemical products, as well as the cost of natural gas, have caused volatility in our raw material costs and utility costs. In 2018, the average price increase of phenol, methanol and urea increased by approximately 2%, 21% and 20%, respectively, as compared to 2017. In 2017, the average price increase of phenol, methanol and urea increased by approximately 15%, 46% and 4%, respectively, as compared to 2016. The impact of passing through raw material price changes to customers can result in significant variances in sales comparisons from year to year.

We expect long-term raw material cost volatility to continue because of price movements of key feedstocks. To help mitigate raw material volatility, we have purchase and sale contracts and commercial arrangements with many of our vendors and customers that contain periodic price adjustment mechanisms. Due to differences in timing of the pricing trigger points between our sales and purchase contracts, there is often a "lead-lag" impact. In many cases this "lead-lag" impact can negatively impact our margins in the short term in periods of rising raw material prices and positively impact them in the short term in periods of falling raw material prices.

**Other Comprehensive Income**

Our other comprehensive income is significantly impacted by foreign currency translation, and to a lesser degree by defined benefit pension and postretirement benefit adjustments. The impact of foreign currency translation is driven by the translation of assets and liabilities of our foreign subsidiaries which are denominated in functional currencies other than the U.S. dollar. The primary assets and liabilities driving the adjustments are cash and cash equivalents; accounts receivable; inventory; property, plant and equipment; accounts payable; pension and other postretirement benefit obligations and certain intercompany loans payable and receivable. The primary currencies in which these assets and liabilities are denominated are the euro, Brazilian real, Chinese yuan, Canadian dollar and Australian dollar. The impact of defined benefit pension and postretirement benefit adjustments is primarily driven by unrecognized prior service cost related to our defined benefit and other non-pension postretirement benefit plans ("OPEB"), as well as the subsequent amortization of these amounts from accumulated other comprehensive income in periods following the initial recording of such amounts.

**Pension and OPEB MTM Adjustments**

Under our accounting policy related to the recognition of gains and losses for pension and OPEB plans, upon the annual remeasurement of our pension and OPEB plans in the fourth quarter, or on an interim basis as triggering events warrant, we immediately recognize gains and losses as a mark-to-market ("MTM") gain or loss through net income. The largest component of our pension and OPEB expense typically relates to these MTM adjustments. In 2018, favorable changes to actuarial assumptions resulted in an increase in the MTM gain of $9, from a gain of $4 in 2017 to a gain of $13 in 2018. In 2017, favorable pension plan asset returns resulted in an increase in the MTM gain of $38, from a loss of $34 in 2016 to a gain of $4 in 2017. These MTM adjustments are recognized in "Other non-operating (income) expense, net" in the Consolidated Statements of Operations.

**Results of Operations**

**CONSOLIDATED STATEMENTS OF OPERATIONS**

| | Year Ended December 31, | | |
|---|---|---|---|
| **(In millions)** | **2018** | **2017** | **2016** |
| Net sales | $ 3,797 | $ 3,591 | $ 3,438 |
| Cost of sales | 3,222 | 3,074 | 2,891 |
| Accelerated depreciation | 4 | 14 | 129 |
| Gross profit | 571 | 503 | 418 |
| *Gross profit as a percentage of net sales* | *15%* | *14%* | *12%* |
| Selling, general and administrative expense | 295 | 321 | 318 |
| Gain on dispositions | (44) | — | (240) |
| Asset impairments | 28 | 13 | — |
| Business realignment costs | 29 | 52 | 55 |
| Other operating expense, net | 36 | 17 | 13 |
| Operating income | 227 | 100 | 272 |
| *Operating income as a percentage of net sales* | *6%* | *3%* | *8%* |
| Interest expense, net | 365 | 329 | 310 |
| Loss (gain) on extinguishment of debt | — | 3 | (48) |
| Other non-operating (income) expense, net | (12) | (12) | 21 |
| Total non-operating expense | 353 | 320 | 283 |
| Loss before income tax and earnings from unconsolidated entities | (126) | (220) | (11) |
| Income tax expense | 40 | 18 | 38 |
| Loss before earnings from unconsolidated entities | (166) | (238) | (49) |
| Earnings from unconsolidated entities, net of taxes | 3 | 4 | 11 |
| Net loss | (163) | (234) | (38) |
| Net loss attributable to noncontrolling interest | 1 | — | — |
| Net loss attributable to Hexion Inc. | $ (162) | $ (234) | $ (38) |
| Other comprehensive (loss) income | $ (10) | $ 31 | $ (24) |

***Net Sales***

In 2018, net sales increased by $206, or 6%, compared to 2017. This increase was primarily driven by pricing, which positively impacted net sales by $382 due largely to improved market conditions in our base epoxy resins business and raw material price increases contractually passed through to customers across many of our businesses. The impact of foreign currency translation positively impacted net sales by $31 due largely to the strengthening of the euro and Chinese yuan against the U.S. dollar in 2018 compared to 2017. These increases were partially offset by volumes, which negatively impacted net sales by $190 primarily related to volume decreases in our epoxy businesses driven by margin optimization. Additionally, volumes in our oilfield business decreased due to highly competitive market conditions. Lastly, the disposition of our ATG business in the first quarter of 2018 negatively impacted sales by $17.

In 2017, net sales increased by $153, or 4%, compared to 2016. Excluding $185 of net sales from the disposition of our PAC Business in 2016, net sales increased by 10%. Pricing positively impacted net sales by $182 due largely to raw material price increases passed through to customers across many of our businesses, partially offset by competitive pricing pressures in our epoxy specialty business. Overall, volumes positively impacted net sales by $131 driven by strong market demand in our North American formaldehyde business, as well as the additional capacity from our new formaldehyde plants. Additionally, volumes increased in our North American forest products resins business due to modest growth in the U.S. housing market and in our base epoxy resins business as it continued to recover from cyclical trough conditions. These increases were partially offset by volume decreases in our epoxy specialty business driven by an ongoing destocking of wind blades and lower installations. The impact of foreign exchange translation positively impacted net sales by $25, due to an overall strengthening of various foreign currencies against the U.S. dollar in 2017 compared to 2016.

***Gross Profit***

Gross profit increased $68 in 2018 compared to 2017. Gross profit as a percentage of net sales increased by 1%, due to margin expansion driven by the market conditions in our base epoxy resins business discussed above, as well as our ongoing restructuring initiatives.

Gross profit increased $85 in 2017 compared to 2016, primarily due to a decrease in accelerated depreciation of $115 driven by the closure of our Norco, LA facility in 2016. Gross profit as a percentage of net sales increased by 2%, primarily due to the decrease in accelerated depreciation discussed above, which had a negative impact of 3% on 2016 gross profit. This impact was partially offset by margin compression driven by competitive pricing pressures discussed above, as well as unfavorable raw material price inflation.

***Operating Income***

In 2018, operating income increased by $127 compared to 2017, primarily driven by the increase in gross profit of $68 discussed above, a gain on the disposition of our ATG business of $44 and a decrease in business realignment costs of $23. The decrease in business realignment costs is largely attributable to lower severance and facility closure related expenses in 2018. These increases to operating income were partially offset by increases in asset impairments of $15 primarily related to our oilfield business, and an increase in other operating expense of $19 due to an increase in realized and unrealized foreign currency losses.

Operating income decreased by $172 in 2017 compared to 2016. This decrease was primarily driven by the absence of gains on the disposition of our PAC Business and HAI joint venture interest of $240 that positively impacted 2016 and a goodwill impairment of $13 recognized in 2017 as a result of the estimated fair value of our oilfield reporting unit being less than the carrying value of its net assets. These decreases to operating income were partially offset by the increase in gross profit of $85, discussed above, as well as decreases in business realignment costs of $3. The decrease in business realignment costs in 2017 is largely attributable to costs in 2016 related to the Norco, LA facility closure that did not recur, largely offset by costs associated with our 2017 cost reduction programs.

***Non-Operating Expense***

In 2018, total non-operating expense increased by $33 compared to 2017, driven by an increase in interest expense of $36 due primarily to the write-off of $33 in unamortized deferred debt issuance costs due to the reclassification of outstanding debt to current in the fourth quarter of 2018 as a result of our Chapter 11 Filings and substantial doubt about our ability to continue as a going concern for the next twelve months, as well as higher average debt levels in 2018. These increases to interest expense are partially offset by $3 of loss on extinguishment of debt that occurred in 2017. Note that other non-operating income remained flat as the positive impact of MTM adjustments on pension and OPEB liabilities was offset by an increase in realized and unrealized foreign currency losses.

In 2017, total non-operating expense increased by $37 compared to 2016, primarily due to gains on debt extinguishment of $48 in 2016 that did not recur in 2017, an increase in interest expense of $19 driven by higher average debt levels and higher weighted average interest rates and a increase of $33 in other non-operating income primarily due to the impact of the MTM adjustments on pension and OPEB liabilities (gains of $4 in 2017 and losses of $34 in 2016).

***Income Tax Expense***

On December 22, 2017, the United States enacted tax reform legislation that included a broad range of business tax provisions, including but not limited to a reduction in the U.S. federal tax rate from 35% to 21% as well as provisions that limit or eliminate various deductions or credits. The legislation also causes U.S. expenses, such as interest and general administrative expenses, to be taxed and imposes new taxes on U.S. cross-border payments. Furthermore, the legislation included a one-time transition tax on accumulated foreign earnings and profits.

In response to the enactment of U.S. tax reform, the SEC issued guidance (referred to as “SAB 118”) to address the complexity in accounting for this new legislation. When the initial accounting for items under the new legislation is incomplete, the guidance allows companies to recognize provisional amounts when reasonable estimates can be made or to continue to apply the prior tax law if a reasonable estimate of the impact cannot be made. The SEC has provided up to a one-year window for companies to finalize the accounting for the impacts of this new legislation and we finalized our accounting during 2018.

While we have completed our accounting for the U.S. tax legislation, we recognized no net tax expense in our 2017 financial statements. We continue to evaluate the accounting impacts of the legislation, assemble and analyze the required information, and await additional guidance from the U.S. Treasury Department, the IRS or other standard-setting bodies. Additionally, we continue to analyze other information and regulatory guidance. See Note 13 in Item 8 of this Annual Report on Form 10-K for further details on the impacts of U.S. tax reform.

In 2018, income tax expense increased by $22 compared to 2017 primarily due to an increase in foreign earnings. During 2018, the Company recognized income tax expense of $40, primarily as a result of income from certain foreign operations. In the United States, as a result of Tax Reform, disallowed interest expense resulted in current year taxable income which utilized a net operating loss carryforward. The disallowed interest expense carryforward of $283 generated a deferred tax asset. The decrease in the valuation allowance due to the net operating loss utilization was offset by an increase in the valuation allowance recorded on the interest expense carryforward deferred tax asset. Tax Reform also resulted in the inclusion of Global Intangible Low Tax Income (“GILTI”) of $21, which was fully offset by our net operating loss. This further reduced our valuation allowance.

As a result of U.S. tax reform the Company recognized the earnings of non-U.S. operations in its 2017 U.S. consolidated income tax return under the transition tax. The previously taxed earnings are expected to be repatriated to the U.S. The Company has accrued the incremental tax expense expected to be incurred upon the repatriation of these earnings. In addition, the Company has certain intercompany arrangements that, if settled, may trigger taxable gains or losses based on foreign currency exchange rates in place at the time of settlement. As a result of the conditions related to the Company’s ability to continue as a going concern described above, in the fourth quarter of 2018, the Company is no longer able to assert permanent reinvestment with respect to certain intercompany arrangements previously considered indefinite, and the impact to deferred taxes on the associated foreign currency translation resulted in no tax expense.

In 2017, income tax expense decreased by $20 compared to 2016 primarily due to reduction in foreign earnings. In 2017, the Company recognized income tax expense of $18, primarily as a result of income from certain foreign operations. Losses in the United States created a deferred income tax benefit which was completely offset by an increase to the valuation allowance. The Company incurred a provisional income tax expense of $167 associated with revaluing its net U.S. deferred tax attributes to reflect the new U.S. corporate tax rate of 21%, as well as an additional $65 provisional income tax expense associated with the estimated transition tax. The Company’s valuation allowance was reduced by $234 as a result of the impact Tax Reform had on reducing its net deferred tax assets. In 2016, the income tax expense related to the gain on dispositions was substantially reduced by net operating loss utilization which was offset by a decrease to the related valuation allowance.

***Other Comprehensive Loss***

In 2018, foreign currency translation negatively impacted other comprehensive loss by $8, primarily due to overall weakening of various foreign currencies against the U.S. dollar in 2017, as well as the impact of $2 of amortization of prior service costs on defined benefit pension and postretirement benefits.

In 2017, other comprehensive income of $31 relates to the $33 positive impact of foreign currency translation, primarily due to the overall strengthening of various foreign currencies against the U.S. dollar, partially offset by $2 of amortization of prior service costs on defined benefit pension and postretirement benefits.

In 2016, other comprehensive loss of $24 relates to the $23 negative impact of foreign currency translation, primarily driven by the strengthening of the U.S. dollar against the Chinese yuan and the euro, and to $1 of amortization of prior service costs on defined benefit pension and postretirement benefits.

**Results of Operations by Segment**

Following are net sales and Segment EBITDA (earnings before interest, income taxes, depreciation and amortization) by reportable segment. Segment EBITDA is defined as EBITDA adjusted for certain non-cash items, other income and expenses and discontinued operations. Segment EBITDA is the primary performance measure used by our senior management, the chief operating decision-maker and the board of directors to evaluate operating results and allocate capital resources among segments. Segment EBITDA is also the profitability measure used to set management and executive incentive compensation goals. Segment EBITDA should not be considered a substitute for net loss or other results reported in accordance with U.S. GAAP. Segment EBITDA may not be comparable to similarly titled measures reported by other companies.

| | Year Ended December 31, | | |
|---|---|---|---|
| | **2018** | **2017** | **2016** |
| **Net Sales [1]:** | | | |
| Epoxy, Phenolic and Coating Resins | $ 2,115 | $ 2,052 | $ 2,094 |
| Forest Products Resins | 1,682 | 1,539 | 1,344 |
| **Total** | $ 3,797 | $ 3,591 | $ 3,438 |
| **Segment EBITDA:** | | | |
| Epoxy, Phenolic and Coating Resins | $ 226 | $ 174 | $ 258 |
| Forest Products Resins | 285 | 257 | 240 |
| Corporate and Other | (71) | (66) | (65) |
| **Total** | $ 440 | $ 365 | $ 433 |

(1) Intersegment sales are not significant and, as such, are eliminated within the selling segment.

***2018 vs. 2017 Segment Results***

Following is an analysis of the percentage change in sales by segment from 2017 to 2018:

| | Volume | Price/Mix | Currency Translation | Impact of Dispositions | Total |
|---|---|---|---|---|---|
| Epoxy, Phenolic and Coating Resins | (9)% | 10% | 2 % | — % | 3% |
| Forest Products Resins | — % | 11% | (1)% | (1)% | 9% |

***Epoxy, Phenolic and Coating Resins***

Net sales in 2018 increased by $63, or 3%, compared to 2017. Pricing positively impacted net sales by $200 due primarily to improved market conditions in our base epoxy resins business and raw material price increases contractually passed through to customers across many of our businesses.Volumes negatively impacted net sales by $189, primarily related to volume decreases in our epoxy specialty business driven by margin optimization. Additionally, volumes in our oilfield business decreased due to highly competitive market conditions. The impact of foreign exchange translation positively impacted net sales by $52, primarily due to the strengthening of the euro and the Chinese yuan against the US dollar in 2018 compared to 2017.

Segment EBITDA in 2018 increased by $52 to $226 compared to 2017. The increase was driven by increased margins in our base epoxy resins business, as well as the impact of our ongoing cost reduction initiatives, most notably in our phenolic resins business.

***Forest Products Resins***

Net sales in 2018 increased by $143, or 9%, when compared to 2017. Pricing positively impacted net sales by $182, which was primarily due to raw material price increases contractually passed through to customers across many of our businesses. The impact of foreign exchange translation negatively impacted net sales by $21, due largely to the strengthening of the U.S. dollar against the Brazilian real partially offset by the strengthening of the euro and Canadian dollar against the U.S. dollar in 2018 compared to 2017. Volumes were essentially flat in 2018 compared to 2017, decreasing net sales by $1. Lastly, the disposition of our ATG business in the first quarter of 2018 negatively impacted sales by $17.

Segment EBITDA in 2018 increased by $28 to $285 compared to 2017. This increase was primarily due to improved performance in our North American formaldehyde business, as well as the impact of our ongoing cost reduction initiatives.

***Corporate and Other***

Corporate and Other is primarily corporate, general and administrative expenses that are not allocated to the other segments, such as shared service and administrative functions, unallocated foreign exchange gains and losses and legacy company costs not allocated to the other segments. Corporate and Other charges increased by $5 to $71 compared to 2017, due primarily to higher compensation costs, partially offset by our ongoing cost savings efforts.

***2017 vs. 2016 Segment Results***

The table below provides additional detail of the percentage change in sales by segment from 2016 to 2017:

| | Volume | Price/Mix | Currency Translation | Impact of Dispositions | Total |
|---|---|---|---|---|---|
| Epoxy, Phenolic and Coating Resins | 3% | 3% | 1% | (9)% | (2)% |
| Forest Products Resins | 5% | 9% | 1% | — % | 15 % |

***Epoxy, Phenolic and Coating Resins***

Net sales in 2017 decreased by $42, or 2%, compared to 2016. The majority of the decrease is due to the disposition of our PAC Business in 2016, which negatively impacted net sales by $185. Higher volumes positively impacted net sales by $68, primarily due to volume growth in our base epoxy resins and oilfield businesses, market driven volume increases in our phenolic resins business in North America and China and continued volume recovery in our European versatic acids business, partially offset by volume decreases in our epoxy specialty business largely driven by an ongoing destocking of wind blades and lower installations. Pricing positively impacted net sales by $66 due primarily to raw material price increases passed through to customers in most of our businesses, partially offset by competitive pricing pressures in our epoxy specialty business. Foreign exchange translation positively impacted net sales by $9, primarily due to the strengthening of the euro against the US dollar, partially offset by the strengthening of the U.S. dollar against the Chinese yuan, in 2017 compared to 2016.

Segment EBITDA in 2017 decreased by $84 to $174 compared to 2016. The impact of the disposition of our PAC Business and HAI joint venture interest in the second quarter of 2016 contributed to $30 of this decrease. The remaining decrease was primarily driven by margin compression and volume decreases in our epoxy specialty business, as well as a Segment EBITDA impact of $15 related to insurance recoveries received in 2016 in our versatic acids business that did not recur in 2017 and $6 of negative impact related to the hurricanes that occurred in the U.S during the third quarter of 2017. These decreases were partially offset by improvements in our oilfield and base epoxy resins businesses, as both continue to recover from cyclical trough conditions.

***Forest Products Resins***

Net sales in 2017 increased by $195, or 15%, when compared to 2016. Pricing positively impacted net sales by $116, which was primarily due to raw material price increases passed through to customers across many of our businesses. Volumes positively impacted net sales by $63, and were primarily driven by strong market demand in our North America formaldehyde business combined with the additional capacity from our new formaldehyde plants. Additionally, volumes increased in our North American forest products resins business due to modest growth in the U.S. housing market. The impact of foreign exchange translation positively impacted net sales by $16, primarily due to an overall strengthening of various foreign currencies against the U.S. dollar in 2017 compared to 2016.

Segment EBITDA in 2017 increased by $17 to $257 compared to 2016. This increase was primarily due to increased volumes in our North American formaldehyde business discussed above, as well as cost efficiencies associated with our new North American formaldehyde plants.

***Corporate and Other***

Corporate and Other is primarily corporate, general and administrative expenses that are not allocated to the other segments, such as shared service and administrative functions, unallocated foreign exchange gains and losses and legacy company costs not allocated to continuing segments. Corporate and Other charges increased by $1 to $66 compared to 2016, due primarily to higher information technology costs and annual merit increases, largely offset by our ongoing cost savings efforts.

**Reconciliation of Net Loss to Segment EBITDA:**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Net loss attributable to Hexion Inc. | $ (162) | $ (234) | $ (38) |
| Net loss attributable to noncontrolling interest | 1 | — | — |
| Net loss | (163) | (234) | (38) |
| Income tax expense | 40 | 18 | 38 |
| Interest expense, net | 365 | 329 | 310 |
| Depreciation and amortization | 113 | 115 | 131 |
| Accelerated depreciation | 4 | 14 | 129 |
| EBITDA | $ 359 | $ 242 | $ 570 |
| Items not included in Segment EBITDA: | | | |
| Asset impairments and write-downs | $ 32 | $ 13 | $ — |
| Business realignment costs | 29 | 52 | 55 |
| Realized and unrealized foreign currency losses (gains) | 27 | 3 | (11) |
| Gain on dispositions | (44) | — | (240) |
| Loss (gain) on extinguishment of debt | — | 3 | (48) |
| Unrealized (gains) losses on pension and OPEB plan liabilities | (13) | (4) | 34 |
| Transaction costs | 13 | 8 | 17 |
| Other | 37 | 48 | 56 |
| Total adjustments | 81 | 123 | (137) |
| Segment EBITDA | $ 440 | $ 365 | $ 433 |
| | | | |
| **Segment EBITDA:** | | | |
| Epoxy, Phenolic and Coating Resins | $ 226 | $ 174 | $ 258 |
| Forest Products Resins | 285 | 257 | 240 |
| Corporate and Other | (71) | (66) | (65) |
| **Total** | $ 440 | $ 365 | $ 433 |

***Items Not Included in Segment EBITDA***

Not included in Segment EBITDA are certain non-cash items and other unusual income and expenses. For 2018 and 2017, these other items primarily included expenses from retention programs, management fees and expenses related to legacy liabilities. For 2016, these other items primarily included expenses from retention programs, management fees and expenses related to legacy liabilities, partially offset by gains on the disposal of assets and a gain on a step acquisition. Transaction costs included certain professional fees related to strategic projects.

Business realignment costs for 2018 and 2017 primarily included costs related to in-process cost reduction programs and certain in-process and recently completed facility rationalizations. Business realignment costs for 2016 primarily included costs related to the rationalization at our Norco, LA manufacturing facility and costs related to certain in-process cost reduction programs.

**Liquidity and Capital Resources**

***2019 Outlook***

As a result of the commencement of the Chapter 11 Cases on April 1, 2019, we are operating as a debtor-in-possession pursuant to the authority granted under Chapter 11 of the Bankruptcy Code. Pursuant to the Chapter 11 Cases, we intend to significantly de-leverage our balance sheet and reduce overall indebtedness upon completion of that process. Additionally, as a debtor-in-possession, certain of our activities are subject to review and approval by the Bankruptcy Court, including, among other things, the incurrence of secured indebtedness, material asset dispositions, and other transactions outside the ordinary course of business. There can be no guaranty that the Chapter 11 Cases will be completed successfully or in the time frame contemplated by the Support Agreement. Refer to Note 2 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K for more information.

As a result of the substantial doubt about our ability to continue as a going concern for the next twelve months, and the associated steps that have been undertaken to restructure our balance sheet, our expected cash outflows related to debt service in 2019 are difficult to predict at this time. We expect to make interest payments under the Credit Facilities and our first lien notes during 2019 in accordance with the Bankruptcy Court order approving the Credit Facilities but do not expect to make interest payments on our other notes. We plan to fund our ongoing operations through available borrowings under our Credit Facilities as well as cash generated from operations.

We currently expect to emerge from Chapter 11 in the third quarter of 2019 in accordance with our Support Agreement; however, this will be contingent upon numerous factors including, many of which are out of our control. Major factors include obtaining the Bankruptcy Court's approval of a Chapter 11 plan of reorganization to be proposed by the Debtors, which will enable us to transition from Chapter 11 into ordinary course operations outside of bankruptcy. We also may need to obtain a new credit facility, or "exit financing." Our ability to obtain such approval and financing will depend on, among other things, the timing and outcome of various ongoing matters related to the Chapter 11 Cases. The plan of reorganization will determine the rights and satisfaction of claims of various creditors and security holders, and is subject to the ultimate outcome of negotiations and Bankruptcy Court decisions ongoing through the date on which such plan is confirmed. See "Risk Factors - Risks Related to Our Chapter 11 Proceedings."

We are a highly leveraged company. Our primary sources of liquidity are cash flows generated from operations and availability under our Credit Facilities. Subsequent to and during pendency of filing the Chapter 11 petitions, we expect that our primary liquidity requirements will be to fund operations and make required payments under our Credit Facilities. Our ability to meet the requirements of our Credit Facilities will be dependent on our ability to generate sufficient cash flows from operations.

Based on current financial projections, we expect to be able to continue to generate cash flows from operations in amounts sufficient to fund our operations, satisfy our interest and principal payment obligations on our Credit Facilities and pay administrative expenses including professional fees while under Chapter 11.

At December 31, 2018, we had $3,815 of outstanding debt and $305 in liquidity consisting of the following:

- $113 of unrestricted cash and cash equivalents (of which $93 is maintained in foreign jurisdictions);
- $165 of borrowings available under our ABL Facility ($350 borrowing base less $137 of outstanding borrowings and $48 of outstanding letters of credit); and
- $27 of time drafts and borrowings available under credit facilities at certain international subsidiaries.

Our net working capital (defined as accounts receivable and inventories less accounts payable) at December 31, 2018 and 2017 was $362 and $373, respectively. A summary of the components of our net working capital as of December 31, 2018 and 2017 is as follows:

| | December 31, 2018 | % of LTM Net Sales | December 31, 2017 | % of LTM Net Sales [1] |
|---|---|---|---|---|
| Accounts receivable | $ 412 | 11 % | $ 462 | 13 % |
| Inventories | 334 | 9 % | 313 | 9 % |
| Accounts payable | (384) | (10)% | (402) | (12)% |
| Net working capital [1][2] | $ 362 | 10 % | $ 373 | 10 % |

(1) The components of net working capital at December 31, 2017 exclude $6 of net working capital related to the ATG business. The assets and liabilities of ATG are classified as held for sale in the December 31, 2017 Consolidated Balance Sheet.

(2) Management believes that this non-GAAP measure is useful supplemental information. This non-GAAP measure should be considered by the reader in addition to but not instead of, the financial statements prepared in accordance with GAAP.

The decrease in net working capital of $11 from December 31, 2017 was driven by a decrease of $50 in accounts receivable, primarily the result of decreased volumes in 2018 compared to 2017 due to margin optimization. This was partially offset by an increase in inventory of $21 driven by raw material price inflation and a decrease in accounts payable of $18 related to the timing of vendor payments. To minimize the impact of net working capital changes on cash flows, we continue to review inventory safety stock levels, focus on receivable collections by offering incentives to customers to encourage early payment or acceleration of receipts through the sale of receivables and negotiate with vendors to contractually extend payment terms whenever possible.

We periodically borrow from the ABL Facility to support our short-term liquidity requirements, particularly when net working capital requirements increase in response to seasonality of our volumes. As of December 31, 2018, there were $137 of outstanding borrowings under the ABL Facility.

***2017 Refinancing Transactions***

In February 2017, we issued $485 aggregate principal amount of First Priority Senior Secured Notes and $225 aggregate principal amount of Senior Secured Notes. Upon the closing of these offerings, we used the net proceeds from these offerings, together with cash on our balance sheet, to redeem all of our outstanding 8.875% Senior Secured Notes due 2018 (the "Old Senior Secured Notes"), which occurred in March 2017.

In May 2017, we issued an additional $75 aggregate principal amount of First Priority Senior Secured Notes at an issue price of 100.5%. These notes mature on February 1, 2022 and have substantially the same terms as the First Priority Senior Secured Notes issued in February 2017. We used the net proceeds from these notes for general corporate purposes.

In December 2016, we amended and restated the ABL Facility, with modifications to, among other things, permit the refinancing of the Old Senior Secured Notes. In connection with the issuance of the new notes in February 2017, certain lenders under the ABL Facility provided extended revolving facility commitments in an aggregate principal amount of $350 with a maturity date of December 5, 2021 (subject to early maturity triggers), the existing commitments were terminated and the size of the ABL Facility was reduced from $400 to $350.

***Sources and Uses of Cash***

Following are highlights from our Consolidated Statements of Cash Flows for the years ended December 31:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Sources (uses) of cash: | | | |
| Operating activities | $ (23) | $ (153) | $ (20) |
| Investing activities | (40) | (110) | 219 |
| Financing activities | 81 | 174 | (235) |
| Effect of exchange rates on cash flow | (5) | 8 | (4) |
| Net increase (decrease) in cash and cash equivalents | $ 13 | $ (81) | $ (40) |

***Operating Activities***

In 2018, operating activities used $23 of cash. Net loss of $163 included $155 of net non-cash expense items, consisting of depreciation and amortization of $113, non-cash asset impairments and accelerated depreciation of $32, amortization of deferred financing fees of $49, deferred tax expense of $12, loss on sale of assets of $6 and unrealized foreign currency losses of $2, partially offset by the gain on the sale of ATG of $44 and unrealized gains related to the remeasurement of our pension and OPEB liabilities of $13. Net working capital used $8, which was largely driven by increases in inventories due to raw material price inflation and decreases in accounts receivable due to lower volumes. Changes in other assets and liabilities and income taxes payable used $7 due to the timing of when items were expensed versus paid, which primarily included interest expense, employee retention programs, restructuring reserves, incentive compensation, pension plan contributions and taxes.

In 2017, operating activities used $153 of cash. Net loss of $234 included $151 of net non-cash expense items, consisting of depreciation and amortization of $115, non-cash asset impairments and accelerated depreciation of $27, amortization of deferred financing fees $16, loss on debt extinguishment of $3 and unrealized foreign currency losses of $3, partially offset by $4 of unrealized gains related to the remeasurement of our pension and OPEB liabilities, gain on sale of assets of $1 and a deferred tax benefit of $3. Net working capital used $41, which was largely driven by increases in accounts receivable and inventories due primarily to volume increases related to market conditions as well as raw material price inflation. Changes in other assets and liabilities and income taxes payable used $29 due to the timing of when items were expensed versus paid, which primarily included interest expense, employee retention programs, restructuring reserves, incentive compensation, pension plan contributions and taxes.

In 2016, operating activities used $20 of cash. Net loss of $38 included $34 of net non-cash income items, of which $240 related to gains on the HAI and PAC dispositions, $52 was for unrealized foreign currency gains and $48 related to gains on debt extinguishments. These items were partially offset by $131 for depreciation and amortization, $129 of accelerated depreciation, $34 of unrealized losses related to the remeasurement of our pension and OPEB liabilities and $2 related to deferred tax expense. Working capital provided $18, which was driven by decreases in accounts payable due to timing of vendor payments, partially offset by smaller decreases in accounts receivable and inventory due to sales volume decreases, lower raw material prices and increased efficiency in accounts receivable collections. Changes in other assets and liabilities and income taxes payable provided $34 due to the timing of when items were expensed versus paid, which primarily included interest expense, restructuring costs, employee retention programs, pension plan contributions and taxes.

***Investing Activities***

In 2018, investing activities used $40, primarily driven by capital expenditures of $90, partially offset by net proceeds from the ATG disposition of $49 and proceeds from sale of assets of $1.

In 2017, investing activities used $110, primarily driven by capital expenditures of $118 (including capitalized interest), partially offset by net proceeds from the sale of assets of $8.

In 2016, investing activities provided $219, primarily driven by net cash proceeds of $356 related to the HAI and PAC dispositions and cash received on the HAI buyer's note, as well as $5 in proceeds from the sale of other assets. These items were partially offset by capital expenditures (including capitalized interest) of $141 and investment in affiliates of $1.

***Financing Activities***

In 2018, financing activities provided $81. Net short-term debt borrowings were $10 and net long-term debt borrowings were $72. Our long-term debt borrowings primarily consisted of $137 in borrowings under our ABL Facility. We also paid $1 of financing fees.

In 2017, financing activities provided $174. Net short-term debt borrowings were $21 and net long-term debt borrowings were $178. Our long-term debt borrowings primarily consisted of $81 in borrowings under our ABL Facility, the refinancing of our Old Senior Secured Notes in February 2017, an additional $75 aggregate principal amount of New First Lien Notes issued in May 2017 and $43 related to the sale-leaseback financing of certain equipment at plants within our Forest Products Resins segment that occurred in the second half of 2017. We also paid $25 of financing fees related to these debt transactions.

In 2016, financing activities used $235. Net short-term debt repayments were $22, and net long term repayments were $212. Our long-term debt repayments primarily consisted of $240 used to repurchase a portion of our Old Senior Secured Notes on the open market. We also paid $1 of financing fees.

There are certain restrictions on the ability of certain of our subsidiaries to transfer funds to the parent in the form of cash dividends, loans or otherwise, which primarily arise as a result of certain foreign government regulations or as a result of restrictions within certain subsidiaries' financing agreements limiting such transfers to the amounts of available earnings and profits or otherwise limit the amount of dividends that can be distributed. In either case, we have alternative methods to obtain cash from these subsidiaries in the form of intercompany loans and/or returns of capital in such instances where payment of dividends is limited to the extent of earnings and profits.

***Outstanding Debt***

Following is a summary of our cash and cash equivalents and outstanding debt at December 31, 2018 and December 31, 2017:

| | As of December 31, | |
|---|---|---|
| | **2018** | **2017** |
| Cash and cash equivalents | $ 128 | $ 115 |
| **Debt:** | | |
| ABL Facility | $ 137 | $ 81 |
| **Senior Secured Notes:** | | |
| 6.625% First-Priority Senior Secured Notes due 2020 (includes $2 of unamortized debt premium at December 31, 2017) | 1,550 | 1,552 |
| 10.00% First-Priority Senior Secured Notes due 2020 | 315 | 315 |
| 10.375% First-Priority Secured Notes due 2022 | 560 | 560 |
| 13.75% Senior Secured Notes due 2022 | 225 | 225 |
| 9.00% Second-Priority Senior Secured Notes due 2020 | 574 | 574 |
| **Debentures:** | | |
| 9.2% debentures due 2021 | 74 | 74 |
| 7.875% debentures due 2023 | 189 | 189 |
| **Other Borrowings:** | | |
| Australia Facility due 2021 at 4.8% and 4.6% at December 31, 2018 and 2017, respectively | 34 | 50 |
| Brazilian bank loans at 10.0% and 9.9% at December 31, 2018 and 2017, respectively | 53 | 43 |
| Lease obligations | 66 | 49 |
| Other at 5.3% and 5.0% at December 31, 2018 and 2017, respectively | 38 | 38 |
| Unamortized debt issuance costs | — | (41) |
| **Total** | $ 3,815 | $ 3,709 |

As discussed in Item 1 Part 1 of this Annual Report of Form 10-K, we believe there is substantial doubt about our ability to continue as a going concern for the next twelve months, including our ability to fund our debt service obligations. Our inability to fund such debt service obligations, as well as the Bankruptcy Petitions, are both an event of default under the ABL Facility and the indentures that govern our notes. As such, all outstanding debt as of December 31, 2018 related to the ABL Facility, the First-Priority Senior Secured Notes, the Senior Secured Notes, the Second-Priority Senior Secured Notes and the debentures has been classified as “Debt payable within one year” in the audited Consolidated Balance Sheets and related footnote disclosures. Also during the year ended December 31, 2018, we wrote-off $33 of unamortized debt issuance costs related to the going concern conclusion. These write-offs are included in “Interest expense, net” in the audited Consolidated Statements of Operations.

In connection with the Bankruptcy Petitions, Hexion LLC, the Company and certain subsidiaries of the Company entered into the $350 DIP ABL Facility and Hexion LLC, the Company and the Dutch Borrower entered into the $350 DIP Term Loan Facility. The Company received interim approval from the Bankruptcy Court to access $600 of the $700 permitted under the Credit Facilities. The proceeds of the DIP Term Loan Facility were used by the Dutch Borrower to make an intercompany loan to the Company, which the Company and certain of its subsidiaries used to repay amounts outstanding under the ABL Facility and for general corporate purposes, and availability under the DIP ABL Facility will be used to support outstanding letters of credit, working capital and for general corporate purposes. See Note 2 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K for additional information regarding the Credit Facilities.

***Covenant Compliance***

The instruments that govern our indebtedness contain, among other provisions, restrictive covenants (and incurrence tests in certain cases) regarding indebtedness, dividends and distributions, mergers and acquisitions, asset sales, affiliate transactions, capital expenditures and, in the case of our ABL Facility, the maintenance of a financial ratio (depending on certain conditions). Payment of borrowings under the ABL Facility and our notes may be accelerated if there is an event of default as determined under the governing debt instrument. Events of default under the credit agreement governing our ABL Facility includes the failure to pay principal and interest when due, a material breach of representations or warranties, events of bankruptcy, a change of control, and most covenant defaults. Events of default under the indentures governing our notes include the failure to pay principal and interest, a failure to comply with covenants, subject to a 30-day grace period in certain instances, and certain events of bankruptcy.

Accordingly, the Company has concluded its financial condition, the defaults under its debt agreements, and the risks and uncertainties surrounding its Chapter 11 proceedings raise substantial doubt as to the Company’s ability to continue as a going concern. The audit report issued by the Company’s independent registered public accounting firm contains an explanatory paragraph expressing substantial doubt about the Company's ability to continue as a going concern included in Item 8 on this Annual Report on Form 10-K. The Bankruptcy Petitions constitute an event of default that accelerated the Company’s obligations under its ABL Facility and 6.625% First-Priority Senior Secured Notes, 10.00% First-Priority Senior Secured Notes, 10.375% First-Priority Senior Secured Notes, 13.75% Senior Secured Notes, 9.00% Second-Priority Senior Secured Notes, 9.2% debentures and 7.875% debentures (collectively, the “Notes”). The debt instruments provide that as a result of the Bankruptcy Petitions, the principal and interest due thereunder are immediately due and payable; however, any efforts to enforce such payment obligations under these instruments are automatically stayed as a result of the Bankruptcy Petitions and the creditors’ rights of enforcement in respect of these instruments are subject to the applicable provisions of the Bankruptcy Code.

The indentures that govern our 6.625% First-Priority Senior Secured Notes, 10.00% First-Priority Senior Secured Notes, 10.375% First-Priority Senior Secured Notes, 13.75% Senior Secured Notes and 9.00% Second-Priority Senior Secured Notes (the “Secured Indentures”) contain an Adjusted EBITDA to Fixed Charges ratio incurrence test which may restrict our ability to take certain actions such as incurring additional debt or making acquisitions if we are unable to meet this ratio (measured on a last twelve months, or LTM, basis) of at least 2.0:1. The Adjusted EBITDA to Fixed Charges Ratio under the Secured Indentures is generally defined as the ratio of (a) Adjusted EBITDA to (b) net interest expense excluding the amortization or write-off of deferred financing costs, each measured on an LTM basis. See below for our Adjusted EBITDA to Fixed Charges Ratio calculation.

Our ABL Facility, which is subject to a borrowing base does not have any financial maintenance covenant other than a minimum fixed charge coverage ratio of 1.0 to 1.0 that would only apply if our availability under the ABL Facility at any time is less than the greater of (a) $35 and (b) 12.5% of the lesser of the borrowing base and the total ABL Facility commitments at such time. The fixed charge coverage ratio under the credit agreement governing the ABL Facility is generally defined as the ratio of (a) Adjusted EBITDA minus non-financed capital expenditures and cash taxes to (b) debt service plus cash interest expense plus certain restricted payments, each measured for the four most recent quarters for which financial statements have been delivered. At December 31, 2018, our availability under the ABL Facility exceeded such levels; therefore, the minimum fixed charge ratio covenant did not apply.

**Reconciliation of Last Twelve Months Net Loss to Adjusted EBITDA**

Adjusted EBITDA is defined as EBITDA adjusted for certain non-cash and certain non-recurring items and other adjustments calculated on a pro-forma basis, including the expected future cost savings from business optimization programs or other programs and the expected future impact of acquisitions, in each case as determined under the governing debt instrument. As we are highly leveraged, we believe that including the supplemental adjustments that are made to calculate Adjusted EBITDA provides additional information to investors about our ability to comply with our financial covenants and to obtain additional debt in the future. Adjusted EBITDA and Fixed Charges are not defined terms under U.S. GAAP. Adjusted EBITDA is not a measure of financial condition, liquidity or profitability, and should not be considered as an alternative to net income (loss) determined in accordance with U.S. GAAP or operating cash flows determined in accordance with U.S. GAAP. Additionally, EBITDA is not intended to be a measure of free cash flow for management's discretionary use, as it does not take into account certain items such as interest and principal payments on our indebtedness, depreciation and amortization expense (because we use capital assets, depreciation and amortization expense is a necessary element of our costs and ability to generate revenue), working capital needs, tax payments (because the payment of taxes is part of our operations, it is a necessary element of our costs and ability to operate), non-recurring expenses and capital expenditures. Fixed Charges under the Secured Indentures should not be considered an alternative to interest expense.

The following table reconciles Net loss to EBITDA and Adjusted EBITDA, and calculates the ratio of Adjusted EBITDA to Fixed Charges as calculated under certain of our indentures for the period presented:

| | Year Ended December 31, 2018 |
|---|---|
| Net loss | $ (163) |
| Interest expense, net | 365 |
| Income tax expense | 40 |
| Depreciation and amortization | 113 |
| Accelerated depreciation | 4 |
| EBITDA | 359 |
| Adjustments to EBITDA: | |
| Asset impairments and write-downs | 32 |
| Business realignment costs [(1)] | 29 |
| Realized and unrealized foreign currency losses | 27 |
| Gain on dispositions | (44) |
| Unrealized gains on pension and OPEB plan liabilities [(2)] | (13) |
| Transaction costs [(3)] | 13 |
| Other [(4)] | 42 |
| Cost reduction programs savings [(5)] | 9 |
| Adjusted EBITDA | $ 454 |
| Pro forma fixed charges [(6)] | $ 318 |
| Ratio of Adjusted EBITDA to Fixed Charges [(7)] | 1.43 |

(1) Primarily represents costs related to headcount reduction expenses and plant rationalization costs related to in-process and recently completed cost reduction programs, termination costs and other costs associated with business realignments.

(2) Represents non-cash gains from pension and postretirement benefit plan liability remeasurements.

(3) Represents certain professional fees related to strategic projects.

(4) Primarily includes retention program costs, business optimization expenses, management fees and expenses related to legacy liabilities.

(5) Represents pro forma impact of in-process cost reduction programs savings. Cost reduction program savings represent the unrealized headcount reduction savings and plant rationalization savings related to cost reduction programs and other unrealized savings associated with the Company's business realignments activities, and represent our estimate of the unrealized savings from such initiatives that would have been realized had the related actions been completed at the beginning of the period presented. The savings are calculated based on actual costs of exiting headcount and elimination or reduction of site costs.

(6) Reflects pro forma interest expense based on interest rates at December 31, 2018.

(7) The Company's ability to incur additional indebtedness, among other actions, is restricted under the indentures governing certain notes, unless the Company has an Adjusted EBITDA to Fixed Charges ratio of 2.0 to 1.0. As of December 31, 2018, we did not satisfy this test. As a result, we are subject to restrictions on our ability to incur additional indebtedness or to make investments; however, there are exceptions to these restrictions, including exceptions that permit indebtedness under the ABL Facility (available borrowings of which were $165 at December 31, 2018).

### Contractual Obligations

The following table presents our contractual cash obligations at December 31, 2018. Our contractual cash obligations consist of legal commitments at December 31, 2018 that require us to make fixed or determinable cash payments, regardless of the contractual requirements of the specific vendor to provide us with future goods or services. This table does not include information about most of our recurring purchases of materials used in our production; our raw material purchase contracts do not meet this definition since they generally do not require fixed or minimum quantities. Contracts with cancellation clauses are not included, unless a cancellation would result in a major disruption to our business. For example, we have contracts for information technology support that are cancelable, but this support is essential to the operation of our business and administrative functions; therefore, amounts payable under these contracts are included. These contractual obligations are grouped in the same manner as they are classified in the Consolidated Statements of Cash Flows in order to provide a better understanding of the nature of the obligations.

| | Payments Due By Year | | | | | | |
|---|---|---|---|---|---|---|---|
| **Contractual Obligations** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024 and beyond** | **Total** |
| **Operating activities:** | | | | | | | |
| Purchase obligations [1] | $ 234 | $ 117 | $ 119 | $ 44 | $ 37 | $ 314 | $ 865 |
| Interest on fixed rate debt obligations [2] | 304 | 236 | 111 | 62 | 8 | — | 721 |
| Interest on variable rate debt obligations [3] | 9 | 3 | 1 | 1 | 1 | — | 15 |
| Operating lease obligations | 33 | 24 | 20 | 13 | 10 | 61 | 161 |
| Funding of pension and other postretirement obligations [4] | 30 | 28 | 28 | 28 | 29 | — | 143 |
| **Financing activities:** | | | | | | | |
| Long-term debt, including current maturities | 3,706 | 34 | 2 | 1 | — | 6 | 3,749 |
| Capital lease obligations | 15 | 20 | 13 | 26 | 9 | 1 | 84 |
| **Total** | $ 4,331 | $ 462 | $ 294 | $ 175 | $ 94 | $ 382 | $ 5,738 |

(1) Purchase obligations are comprised of the fixed or minimum amounts of goods and/or services under long-term contracts and assumes that certain contracts are terminated in accordance with their terms after giving the requisite notice which is generally two to three years for most of these contracts; however, under certain circumstances, some of these minimum commitment term periods could be further reduced which would significantly decrease these contractual obligations.

(2) Based on contractual debt maturities at December 31, 2018. Future interest obligations will depend on the results of the Chapter 11 Cases, which are not known at this time.

(3) Based on applicable interest rates in effect at December 31, 2018.

(4) Pension and other postretirement contributions have been included in the above table for the next five years. These amounts include estimated benefit payments to be made for unfunded foreign defined benefit pension plans as well as estimated contributions to our funded defined benefit plans. The assumptions used by our actuaries in calculating these projections includes a weighted average annual return on pension assets of approximately 6.5% for the years 2019 – 2022 and the continuation of current law and plan provisions. These estimated payments may vary based on the actual return on our plan assets or changes in current law or plan provisions. See Note 10 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K for more information on our pension and postretirement obligations.

The table above excludes payments for income taxes and environmental obligations since, at this time, we cannot determine either the timing or the amounts of all payments beyond 2018. At December 31, 2018, we recorded unrecognized tax benefits and related interest and penalties of $145. We estimate that we will pay between $15 and $25 in 2019 for U.S. Federal, state and international income taxes. We expect non-capital environmental expenditures for 2019 through 2022 totaling $17. See Notes 9 and 13 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on 10-K for more information on these obligations.

### Off Balance Sheet Arrangements

We had no off-balance sheet arrangements as of December 31, 2018.

**Critical Accounting Estimates**

In preparing our financial statements in conformity with U.S. GAAP, we have to make estimates and assumptions about future events that affect the amounts of reported assets, liabilities, revenues and expenses, as well as the disclosure of contingent assets and liabilities in the financial statements and accompanying notes. Some of these accounting policies require the application of significant judgment by management to select the appropriate assumptions to determine these estimates. By their nature, these judgments are subject to an inherent degree of uncertainty; therefore, actual results may differ significantly from estimated results. We base these judgments on our historical experience, advice from experienced consultants, forecasts and other available information, as appropriate. Our significant accounting policies are more fully described in Note 3 to the Consolidated Financial Statements in Item 8 of Part II of this Annual Report on Form 10-K.

Our most critical accounting policies, which reflect significant management estimates and judgment to determine amounts in our audited Consolidated Financial Statements, are as follows:

***Environmental Remediation and Restoration Liabilities***

Accruals for environmental matters are recorded when we believe that it is probable that a liability has been incurred and we can reasonably estimate the amount of the liability. We have accrued $50 and $52 at December 31, 2018 and 2017, respectively, for all probable environmental remediation and restoration liabilities, which is our best estimate of these liabilities. Based on currently available information and analysis, we believe that it is reasonably possible that the costs associated with these liabilities may fall within a range of $41 to $96. This estimate of the range of reasonably possible costs is less certain than the estimates that we make to determine our reserves. To establish the upper limit of this range, we used assumptions that are less favorable to Hexion among the range of reasonably possible outcomes, but we did not assume that we would bear full responsibility for all sites to the exclusion of other potentially responsible parties.

Some of our facilities are subject to environmental indemnification agreements, where we are generally indemnified against damages from environmental conditions that occurred or existed before the closing date of our acquisition of the facility, subject to certain limitations. In other cases we have sold facilities subject to an environmental indemnification agreement pursuant to which we retain responsibility for certain environmental conditions that occurred or existed before the closing date of the sale of the facility.

***Income Tax Assets and Liabilities and Related Valuation Allowances***

On December 22, 2017, the United States enacted tax reform legislation that included a broad range of business tax provisions, including but not limited to a reduction in the U.S. federal tax rate from 35% to 21% as well as provisions that limit or eliminate various deductions or credits. The legislation also causes U.S. expenses, such as interest and general administrative expenses, to be taxed and imposes new taxes on U.S. cross-border payments. Furthermore, the legislation includes a one-time transition tax on accumulated foreign earnings and profits.

In response to the enactment of U.S. tax reform, the SEC issued guidance (referred to as “SAB 118”) to address the complexity in accounting for this new legislation. When the initial accounting for items under the new legislation is incomplete, the guidance allows companies to recognize provisional amounts when reasonable estimates can be made or to continue to apply the prior tax law if a reasonable estimate of the impact cannot be made. The SEC has provided up to a one-year window for companies to finalize the accounting for the impacts of this new legislation and we finalized our accounting during 2018.

While we have completed our accounting for the U.S. tax legislation, we recognized no net tax expense in our 2017 financial statements. We continue to evaluate the accounting impacts of the legislation, assemble and analyze the required information, and await additional guidance from the U.S. Treasury Department, the IRS, or other standard-setting bodies. Additionally, we continue to analyze other information and regulatory guidance. See Note 13 for further details on the impacts of U.S. tax reform.

At December 31, 2018, we had a valuation allowance of $547 against our deferred income tax assets. This valuation allowance is made up of a $413 valuation allowance against all of our net U.S. federal and state deferred income tax assets, as well as a valuation allowance of $134 against a portion of our net foreign deferred income tax assets, primarily in Germany and the Netherlands.

At December 31, 2017, we had a valuation allowance of $522 against our deferred income tax assets. This valuation allowance is made up of a $377 valuation allowance against all of our net U.S. federal and state deferred income tax assets, as well as a valuation allowance of $145 against a portion of our net foreign deferred income tax assets, primarily in Germany and the Netherlands.

The valuation allowances require an assessment of both negative and positive evidence, such as operating results during the most recent three-year period. This evidence is given more weight than our expectations of future profitability, which are inherently uncertain.

The Company considered all available evidence, both positive and negative, in assessing the need for a valuation allowance for deferred tax assets. The Company evaluated four possible sources of taxable income when assessing the realization of deferred tax assets:

- Taxable income in prior carryback years;
- Future reversals of existing taxable temporary differences;
- Tax planning strategies; and
- Future taxable income exclusive of reversing temporary differences and carryforwards.

For 2018, previous losses in the U.S. and previous and current losses in certain foreign operations for recent periods continue to provide sufficient negative evidence requiring a full valuation allowance against the net federal, state, and foreign deferred tax assets. The Company's risk of not being able to continue as a going concern further supports the maintenance of a full valuation allowance.

Uncertainty in income taxes is recognized in the financial statements in accordance with the applicable accounting guidance. The guidance prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of tax positions taken or expected to be taken in its tax return. We also apply the guidance relating to de-recognition, classification, interest and penalties, accounting in interim periods, disclosure and transition.

The calculation of our income tax liabilities involves dealing with uncertainties in the application of complex domestic and foreign income tax regulations. Unrecognized tax benefits are generated when there are differences between tax positions taken in a tax return and amounts recognized in the Consolidated Financial Statements. Tax benefits are recognized in the Consolidated Financial Statements when it is more likely than not that a tax position will be sustained upon examination. Tax benefits are measured as the largest amount of benefit that is greater than 50% likely to be realized upon settlement. To the extent we prevail in matters for which liabilities have been established, or are required to pay amounts in excess of our liabilities, our effective income tax rate in a given period could be materially impacted. An unfavorable income tax settlement may require the use of cash and result in an increase in our effective income tax rate in the year it is resolved. A favorable income tax settlement would be recognized as a reduction in the effective income tax rate in the year of resolution. At December 31, 2018 and 2017, we recorded unrecognized tax benefits and related interest and penalties of $145 and $129, respectively.

***Pensions***

The amounts that we recognize in our financial statements for pension benefit obligations are determined by actuarial valuations. Inherent in these valuations are certain assumptions, the more significant of which are:

- The weighted average rate used for discounting the liability;
- The weighted average expected long-term rate of return on pension plan assets;
- The method used to determine market-related value of pension plan assets;
- The weighted average rate of future salary increases; and
- The anticipated mortality rate tables.

The discount rate reflects the rate at which pensions could be effectively settled. When selecting a discount rate, our actuaries provide us with a cash flow model that uses the yields of high-grade corporate bonds with maturities consistent with our anticipated cash flow projections. Our pension and OPEB liabilities and related service and interest cost are calculated using a split-rate interest discounting methodology, whereby expected future cash flows related to these liabilities are discounted using multiple interest rates on a forward curve that correspond to the timing of the expected cash flows.

The expected long-term rate of return on plan assets is determined based on the various plans' current and projected asset mix. To determine the expected overall long-term rate of return on assets, we take into account the rates on long-term debt investments that are held in the portfolio, as well as expected trends in the equity markets, for plans including equity securities.

The rate of increase in future compensation levels is determined based on salary and wage trends in the chemical and other similar industries, as well as our specific compensation targets.

The mortality tables that are used represent the most commonly used mortality projections for each particular country, and reflect projected mortality improvements.

We believe the current assumptions used to estimate plan obligations and pension expense are appropriate in the current economic environment. However, as economic conditions change, we may change some of our assumptions, which could have a material impact on our financial condition and results of operations.

The following table presents the sensitivity of our projected pension benefit obligation ("PBO"), accumulated benefit obligation ("ABO"), deficit ("Deficit") and 2018 pension expense to the following changes in key assumptions:

| | Increase / (Decrease) at December 31, 2018 | | Increase / (Decrease) |
|---|---|---|---|
| | **PBO** | **ABO** | **2019 Expense** |
| **Assumption:** | | | |
| Increase in discount rate of 0.5% | $ (69) | $ (65) | $ (3) |
| Decrease in discount rate of 0.5% | 61 | 57 | 2 |
| Increase in estimated return on assets of 1.0% | N/A | N/A | (6) |
| Decrease in estimated return on assets of 1.0% | N/A | N/A | 6 |

***Impairment of Long-Lived Assets, Goodwill and Other Intangible Assets***

**Goodwill**

Our reporting units include epoxy, phenolic specialty resins, oilfield, versatics and forest products. Our reporting units are generally one level below our operating segments for which discrete financial information is available and reviewed by segment management. However, components of an operating segment can be aggregated as one reporting unit if the components have similar economic characteristics. We perform an annual assessment of qualitative factors to determine whether the existence of any events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than the carrying amount of the reporting unit's net assets. If, after assessing all events and circumstances, we determine it is more likely than not that the fair value of a reporting unit is less than the carrying amount of the reporting unit's net assets, we use a probability weighted market and income approach to estimate the fair value of the reporting unit. Our market approach is a comparable analysis technique commonly used in the investment banking and private equity industries based on the EBITDA multiple technique. Under this technique, estimated fair value is the result of a market based EBITDA multiple that is applied to an appropriate historical EBITDA amount, adjusted for the additional fair value that would be assigned by a market participant obtaining control over the reporting unit. Our income approach is a discounted cash flow model. The discounted cash flow model requires management to project revenues, operating expenses, working capital investment, taxes, capital spending and cash flows over a multi-year period, as well as determine the weighted average cost of capital to be used as a discount rate. Applying this discount rate to the multi-year projections provides an estimate of fair value for the reporting unit. If the carrying value of the reporting unit exceeds the estimated fair value, an impairment charge is recorded for the difference.

In 2017, due to the Company lowering its forecast of estimated earnings and cash flows for its oilfield business from those previously projected and indefinitely idling a manufacturing facility within its oilfield business, and due to the slower than previously assumed recovery in the oil and gas market, the estimated fair value of the Company's oilfield reporting unit was less than the carrying value of the net assets of the reporting unit. In estimating the fair value of the oilfield reporting unit, the Company relied solely on a discounted cash flow model income approach. This was due to the Company's belief that the reporting unit's EBITDA, a key input under the market approach, was not representative and consistent with the reporting unit's historical performance and long-term outlook and, therefore, was not consistent with assumptions that a market participant would use in determining the fair value of the reporting unit. To measure the amount of the goodwill impairment, the Company allocated the estimated fair value of the reporting unit to the reporting unit's assets and liabilities. As a result of this allocation, the Company estimated that the implied fair value of the oilfield reporting unit's goodwill was $0. As such, the entire oilfield reporting unit's goodwill balance of $13 was impaired during the third quarter of 2017, and the Company recognized a goodwill impairment charge of $13 in its Epoxy, Phenolic and Coating Resins segment, which is included in "Asset impairments" in the Consolidated Statements of Operations. Significant unobservable inputs in the discounted cash flow analysis included projected long-term future cash flows, projected growth rates and discount rates associated with this reporting unit. Future projected long-term cash flows and growth rates were derived from models based upon forecasts prepared by the Company's management. These projected cash flows were discounted using a rate of 13.5%.

As of October 1, 2018 and 2017, the estimated fair value of each of our remaining reporting units was deemed to be substantially in excess of the carrying amount of assets and liabilities assigned to each unit. A 20% decrease in the EBITDA multiple or a 20% increase in the interest rate used to calculate the discounted cash flows would not result in any of our remaining reporting units failing the step one goodwill impairment test.

**Long-Lived Assets**

As events warrant, we evaluate the recoverability of long-lived assets, other than goodwill and other indefinite-lived intangibles, by assessing whether the carrying value can be recovered over their remaining useful lives through the expected future undiscounted operating cash flows of the underlying business. Impairment indicators include, but are not limited to, a significant decrease in the market price of a long-lived asset; a significant adverse change in the manner in which the asset is being used or in its physical condition; a significant adverse change in legal factors or the business climate that could affect the value of a long-lived asset; an accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset; current period operating or cash flow losses combined with a history of operating or cash flow losses associated with the use of the asset; or a current expectation that it is more likely than not that a long-lived asset will be sold or otherwise disposed of significantly before the end of its previously estimated useful life. As a result, future decisions to change our manufacturing process, exit certain businesses, reduce excess capacity, temporarily idle facilities and close facilities could result in material impairment charges. Long-lived assets are grouped together at the lowest level for which identifiable cash flows are largely independent of cash flows of other groups of long-lived assets. Any impairment loss that may be required is determined by comparing the carrying value of the assets to their estimated fair value. We do not have any indefinite-lived intangible assets, other than goodwill.

**Recently Issued Accounting Standards**

See Note 3 in Item 8 of Part II of this Annual Report on Form 10-K for a detailed description of recently issued accounting pronouncements.

**ITEM 7A - QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

We are exposed to market risk, including changes in currency exchange rates, interest rates and certain commodity prices. To manage the volatility related to these exposures we use various financial instruments, including some derivatives, to help us hedge our foreign currency exchange risk and interest rate risk. We also use raw material purchasing contracts and pricing contracts with our customers to help mitigate commodity price risks. These contracts generally do not contain minimum purchase requirements.

We do not use derivative instruments for trading or speculative purposes. We manage counterparty credit risk by entering into derivative instruments only with financial institutions with investment-grade ratings.

***Foreign Exchange Risk***

Our international operations accounted for 56% and 58% of our sales in 2018 and 2017, respectively. As a result, we have significant exposure to foreign exchange risk on transactions that can potentially be denominated in many foreign currencies. These transactions include foreign currency denominated imports and exports of raw materials and finished goods (both intercompany and third party) and loan repayments. The functional currency of our operating subsidiaries is the related local currency.

We reduce foreign currency cash flow exposure from exchange rate fluctuations where economically feasible by hedging firmly committed foreign currency transactions. Our use of forward contracts is designed to protect our cash flows against unfavorable movements in exchange rates, to the extent of the amount that is under contract. We do not attempt to hedge foreign currency exposure in a manner that would entirely eliminate the effect of changes in foreign currency exchange rates on net income and cash flow. We do not speculate in foreign currency nor do we hedge the foreign currency translation of our international businesses to the U.S. dollar for purposes of consolidating our financial results, or other foreign currency net asset or liability positions.

We are party to various foreign exchange rate swaps in Brazil in order to reduce the foreign currency risk associated with certain assets and liabilities of our Brazilian subsidiary that are denominated in U.S. dollars. The counter-parties to the foreign exchange rate swap agreements are financial institutions with investment grade ratings. We do not apply hedge accounting to these derivative instruments.

Our foreign exchange risk is also mitigated because we operate in many foreign countries, which reduces the concentration of risk in any one currency. In addition, our foreign operations have limited imports and exports, which reduces the potential impact of foreign currency exchange rate fluctuations.

A 5% strengthening of the U.S. dollar against the primary currencies in which we conduct our non-U.S. operations in 2018 would generate an approximate $107 negative impact to our estimated net sales. Conversely, a 5% weakening of the U.S. dollar against the same currencies would benefit our estimated net sales by an equal amount.

***Interest Rate Risk***

The interest rates on approximately 97% of our outstanding debt are fixed. Assuming the amount of our variable debt remains the same, an increase of 1% in the interest rates on our variable rate debt would increase our 2019 estimated debt service requirements by approximately $3.

Following is a summary of our outstanding debt as of December 31, 2018 and 2017 (see Note 8 in Item 8 of Part II of this Annual Report on Form 10-K for additional information on our debt). The fair value of our publicly held debt is based on the price at which the bonds are traded or quoted at December 31, 2018 and 2017. All other debt fair values are based on other similar financial instruments, or based upon interest rates that are currently available to us for the issuance of debt with similar terms and maturities.

| | 2018 | | | 2017 | | |
|---|---|---|---|---|---|---|
| **Year** | **Debt Maturities** | **Weighted Average Interest Rate** | **Fair Value** | **Debt Maturities** | **Weighted Average Interest Rate** | **Fair Value** |
| 2018 | | | | $ 125 | 7.5% | $ 125 |
| 2019 | $ 3,716 | 8.2% | $ 2,646 | 11 | 7.5% | 10 |
| 2020 | 49 | 6.7% | 49 | 2,534 | 8.2% | 2,206 |
| 2021 | 11 | 10.1% | 11 | 83 | 10.6% | 61 |
| 2022 | 24 | 10.1% | 24 | 805 | 10.3% | 725 |
| 2023 | 8 | 10.1% | 8 | 189 | 7.2% | 127 |
| 2024 and beyond | 7 | 10.1% | 7 | 1 | 10.8% | 1 |
| | $ 3,815 | | $ 2,745 | $ 3,748 | | $ 3,255 |

We do not use derivative financial instruments in our investment portfolios. Our cash equivalent investments and short-term investments are made in instruments that meet the credit quality standards that are established in our investment policies, which also limits the exposure to any one investment. At December 31, 2018 and 2017, we had $31 and $9, respectively, invested at average rates of 4.1% and 5.3%, respectively, primarily in interest-bearing time deposits. Due to the short maturity of our cash equivalents, the carrying value of these investments approximates fair value. Our short-term investments are recorded at cost which approximates fair value. Our interest rate risk is not significant; a 1% increase or decrease in interest rates on invested cash would not have had a material effect on our net income or cash flows for the years ended December 31, 2018 and 2017.

***Commodity Risk***

We are exposed to price risks on raw material purchases, most significantly with phenol, methanol, urea, acetone, propylene and chlorine. For our commodity raw materials, we have purchase contracts that have periodic price adjustment provisions. Commitments with certain suppliers, including our phenol and urea suppliers, provide up to 100% of our estimated requirements but also provide us with the flexibility to purchase a certain portion of our needs in the spot market, when it is favorable to us. We rely on long-term agreements with key suppliers for most of our raw materials. The loss of a key source of supply or a delay in shipments could have an adverse effect on our business. Should any of our suppliers fail to deliver or should any key long-term supply contracts be cancelled, we would be forced to purchase raw materials in the open market, and no assurances can be given that we would be able to make these purchases or make them at prices that would allow us to remain competitive. Our largest supplier provided approximately 10% of our raw material purchases in 2018, and we could incur significant time and expense if we had to replace this supplier. In addition, several feedstocks at various facilities are transported through a pipeline from one supplier. If we were unable to receive these feedstocks through these pipeline arrangements, we may not be able to obtain them from other suppliers at competitive prices or in a timely manner. See the discussion about the risk factor on raw materials in Item 1A of Part I of this Annual Report on Form 10-K.

Natural gas is essential in our manufacturing processes, and its cost can vary widely and unpredictably. To help control our natural gas costs, we hedge a portion of our natural gas purchases for North America by entering into futures contracts for natural gas. These contracts are settled for cash each month based on the closing market price on the last day that the contract trades on the New York Mercantile Exchange. We also enter into fixed price forward contracts for the purchase of electricity at certain of our manufacturing plants to offset the risk associated with increases in the prices of the underlying commodities.

We recognize gains and losses on these contracts each month as gas and electricity is used. Our future commitments are marked-to-market on a quarterly basis. We have not applied hedge accounting to these contracts.

Our commodity risk is moderated through our selected use of customer contracts with selling price provisions that are indexed to publicly available indices for the relevant commodity raw materials.

**ITEM 8 - FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

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**HEXION INC.**
**CONSOLIDATED BALANCE SHEETS**

| (In millions, except share data) | December 31, 2018 | December 31, 2017 |
|---|---|---|
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents (including restricted cash of $15 and $18, respectively) | $ 128 | $ 115 |
| Accounts receivable (net of allowance for doubtful accounts of $16 and $19, respectively) | 412 | 462 |
| Inventories: | | |
| Finished and in-process goods | 240 | 221 |
| Raw materials and supplies | 94 | 92 |
| Current assets held for sale (see Note 12) | — | 6 |
| Other current assets | 57 | 44 |
| Total current assets | 931 | 940 |
| Investments in unconsolidated entities | 19 | 20 |
| Deferred income taxes (see Note 13) | — | 8 |
| Long-term assets held for sale (see Note 12) | — | 2 |
| Other long-term assets | 34 | 49 |
| Property and equipment: | | |
| Land | 89 | 84 |
| Buildings | 285 | 291 |
| Machinery and equipment | 2,293 | 2,327 |
| | 2,667 | 2,702 |
| Less accumulated depreciation | (1,826) | (1,778) |
| | 841 | 924 |
| Goodwill (see Note 6) | 109 | 112 |
| Other intangible assets, net (see Note 6) | 27 | 42 |
| Total assets | $ 1,961 | $ 2,097 |
| **Liabilities and Deficit** | | |
| Current liabilities: | | |
| Accounts payable | $ 384 | $ 402 |
| Debt payable within one year (see Note 8) | 3,716 | 125 |
| Interest payable | 82 | 82 |
| Income taxes payable | 5 | 12 |
| Accrued payroll and incentive compensation | 52 | 47 |
| Current liabilities associated with assets held for sale (see Note 12) | — | 2 |
| Other current liabilities | 106 | 135 |
| Total current liabilities | 4,345 | 805 |
| Long-term liabilities: | | |
| Long-term debt (see Note 8) | 99 | 3,584 |
| Long-term pension and postretirement benefit obligations (see Note 10) | 221 | 262 |
| Deferred income taxes (see Note 13) | 15 | 11 |
| Other long-term liabilities | 195 | 177 |
| Total liabilities | 4,875 | 4,839 |
| Commitments and contingencies (see Notes 8 and 9) | | |
| **Deficit** | | |
| Common stock—$0.01 par value; 300,000,000 shares authorized, 170,605,906 issued and 82,556,847 outstanding at December 31, 2018 and 2017 | 1 | 1 |
| Paid-in capital | 526 | 526 |
| Treasury stock, at cost—88,049,059 shares | (296) | (296) |
| Accumulated other comprehensive loss | (18) | (8) |
| Accumulated deficit | (3,125) | (2,964) |
| Total Hexion Inc. shareholders' deficit | (2,912) | (2,741) |
| Noncontrolling interest | (2) | (1) |
| Total deficit | (2,914) | (2,742) |
| Total liabilities and deficit | $ 1,961 | $ 2,097 |

See Notes to Consolidated Financial Statements

**HEXION INC.**
**CONSOLIDATED STATEMENTS OF OPERATIONS**

| | Year Ended December 31, | | |
|---|---|---|---|
| (In millions) | 2018 | 2017 | 2016 |
| Net sales | $ 3,797 | $ 3,591 | $ 3,438 |
| Cost of sales | 3,226 | 3,088 | 3,020 |
| Gross profit | 571 | 503 | 418 |
| Selling, general and administrative expense | 295 | 321 | 318 |
| Gain on dispositions (see Note 12) | (44) | — | (240) |
| Asset impairments (see Note 3) | 28 | 13 | — |
| Business realignment costs (see Note 4) | 29 | 52 | 55 |
| Other operating expense, net | 36 | 17 | 13 |
| Operating income | 227 | 100 | 272 |
| Interest expense, net | 365 | 329 | 310 |
| Loss (gain) on extinguishment of debt | — | 3 | (48) |
| Other non-operating (income) expense, net | (12) | (12) | 21 |
| Loss before income tax and earnings from unconsolidated entities | (126) | (220) | (11) |
| Income tax expense (see Note 13) | 40 | 18 | 38 |
| Loss before earnings from unconsolidated entities | (166) | (238) | (49) |
| Earnings from unconsolidated entities, net of taxes | 3 | 4 | 11 |
| Net loss | (163) | (234) | (38) |
| Net loss attributable to noncontrolling interest | 1 | — | — |
| Net loss attributable to Hexion Inc. | $ (162) | $ (234) | $ (38) |

See Notes to Consolidated Financial Statements

**HEXION INC.**
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS**

| (In millions) | Year Ended December 31, 2018 | 2017 | 2016 |
|---|---|---|---|
| Net loss | $ (163) | $ (234) | $ (38) |
| Other comprehensive (loss) income, net of tax: | | | |
| Foreign currency translation adjustments | (8) | 33 | (23) |
| Loss recognized from pension and postretirement benefits | (2) | (2) | (1) |
| Other comprehensive (loss) income | (10) | 31 | (24) |
| Comprehensive loss | (173) | (203) | (62) |
| Comprehensive loss attributable to noncontrolling interest | 1 | — | — |
| Comprehensive loss attributable to Hexion Inc. | $ (172) | $ (203) | $ (62) |

See Notes to Consolidated Financial Statements

**HEXION INC.**
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

| (In millions) | Year Ended December 31, 2018 | 2017 | 2016 |
|---|---|---|---|
| **Cash flows used in operating activities** | | | |
| Net loss | $ (163) | $ (234) | $ (38) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | | |
| Depreciation and amortization | 113 | 115 | 131 |
| Non-cash asset impairments and accelerated depreciation | 32 | 27 | 129 |
| Deferred tax expense (benefit) | 12 | (3) | 2 |
| Gain on dispositions (see Note 12) | (44) | — | (240) |
| Loss (gain) on sale of assets | 6 | (1) | 7 |
| Amortization of deferred financing fees | 49 | 16 | 15 |
| Loss (gain) on extinguishment of debt | — | 3 | (48) |
| Unrealized foreign currency losses (gains) | 2 | 3 | (52) |
| Unrealized (gains) losses on pension and postretirement benefit plan liabilities | (13) | (4) | 34 |
| Other non-cash adjustments | (2) | (5) | 3 |
| Net change in assets and liabilities: | | | |
| Accounts receivable | 24 | (50) | (1) |
| Inventories | (31) | (10) | (8) |
| Accounts payable | (1) | 19 | 27 |
| Income taxes payable | 8 | 9 | 17 |
| Other assets, current and non-current | (15) | 1 | (22) |
| Other liabilities, current and non-current | — | (39) | 24 |
| Net cash used in operating activities | (23) | (153) | (20) |
| **Cash flows (used in) provided by investing activities** | | | |
| Capital expenditures | (90) | (117) | (140) |
| Capitalized interest | — | (1) | (1) |
| Proceeds from dispositions, net | 49 | — | 281 |
| Cash received on buyer’s note | — | — | 75 |
| Investment in affiliates | — | — | (1) |
| Proceeds from sale of assets, net | 1 | 8 | 5 |
| Net cash (used in) provided by investing activities | (40) | (110) | 219 |
| **Cash flows provided by (used in) financing activities** | | | |
| Net short-term debt borrowings (repayments) | 10 | 21 | (22) |
| Borrowings of long-term debt | 540 | 1,429 | 644 |
| Repayments of long-term debt | (468) | (1,251) | (856) |
| Long-term debt and credit facility financing fees | (1) | (25) | (1) |
| Net cash provided by (used in) financing activities | 81 | 174 | (235) |
| Effect of exchange rates on cash and cash equivalents | (5) | 8 | (4) |
| Increase (decrease) in cash and cash equivalents | 13 | (81) | (40) |
| Cash, cash equivalents and restricted cash at beginning of year | 115 | 196 | 236 |
| Cash, cash equivalents and restricted cash at end of year | $ 128 | $ 115 | $ 196 |
| **Supplemental disclosures of cash flow information** | | | |
| Cash paid for: | | | |
| Interest, net | $ 318 | $ 302 | $ 306 |
| Income taxes, net of cash refunds | 17 | 13 | 24 |
| Non-cash investing activities: | | | |
| Acceptance of buyer’s note (see Note 12) | — | — | 75 |

See Notes to Consolidated Financial Statements

**HEXION INC.**
**CONSOLIDATED STATEMENTS OF DEFICIT**

| (In millions) | Common Stock | Paid-in Capital | Treasury Stock | Accumulated Other Comprehensive Income (Loss) | Accumulated Deficit | Total Hexion Inc. Deficit | Non-controlling Interest | Total |
|---|---|---|---|---|---|---|---|---|
| Balance at December 31, 2015 | $ 1 | $ 526 | $ (296) | $ (15) | $ (2,692) | $ (2,476) | $ (1) | $ (2,477) |
| Net loss | — | — | — | — | (38) | (38) | — | (38) |
| Other comprehensive loss | — | — | — | (24) | — | (24) | — | (24) |
| Balance at December 31, 2016 | 1 | 526 | (296) | (39) | (2,730) | (2,538) | (1) | (2,539) |
| Net loss | — | — | — | — | (234) | (234) | — | (234) |
| Other comprehensive income | — | — | — | 31 | — | 31 | — | 31 |
| Balance at December 31, 2017 | 1 | 526 | (296) | (8) | (2,964) | (2,741) | (1) | (2,742) |
| Net loss | — | — | — | — | (162) | (162) | (1) | (163) |
| Other comprehensive loss | — | — | — | (10) | — | (10) | — | (10) |
| Impact of change in accounting policy | — | — | — | — | 1 | 1 | — | 1 |
| Balance at December 31, 2018 | $ 1 | $ 526 | $ (296) | $ (18) | $ (3,125) | $ (2,912) | $ (2) | $ (2,914) |

See Notes to Consolidated Financial Statements

**HEXION INC.**

**Notes to Consolidated Financial Statements**
**(In millions, except share data)**

## 1. Background and Basis of Presentation

Based in Columbus, Ohio, Hexion Inc. (“Hexion” or the “Company”), serves global industrial markets through a broad range of thermoset technologies, specialty products and technical support for customers in a diverse range of applications and industries. At December 31, 2018, the Company had 47 production and manufacturing facilities, with 21 located in the United States. The Company’s business is organized based on the products offered and the markets served. At December 31, 2018, the Company had three reportable segments: Epoxy, Phenolic and Coating Resins; Forest Products Resins; and Corporate and Other.

The Company’s direct parent is Hexion LLC, a holding company and wholly owned subsidiary of Hexion Holdings LLC (“Hexion Holdings”), the ultimate parent entity of Hexion. Hexion Holdings is controlled by investment funds managed by affiliates of Apollo Management Holdings, L.P. (together with Apollo Global Management, LLC and its subsidiaries, “Apollo”).

As of December 31, 2018, the Company has elected not to apply push-down accounting of its parent’s basis as a result of the prior combination of Hexion and Momentive Performance Materials Inc. (“MPM”), a former subsidiary of Hexion Holdings.

### Going Concern

The Company has concluded its financial condition and its projected operating results, the defaults under its debt agreements, and the risks and uncertainties surrounding its Chapter 11 proceedings raise substantial doubt as to the Company’s ability to continue as a going concern.

The Company has $1.9 billion of First Priority Senior Secured Notes maturing in April 2020. If 91 days prior to the scheduled maturity of these notes, more than $50 aggregate principal amount is outstanding, the Company’s senior secured asset-based revolving loan facility (the "ABL Facility"), would have accelerated and become immediately due and payable. Additionally, the Company has $0.6 billion of Second Priority Notes maturing in November 2020. Based on the Company’s current liquidity position, the acceleration of the ABL Facility and the Company’s Chapter 11 Cases (as discussed in Note 2), the Company’s current projections of operating results, cash flows and liquidity over the next twelve months are not expected to be sufficient to fund its most significant cash obligations necessary to continue as a going concern.

The accompanying Consolidated Financial Statements included in this Annual Report on Form 10-K have been prepared assuming that the Company will continue as a going concern basis of accounting, which contemplates continuity of operations, realization of assets and satisfaction of liabilities and commitments in the normal course of business. The Company has made certain adjustments to the Consolidated Financial Statements including the reclassification of certain outstanding debt to current liabilities and the write-off of unamortized deferred financing costs related to such debt (see Note 3). To address the risk of not being able to continue as a going concern, the Company has undertaken steps to restructure its balance sheet (see Note 2).

## 2. Chapter 11 Bankruptcy Filing (Subsequent Event)

***Bankruptcy Petitions***

On April 1, 2019 (the “Petition Date”), the Company, Hexion Holdings LLC, Hexion LLC and certain of the Company’s subsidiaries (collectively, the “Debtors”), filed voluntary petitions (the “Bankruptcy Petitions”) for reorganization under Chapter 11 (“Chapter 11”) of the U.S. Bankruptcy Code (the “Bankruptcy Code”) in the United States Bankruptcy Court for the District of Delaware, (the "Bankruptcy Court"). The Chapter 11 proceedings are being jointly administered under the caption *In re Hexion Holdings LLC, No. 19-10684* (the “Chapter 11 Cases”). The Debtors will continue to operate their businesses as “debtors-in-possession” under the jurisdiction of the Bankruptcy Court and in accordance with the applicable provisions of the Bankruptcy Code and orders of the Bankruptcy Court.

***Operation and Implications of the Bankruptcy Filing***

The filing of the Bankruptcy Petitions constitutes an event of default that accelerated the Company’s obligations under the following debt instruments (the “Debt Instruments”):

- Amended and Restated Asset-Based Revolving Credit Agreement, dated as of December 21, 2016, by and among Hexion LLC, the Company, certain subsidiaries of the Company, the lenders party thereto and the other parties thereto with respect to approximately $297 of borrowings outstanding, plus accrued and unpaid interest thereon;

- Indenture, dated as of December 15, 1987, by and between the Company and The Bank of New York, as trustee, with respect to an aggregate principal amount of approximately $74 of 9.20% Debentures due 2021 and approximately $189 of 7.875% Debentures due 2023, in each case, plus accrued and unpaid interest thereon;

- Indenture, dated as of November 5, 2010, by and among the Company, as successor issuer, Hexion Nova Scotia Finance, ULC, a Nova Scotia unlimited liability company, as the Nova Scotia issuer, certain subsidiaries of the Company and Wilmington Trust Company, as trustee, with respect to an aggregate principal amount of approximately $574 of 9.0% Second-Priority Senior Secured Notes due 2020 plus accrued and unpaid interest thereon;

- Indenture, dated as of March 14, 2012, by and among the Company, as successor issuer, certain subsidiaries of the Company and Wilmington Trust, National Association, as trustee, with respect to an aggregate principal amount of approximately $1,550 of 6.625% First-Priority Senior Secured Notes due 2020 plus accrued and unpaid interest thereon;

- Indenture, dated as of April 15, 2015, by and among the Company, certain subsidiaries of the Company and Wilmington Trust, National Association, as trustee, with respect to an aggregate principal amount of approximately $315 of 10.00% First-Priority Senior Secured Notes due 2020 plus accrued and unpaid interest thereon;

- Indenture, dated as of February 8, 2017, by and among the Company, as successor issuer, certain subsidiaries of the Company and Wilmington Trust, National Association, as trustee, with respect to an aggregate principal amount of approximately $560 of 10.375% First-Priority Senior Secured Notes due 2022 plus accrued and unpaid interest thereon; and

- The 1.5 Lien Indenture, with respect to an aggregate principal amount of approximately $225 of 13.75% Senior Secured Notes due 2022 plus accrued and unpaid interest thereon.

The Debt Instruments provide that as a result of the Bankruptcy Petitions the principal and interest due thereunder shall be immediately due and payable. Any efforts to enforce such payment obligations under the Debt Instruments are automatically stayed as a result of the Bankruptcy Petitions and the creditors' rights of enforcement in respect of the Debt Instruments are subject to the applicable provisions of the Bankruptcy Code.

The accompanying Consolidated Financial Statements contemplate the realization of assets and the satisfaction of liabilities in the normal course of business. The Company's ability to continue as a going concern is contingent upon the Debtors ability to comply with the financial and other covenants contained in the DIP ABL Facility described below, the development of, and the Bankruptcy Court's approval of, a Chapter 11 plan and the Debtors ability to successfully implement a restructuring plan and obtain new financing, among other factors. Such conditions raise substantial doubt as to the Company's ability to continue as a going concern.

Subsequent to the Petition Date, the Company received approval from the Bankruptcy Court to pay or otherwise honor certain pre-petition obligations generally designed to stabilize the Company's operations, such as certain employee wages, salaries and benefits, certain taxes and fees, customer obligations, obligations to logistics providers and pre-petition amounts owed to certain critical vendors. The Company also expects to honor payments to vendors and other providers in the ordinary course of business for goods and services received after the Petition Date. The Company has retained, subject to Court approval, legal and financial professionals to advise the Company in connection with the Chapter 11 Cases and certain other professionals to provide services and advice in the ordinary course of business. From time to time, the Company may seek Court approval to retain additional professionals as deemed necessary.

***Debtor-in-Possession Financing***

**Credit Facilities**

In connection with the filing of the Bankruptcy Petitions, on April 3, 2019, Hexion LLC ("Holdings"), the Company and certain of its subsidiaries (collectively, the "Borrowers"), the lenders party thereto, JPMorgan Chase Bank, N.A. ("JPMorgan"), as administrative agent, and JPMorgan, as collateral agent (the "DIP ABL Collateral Agent"), entered into an amended and restated senior secured debtor-in-possession asset-based revolving credit agreement (the "DIP ABL Facility"), which amended and restated the Company's existing asset-based revolving credit agreement (the "ABL Facility") among Holdings, the Company, the Borrowers, the lenders party thereto, JPMorgan, as administrative agent, and JPMorgan, as collateral agent. The DIP ABL Facility is currently being syndicated and certain terms, including pricing, are subject to change.

The DIP ABL Facility has an 18-month term unless, prior to the end of such 18 month period, a plan of reorganization filed in the Chapter 11 Cases is confirmed pursuant to an order entered by the Bankruptcy Court, in which case, the DIP ABL Facility will terminate on the date of such confirmation. Availability under the ABL Facility is $350, which is limited to $250 prior to the date that the Bankruptcy Court issues a final order approving the DIP ABL Facility. The DIP ABL Facility is also subject to a borrowing base that is based on a specified percentage of eligible accounts receivable and inventory and, in certain foreign jurisdictions, machinery and equipment.

The DIP ABL Facility bears interest based on, at the Company's option, an adjusted LIBOR rate plus an applicable margin of 2.00% to 2.50% based on excess availability or an alternate base rate plus an applicable margin of 1.00% to 1.50% based on excess availability. In addition to paying interest on outstanding principal under the DIP ABL Facility, the Company will be required to pay a commitment fee to the lenders in respect of the unutilized commitments at an initial rate equal to 0.50% per annum, subject to adjustment depending on the usage.

The DIP ABL Facility has a minimum liquidity covenant of $35 tested at the close of each business day.

The DIP ABL Facility is secured by, among other things, first-priority liens on most of the inventory and accounts receivable and related assets of the Company, its domestic subsidiaries and certain of its foreign subsidiaries, and, in the case of certain foreign subsidiaries, machinery and equipment (the "DIP ABL Priority Collateral"), and second-priority liens on certain collateral that generally includes most of the Company's, its domestic subsidiaries' and certain of its foreign subsidiaries' assets other than DIP ABL Priority Collateral (the "DIP Term Loan Priority Collateral"), in each case subject to certain exceptions and permitted liens.

**DIP Term Loan Facility**

In connection with the filing of the Bankruptcy Petitions, on April 3, 2019, the Company entered into a New York law-governed senior secured term loan agreement (the "DIP Term Loan Facility") among Holdings, the Company, Hexion International Holdings B.V. (the "Dutch Borrower"), the lenders party thereto and JPMorgan, as administrative agent and collateral agent (the "Term Loan Agent"). The proceeds of the DIP Term Loan Facility were loaned by the Term Borrower to the Company pursuant to an intercompany loan agreement (the "Intercompany Loan Agreement") and were used in part to repay in full the outstanding obligations under the ABL Facility. The DIP Term Loan Facility is currently being syndicated and certain terms, including pricing and tenor, are subject to change.

The DIP Term Loan Facility has an 18-month term unless, prior to the end of such 18 month period, a plan of reorganization filed in the Chapter 11 Cases is confirmed pursuant to an order entered by the Bankruptcy Court, in which case, the DIP Term Loan Facility will terminate on the date of such confirmation. The amount committed and made available under the DIP Term Loan Facility is $350. The DIP Term Loan Facility bears interest based on, at the Company's option, an adjusted LIBOR rate plus an applicable margin yet to be determined or an alternate base rate plus an applicable margin yet to be determined.

The DIP Term Loan Facility has a minimum liquidity covenant of $35 tested at the close of each business day.

The security arrangements for the DIP Term Loan Facility include a Dutch-law governed pledge over the equity of the Dutch Borrower's direct subsidiary Hexion Holding B.V., a Dutch-law governed pledge over the Dutch Borrower's rights and interest under the Intercompany Loan Agreement and first-priority liens on the unencumbered equity interests directly owned by, and all other unencumbered tangible and intangible property that is neither Notes Priority Collateral nor ABL Priority Collateral (as such terms are defined in the Company's existing ABL Intercreditor Agreement, dated as of March 28, 2013, by and among JPMorgan, as the ABL facility collateral agent, Wilmington Trust, National Association, as applicable first-lien agent and first-lien collateral agent, the Company and its subsidiaries party thereto) of, the Debtors, in each case subject to certain exceptions and permitted liens.

***Restructuring Support Agreement***

On April 1, 2019, the Debtors entered into a Restructuring Support Agreement (the "Support Agreement") with equityholders that beneficially own more than a majority of the Company's outstanding equity (the "Consenting Sponsors") and creditors holding more than a majority of the aggregate outstanding principal amount of each of the Company's 1L Notes, 1.5L Notes, 2L Notes and Unsecured Notes (each as defined in the Support Agreement) (the "Consenting Creditors" and, together with the Consenting Sponsors, the "Consenting Parties"). The Support Agreement incorporates the economic terms regarding a restructuring of the Debtors agreed to by the parties reflected in a term sheet attached as Exhibit A to the Support Agreement. The restructuring transactions will be effectuated through a plan of reorganization (the "Plan") to be proposed by the Debtors.

Pursuant to the Support Agreement, each of the Debtors and the Consenting Parties has made certain customary commitments to each other. The Debtors have agreed to, among other things, use commercially reasonable efforts to make all requisite filings with the Bankruptcy Court (as defined below) and continue to involve and update the Consenting Creditors' representatives in the bankruptcy process; respond to diligence requests from certain of the Consenting Creditors' representatives; and satisfy certain other covenants set forth in the Support Agreement. The Consenting Parties have committed to support and vote for the Plan and have agreed to use commercially reasonable efforts to take, or refrain from taking, certain actions in furtherance of such support.

The Support Agreement contains milestones for the progress of the Chapter 11 Cases (the "Milestones"), which include the dates by which the Debtors are required to, among other things, obtain certain orders of the Bankruptcy Court and consummate the Debtors' emergence from bankruptcy. Among other dates set forth in the Support Agreement, the agreement contemplates that the Bankruptcy Court shall have entered the Disclosure Statement Order (as defined therein) no later than 90 days after April 1, 2019 and that the Company shall have emerged from bankruptcy no later than 150 days after April 1, 2019, both of which are subject to an extension of up to the number of days (not to exceed 35 days) by which the Company's deadline to file its schedules of assets and liabilities and statements of financial affairs is extended beyond 45 days, in the event the Company receives such an extension from the Bankruptcy Court.

Each of the parties to the Support Agreement may terminate the agreement (and thereby their support for the Plan) under certain limited circumstances. Any Debtor may terminate the Support Agreement upon, among other circumstances:

- its board of directors, after consultation with legal counsel, determining in good faith that performance under the Support Agreement would be inconsistent with its fiduciary duties;
- the failure of Consenting Creditors to hold, in the aggregate, at least 66 2/3% of the aggregate principal amount outstanding of each of the (a) 1L Notes, (b) 1.5L Notes, and (c) 2L Notes and the Unsecured Notes, in each case, at any time after April 5, 2019; and
- certain actions by the Bankruptcy Court, including dismissing the Chapter 11 Cases or converting the Chapter 11 Cases into cases under chapter 7 of the Bankruptcy Code.

The Consenting Parties also have specified termination rights, including certain termination rights similar to the Debtors. The Consenting Creditors' termination rights may be exercised by the Required Consenting First Lien Noteholders, the Required Consenting 1.5L Noteholders or the Required Consenting Crossholder Noteholders (each as defined in the Support Agreement). Additionally, such parties may terminate the Support Agreement upon any acceleration or termination of the Credit Facilities or if any of the Milestones have not been achieved, extended, or waived within three business days after such Milestone.

The Support Agreement is subject to approval by the Bankruptcy Court, among other conditions. Accordingly, no assurance can be given that the transactions described therein will be consummated.

***Significant Bankruptcy Court Actions***

Following the Commencement Date, the Bankruptcy Court entered certain interim and final orders facilitating the Debtors' operational transition into Chapter 11. These orders authorized the Debtors to, among other things, pay certain pre-petition employee expenses and benefits, use their existing cash management system, maintain and administer customer programs, pay certain critical and foreign vendors, honor insurance-related obligations, and pay certain pre-petition taxes and related fees on a final basis, and approved the Credit Facilities on an interim basis. The Bankruptcy Court will hold a hearing to consider approval of the Credit Facilities on a final basis on May 1, 2019.

**3. Summary of Significant Accounting Policies**

**Principles of Consolidation—**The Consolidated Financial Statements include the accounts of the Company and its majority-owned subsidiaries in which minority shareholders hold no substantive participating rights. Intercompany accounts and transactions are eliminated in consolidation. The Company's share of the net earnings of 20% to 50% owned companies, for which it has the ability to exercise significance influence over operating and financial policies (but not control), are included in "Earnings from unconsolidated entities, net of taxes" in the Consolidated Statements of Operations. Investments in the other companies are carried at cost.

The Company has recorded a noncontrolling interest for the equity interests in consolidated subsidiaries that are not 100% owned.

The Company's unconsolidated investments accounted for under the equity method of accounting include the following as of December 31, 2018:

- 49.99% interest in Momentive UV Coatings (Shanghai) Co., Ltd, a joint venture that manufactures UV-curable coatings and adhesives in China;
- 50% ownership interest in Hexion Shchekinoazot Holding B.V., a joint venture that manufactures forest products resins in Russia;
- 49% ownership interest in Sanwei Hexion Company Limited, a joint venture that manufactures versatic acid derivatives in China;
- 50% ownership interest in Hexion Australia Pty Ltd, a joint venture which provides urea formaldehyde resins and other products to industrial customers in western Australia; and
- 50% ownership interest in MicroBlend Columbia S.A.S, a joint venture that distributes custom point-of-sale paint mixing systems and paint bases to consumer retail stores in Latin America.

**Foreign Currency Translations and Transactions**—Assets and liabilities of foreign affiliates are translated at the exchange rates in effect at the balance sheet date. Income, expenses and cash flows are translated at average exchange rates during the year. The Company recognized transaction losses of $30, losses of $4 and gains of $10 for the years ended December 31, 2018, 2017, and 2016, respectively, which are included as a component of "Net loss." In addition, gains or losses related to the Company's intercompany loans payable and receivable denominated in a foreign currency other than the subsidiary's functional currency that are deemed to be permanently invested are remeasured to cumulative translation and recorded in "Accumulated other comprehensive loss" in the Consolidated Balance Sheets. The effect of translation is included in "Accumulated other comprehensive loss." As a result of the Company's going concern conclusion (see Note 1), as of December 31, 2018 the Company no longer asserts permanent investment on any of its intercompany loans payable and receivable, and therefore any future foreign currency gains and losses on these loans will be included as a component of "Net loss."

**Use of Estimates**—The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and also the disclosure of contingent assets and liabilities at the date of the financial statements. In addition, it requires management to make estimates and assumptions that affect the reported amounts of revenues and expenses during the reporting period. The most significant estimates that are included in the financial statements are environmental remediation liabilities, legal liabilities, deferred tax assets and liabilities and related valuation allowances, income tax accruals, pension and postretirement assets and liabilities, valuation allowances for accounts receivable and inventories, general insurance liabilities, asset impairments and fair values of assets acquired and liabilities assumed in business acquisitions. Actual results could differ from these estimates.

**Cash and Cash Equivalents**—The Company considers all highly liquid investments that are purchased with an original maturity of three months or less to be cash equivalents. At December 31, 2018 and 2017, the Company had interest-bearing time deposits and other cash equivalent investments of $31 and $9, respectively. The Company's restricted cash balances of $15 and $18 as of December 31, 2018 and 2017, respectively represent deposits to secure certain bank guarantees issued to third parties to guarantee potential obligations of the Company primarily related to the completion of tax audits and environmental liabilities. These balances will remain restricted as long as the underlying exposures exist and are included in the Consolidated Balance Sheets as a component of "Cash and cash equivalents." Following the adoption of ASU 2016-18: *Statement of Cash Flows (Topic 230) Restricted Cash*, the Company includes restricted cash in the cash and cash equivalents balance of the Consolidated Statements of Cash Flows.

The following table includes the impact of the adoption of ASU 2016-18 on the Consolidated Statements of Cash Flows for the years ended December 31, 2017 and 2016:

**Consolidated Statements of Cash Flows**

| | For the year ended December 31, 2017 | | |
|---|---|---|---|
| | **Previous Accounting Method** | **Effect of Accounting Change** | **As Reported** |
| **Cash flows used in investing activities** | | | |
| Change in restricted cash | $ 1 | $ (1) | $ — |
| Net cash used in investing activities | (109) | (1) | (110) |
| | | | |
| Effect of exchange rates on cash and cash equivalents | 6 | 2 | 8 |
| Change in cash and cash equivalents | (82) | 1 | (81) |
| Cash, cash equivalents and restricted cash at beginning of period | 179 | 17 | 196 |
| Cash, cash equivalents and restricted cash at end of period | $ 97 | $ 18 | $ 115 |

**Consolidated Statements of Cash Flows**

| | For the year ended December 31, 2016 | | |
|---|---|---|---|
| | **Previous Accounting Method** | **Effect of Accounting Change** | **As Reported** |
| **Cash flows used in investing activities** | | | |
| Change in restricted cash | $ (9) | $ 9 | $ — |
| Net cash used in investing activities | 210 | 9 | 219 |
| | | | |
| Effect of exchange rates on cash and cash equivalents | (4) | — | (4) |
| Change in cash and cash equivalents | (49) | 9 | (40) |
| Cash, cash equivalents and restricted cash at beginning of period | 228 | 8 | 236 |
| Cash, cash equivalents and restricted cash at end of period | $ 179 | $ 17 | $ 196 |

**Allowance for Doubtful Accounts**—The allowance for doubtful accounts is estimated using factors such as customer credit ratings and past collection history. Receivables are charged against the allowance for doubtful accounts when it is probable that the receivable will not be collected.

**Inventories**—Inventories are stated at lower of cost or net realizable value using the first-in, first-out method. Costs include direct material, direct labor and applicable manufacturing overheads, which are based on normal production capacity. Abnormal manufacturing costs are recognized as period costs and fixed manufacturing overheads are allocated based on normal production capacity. An allowance is provided for excess and obsolete inventories based on management's review of inventories on-hand compared to estimated future usage and sales. Inventories in the Consolidated Balance Sheets are presented net of an allowance for excess and obsolete inventory of $9 at both December 31, 2018 and 2017.

**Deferred Expenses**—Deferred debt financing costs are included in "Long-term debt" in the Consolidated Balance Sheets, with the exception of deferred financing costs related to revolving line of credit arrangements, which are included in "Other long-term assets" in the Consolidated Balance Sheets. These costs are amortized over the life of the related debt or credit facility using the effective interest method. Upon extinguishment of any debt, the related debt issuance costs are written off. At December 31, 2017, the Company's unamortized deferred financing costs included in "Other long-term assets" were $8, and unamortized deferred financing costs included in "Long-term debt" were $41.

During the year ended December 31, 2018, the Company wrote off unamortized deferred debt financing costs of $29 included in “Long-term debt” and $4 included in “Other long-term assets” as a result of the Company’s substantial doubt about its ability to continue as a going concern for the next twelve months (see Note 1) and the resulting reclassification of all outstanding debt related to the ABL Facility and the Senior Secured Notes and debentures to “Debt payable within one year’ in the Consolidated Balance Sheets (see Note 8). These write-offs are included in “Interest expense, net” in the Consolidated Statements of Operations.

**Property and Equipment**—Land, buildings and machinery and equipment are stated at cost less accumulated depreciation. Depreciation is recorded on a straight-line basis over the estimated useful lives of properties (the average estimated useful lives for buildings and machinery and equipment are 20 years and 15 years, respectively). Assets under capital leases are amortized over the lesser of their useful life or the lease term. Major renewals and betterments are capitalized. Maintenance, repairs, minor renewals and turnarounds (periodic maintenance and repairs to major units of manufacturing facilities) are expensed as incurred. When property and equipment is retired or disposed of, the asset and related depreciation are removed from the accounts and any gain or loss is reflected in operating income. The Company capitalizes interest costs that are incurred during the construction of property and equipment. Depreciation expense was $103, $103 and $119 for the years ended December 31, 2018, 2017, and 2016, respectively. Additionally, for the years ended December 31, 2018, 2017, and 2016, $4, $14, and $129, respectively, of accelerated depreciation was recorded as a result of shortening the estimated useful lives of certain long-lived assets related to planned facility rationalizations. Lastly, for the years ended December 31, 2018, 2017, and 2016, “Capitalized expenditures” in the Consolidated Statements of Cash Flows were increased by $5, increased by $2 and increased by $4, respectively, to reflect the change in invoiced but unpaid capital expenditures at each respective year-end as a non-cash investing activity.

**Capitalized Software**—The Company capitalizes certain costs, such as software coding, installation and testing, that are incurred to purchase or create and implement computer software for internal use. Amortization is recorded on the straight-line basis over the estimated useful lives, which range from 1 to 5 years.

**Goodwill and Intangibles**—The excess of purchase price over net tangible and identifiable intangible assets of businesses acquired is carried as “Goodwill” in the Consolidated Balance Sheets. Separately identifiable intangible assets that are used in the operations of the business (e.g., patents and technology, tradenames, customer lists and contracts) are recorded at cost (fair value at the time of acquisition) and reported as “Other intangible assets, net” in the Consolidated Balance Sheets. Costs to renew or extend the term of identifiable intangible assets are expensed as incurred. The Company does not amortize goodwill. Intangible assets with determinable lives are amortized on a straight-line basis over the shorter of the legal or useful life of the assets, which range from 1 to 30 years (see Note 6).

**Impairment**—The Company reviews property and equipment and all amortizable intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Recoverability is based on estimated undiscounted cash flows or other relevant observable measures. The Company tests goodwill for impairment annually, or when events or changes in circumstances indicate impairment may exist, by comparing the estimated fair value of each reporting unit with goodwill to its carrying value to determine if there is an indication that a potential impairment may exist.

***Long-Lived Assets and Amortizable Intangible Assets***

During the year ended December 31, 2018, the Company recorded long-lived asset impairments of $28, which are included in “Asset impairments” in the Consolidated Statements of Operations (see Note 4). There were no long-lived asset impairments recorded during the years ended December 31, 2017 and 2016.

***Goodwill***

The Company performs an annual assessment of qualitative factors to determine whether the existence of any events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than the carrying amount of the reporting unit’s net assets. If, after assessing all events and circumstances, the Company determines it is more likely than not that the fair value of a reporting unit is less than the carrying amount of the reporting unit’s net assets, the Company uses a probability weighted market and income approach to estimate the fair value of the reporting unit. The Company’s market approach is a comparable analysis technique commonly used in the investment banking and private equity industries based on the EBITDA (earnings before interest, income taxes, depreciation and amortization) multiple technique. Under this technique, estimated fair value is the result of a market-based EBITDA multiple that is applied to an appropriate historical EBITDA amount, adjusted for the additional fair value that would be assigned by a market participant obtaining control over the reporting unit. The Company’s income approach is a discounted cash flow model. If the carrying value of the reporting unit exceeds the estimated fair value, an impairment charge is recorded for the difference.

In 2017, the Company lowered its forecast of estimated earnings and cash flows for its oilfield business from those previously projected, and indefinitely idled a manufacturing facility within its oilfield business. This was due to the slower than previously assumed recovery in the oil and gas market. As of September 30, 2017, the estimated fair value of the Company's oilfield reporting unit was less than the carrying value of the net assets of the reporting unit. In estimating the fair value of the oilfield reporting unit, the Company relied solely on a discounted cash flow model income approach. This was due to the Company's belief that the reporting unit's EBITDA, a key input under the market approach, was not representative and consistent with the reporting unit's historical performance and long-term outlook and, therefore, was not consistent with assumptions that a market participant would use in determining the fair value of the reporting unit. When the fair value of the reporting unit was determined, an impairment charge was recognized for the amount by which the carrying amount of oilfield's net assets exceeded its fair value. As such, the entire oilfield reporting unit's goodwill balance of $13 was impaired during the third quarter of 2017, and the Company recognized a goodwill impairment charge of $13 in its Epoxy, Phenolic and Coating Resins segment, which is included in "Asset impairments" in the Consolidated Statements of Operations. Significant unobservable inputs in the discounted cash flow analysis included projected long-term future cash flows, projected growth rates and discount rates associated with this reporting unit. Future projected long-term cash flows and growth rates were derived from models based upon forecasts prepared by the Company's management. These projected cash flows were discounted using a rate of 13.5%.

As of October 1, 2018 and 2017, the estimated fair value of each of the Company's remaining reporting units was deemed to be in excess of the carrying amount of assets (including goodwill) and liabilities assigned to each reporting unit.

**Assets and Liabilities Held for Sale** - The assets and liabilities at December 31, 2017 related to the sale of the Company's Additive Technology Group business ("ATG"), which was completed in January 2018, were classified as "Current assets held for sale", "Long-term assets held for sale", and "Current liabilities associated with assets held for sale" within the Consolidated Balance Sheets. See Note 11 for more information.

**General Insurance**—The Company is generally insured for losses and liabilities for workers' compensation, physical damage to property, business interruption and comprehensive general, product and vehicle liability under high-deductible insurance policies. The Company records losses when they are probable and reasonably estimable and amortizes insurance premiums over the life of the respective insurance policies.

**Legal Claims and Costs**—The Company accrues for legal claims and costs in the period in which a claim is made or an event becomes known, if the amounts are probable and reasonably estimable. Each claim is assigned a range of potential liability and the most likely amount is accrued. If there is no amount in the range of potential liability that is most likely, the low end of the range is accrued. The amount accrued includes all costs associated with the claim, including settlements, assessments, judgments and fines. Legal fees are expensed as incurred (see Note 9).

**Environmental Matters**—Accruals for environmental matters are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated. Environmental accruals are reviewed on a quarterly basis and as events and developments warrant (see Note 9).

**Asset Retirement Obligations**—Asset retirement obligations are initially recorded at their estimated net present values in the period in which the obligation occurs, with a corresponding increase to the related long-lived asset. Over time, the liability is accreted to its settlement value and the capitalized cost is depreciated over the useful life of the related asset. When the liability is settled, a gain or loss is recognized for any difference between the settlement amount and the liability that was recorded.

**Revenue Recognition**—The Company follows the principles-based five step model to recognize revenue upon the transfer of promised goods or services to customers and in an amount that reflects the consideration for which the entity expects to be entitled in exchange for those goods or services. Revenue, net of estimated allowances and returns, is recognized when the Company has completed its performance obligations under a contract and control of the product is transferred to the customer. Substantially all revenue is recognized at the time shipment is made or upon delivery as risk and title to the product transfer to the customer. Sales, value add, and other taxes that are collected concurrently with revenue-producing activities are excluded from revenue. Contract terms for certain transactions, including sales made on a consignment basis, result in the transfer of control of the finished product to the customer prior to the point at which the Company has the right to invoice for the product. In these cases, timing of revenue recognition will differ from the timing of invoicing to customers and will result in the Company recording a contract asset. At December 31, 2018, a contract asset balance of $11 is recorded within "Other current assets" with a corresponding decrease of $9 recorded within "Finished and in-process goods" in the Consolidated Balance Sheet. Refer to Note 15 for additional discussion of the Company's net sales by reportable segment disaggregated by geographic region.

**Shipping and Handling**—Freight costs that are billed to customers are included in "Net sales" in the Consolidated Statements of Operations. Shipping costs are incurred to move the Company's products from production and storage facilities to the customer. Handling costs are incurred from the point the product is removed from inventory until it is provided to the shipper and generally include costs to store, move and prepare the products for shipment. Revenue from shipping and handling services is recognized when control of the product is transferred to the customer. Shipping and handling costs are recorded in "Cost of sales" in the Consolidated Statements of Operations.

**Research and Development Costs**—Funds are committed to research and development activities for technical improvement of products and processes that are expected to contribute to future earnings. All costs associated with research and development are charged to expense as incurred. Research and development and technical service expense was $53, $58 and $59 for the years ended December 31, 2018, 2017, and 2016, respectively, and is included in "Selling, general and administrative expense" in the Consolidated Statements of Operations.

**Business Realignment Costs**—The Company incurred “Business realignment costs” totaling $29, $52 and $55 for the years ended December 31, 2018, 2017, and 2016, respectively. For the years ended December 31, 2018 and 2017, these costs primarily included costs related to in-process cost reduction programs and certain in-process and recently completed facility rationalizations. For the year ended December 31, 2016, these costs primarily included costs related to the rationalization at our Norco, LA manufacturing facility and costs related to certain cost reduction programs.

**Pension and Other Non-Pension Postretirement Benefit Liabilities**—Pension and other non-pension postretirement benefit (“OPEB”) assumptions are significant inputs to the actuarial models that measure pension and OPEB benefit obligations and related effects on operations. Two assumptions, discount rate and expected return on assets, are important elements of plan expense and asset/liability measurement. The Company evaluates these critical assumptions at least annually on a plan and country-specific basis. The Company periodically evaluates other assumptions involving demographic factors, such as retirement age, mortality and turnover, and updates them to reflect the Company's experience and expectations for the future. Actual results in any given year will often differ from actuarial assumptions because of economic and other factors.

Accumulated and projected benefit obligations are measured as the present value of future cash payments. The Company discounts these cash payments using a split-rate interest approach. This approach uses multiple interest rates from market-observed forward yield curves which correspond to the estimated timing of the related benefit payments. Lower discount rates increase present values and subsequent-year pension expense; higher discount rates decrease present values and subsequent-year pension and OPEB expense.

To determine the expected long-term rate of return on pension plan assets, the Company considers current and expected asset allocations, as well as historical and expected returns on various categories of plan assets. In developing future return expectations for the principal benefit plans’ assets, the Company evaluates general market trends as well as key elements of asset class returns such as expected earnings growth, yields and spreads across a number of potential scenarios.

Upon the Company’s annual remeasurement of its pension and OPEB liabilities in the fourth quarter, or on an interim basis as triggering events warrant remeasurement, the Company immediately recognizes gains and losses as a mark-to-market (“MTM”) gain or loss through earnings. As such, the Company’s net periodic pension and OPEB expense consists of i) service cost, interest cost, expected return on plan assets, amortization of prior service cost/credits recognized on a quarterly basis and ii) MTM adjustments recognized annually in the fourth quarter upon remeasurement of pension and OPEB liabilities or when triggering events warrant remeasurement.

The MTM adjustments were a gain of $13, gain of $4 and a loss of $34 for the years ended December 31, 2018, 2017 and 2016, respectively, and are recognized in “Other non-operating (income) expense, net” in the Consolidated Statements of Operations.

**Income Taxes**—The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement carrying amounts and the tax bases of the assets and liabilities.

Deferred tax balances are adjusted to reflect tax rates, based on current tax laws, which will be in effect in the years in which temporary differences are expected to reverse. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized (see Note 13).

Unrecognized tax benefits are generated when there are differences between tax positions taken in a tax return and amounts recognized in the consolidated financial statements. Tax benefits are recognized in the consolidated financial statements when it is more likely than not that a tax position will be sustained upon examination. Tax benefits are measured as the largest amount of benefit that is greater than 50% likely of being realized upon settlement. The Company classifies interest and penalties as a component of tax expense.

The Company monitors changes in tax laws and reflects the impact of tax law changes in the period of enactment. See Note 13 for additional information on how the Company recorded the impacts of the U.S. tax reform.

**Derivative Financial Instruments—** Periodically, the Company is a party to forward exchange contracts, foreign exchange rate swaps, interest rate swaps, natural gas futures and electricity forward contracts to reduce its cash flow exposure to changes in interest rates and natural gas and electricity prices. The Company does not hold or issue derivative financial instruments for trading purposes. These instruments are not accounted for using hedge accounting, but are measured at fair value and recorded in the balance sheet as an asset or liability, depending upon the Company’s underlying rights or obligations. Changes in fair value are recognized in earnings.

**Stock-Based Compensation**—Stock-based compensation cost is measured at the grant date based on the fair value of the award which is amortized as expense over the requisite service period on a graded-vesting basis (see Note 11).

**Transfers of Financial Assets**—The Company executes factoring and sales agreements with respect to its trade accounts receivable to support its working capital requirements. The Company accounts for these transactions as either sales-type or financing-type transfers of financial assets based on the terms and conditions of each agreement. For the portion of the sales price that is deferred in a reserve account and subsequently collected, the Company’s policy is to classify the cash in-flows as cash flows from operating activities as the predominant source of the cash flows pertains to the Company’s trade accounts receivable. When the Company retains the servicing rights on the transfers of accounts receivable, it measures these rights at fair value, if material.

**Concentrations of Credit Risk**—Financial instruments that potentially subject the Company to concentrations of credit risk are primarily temporary investments and accounts receivable. The Company places its temporary investments with high quality institutions and, by policy, limits the amount of credit exposure to any one institution. Concentrations of credit risk for accounts receivable are limited due to the large number of customers in the Company's customer base and their dispersion across many different industries and geographies. The Company generally does not require collateral or other security to support customer receivables.

**Concentrations of Supplier Risk**—The Company relies on long-term agreements with key suppliers for most of its raw materials. The loss of a key source of supply or a delay in shipments could have an adverse effect on its business. Should any of the suppliers fail to deliver or should any of the key long-term supply contracts be canceled, the Company would be forced to purchase raw materials at current market prices. The Company's largest supplier provides approximately 10% of raw material purchases. In addition, several of the feedstocks at various facilities are transported through a pipeline from one supplier.

**Subsequent Events**—The Company has evaluated events and transactions subsequent to December 31, 2018 through the date of issuance of its Consolidated Financial Statements. Additionally, see Note 2 and Note 17 for further information around subsequent events.

**Reclassifications**—Certain prior period balances have been reclassified to conform with current presentations.

**Standard Guarantees / Indemnifications**—In the ordinary course of business, the Company enters into a number of agreements that contain standard guarantees and indemnities where the Company may indemnify another party for, among other things, breaches of representations and warranties. These guarantees or indemnifications are granted under various agreements, including those governing (i) purchases and sales of assets or businesses, (ii) leases of real property, (iii) licenses of intellectual property, (iv) long-term supply agreements, (v) employee benefits services agreements and (vi) agreements with public authorities on subsidies for designated research and development projects. These guarantees or indemnifications are for the benefit of the (i) buyers in sale agreements and sellers in purchase agreements, (ii) landlords or lessors in lease contracts, (iii) licensors or licensees in license agreements, (iv) vendors or customers in long-term supply agreements, (v) service providers in employee benefits services agreements and (vi) governments or agencies subsidizing research or development. In addition, the Company guarantees some of the payables of its subsidiaries to purchase raw materials in the ordinary course of business.

These parties may also be indemnified against any third party claim resulting from the transaction that is contemplated in the underlying agreement. Additionally, in connection with the sale of assets and the divestiture of businesses, the Company may agree to indemnify the buyer for liabilities related to the pre-closing operations of the assets or businesses sold. Indemnities for pre-closing operations generally include tax liabilities, environmental liabilities and employee benefit liabilities that are not assumed by the buyer in the transaction.

Indemnities related to the pre-closing operations of sold assets normally do not represent additional liabilities to the Company, but simply serve to protect the buyer from potential liability associated with the Company's existing obligations at the time of sale. As with any liability, the Company has accrued for those pre-closing obligations that it considers to be probable and reasonably estimable. The amounts recorded at December 31, 2018 and 2017 are not significant.

While some of these guarantees extend only for the duration of the underlying agreement, many survive the expiration of the term of the agreement or extend into perpetuity (unless they are subject to a legal statute of limitations). There are no specific limitations on the maximum potential amount of future payments that the Company could be required to make under its guarantees, nor is the Company able to estimate the maximum potential amount of future payments to be made under these guarantees because the triggering events are not predictable.

Our corporate charter also requires us to indemnify, to the extent allowed by New Jersey state corporate law, our directors and officers as well as directors and officers of our subsidiaries and other agents against certain liabilities and expenses incurred by them in carrying out their obligations.

**Warranties**—The Company does not make express warranties on its products, other than that they comply with the Company's specifications; therefore, the Company does not record a warranty liability. Adjustments for product quality claims are not material and are charged against net sales.

**Recently Issued Accounting Standards**

***Newly Issued Accounting Standards***

In February 2016, the FASB issued Accounting Standards Board Update No. 2016-02: *Leases (Topic 842)* ("ASU 2016-02"). ASU 2016-02 supersedes the existing lease guidance in Topic 840. According to the new guidance, all leases, with limited scope exceptions, will be recorded on the balance sheet in the form of a liability to make lease payments (lease liability) and a right-of-use asset representing the right to use the underlying asset for the lease term and provide enhanced disclosures. The guidance is effective for annual and interim periods beginning on or after December 15, 2018. The Company adopted ASU 2016-02 effective January 1, 2019 using a modified retrospective method and will not restate comparative periods. As permitted under the transition guidance, we will carry forward the assessment of whether our contracts contain or are leases, classification of our leases and remaining lease terms. The Company is substantially complete with the development of reporting and disclosure processes and controls around leases to meet the new accounting and disclosure requirements upon adoption in January 2019. The Company will record right-of-use assets and offsetting lease liabilities of $95 to $115 on the Company's Balance Sheet upon adoption of the standard.

In February 2018, the FASB issued Accounting Standards Board Update No. 2018-02: *Income Statement-Reporting Comprehensive Income (Topic 220)* ("ASU 2018-02"). ASU 2018-02 was issued in response to the United States tax reform legislation, the Tax Cuts and Jobs Act ("Tax Reform"), enacted in December 2017. The amendments in ASU 2018-02 allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the new tax legislation. The guidance is effective for annual and interim periods beginning on or after December 15, 2018, and early adoption is permitted. The Company has assessed the potential impact of ASU 2018-02 on its financial statements and does not expect it to have a material impact on its financial statements.

***Newly Adopted Accounting Standards***

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Board Update No. 2014-09: *Revenue from Contracts with Customers (Topic 606)* ("ASU 2014-09"). ASU 2014-09 supersedes the existing revenue recognition guidance and most industry-specific guidance applicable to revenue recognition. According to the new guidance, an entity will apply a principles-based five step model to recognize revenue upon the transfer of promised goods or services to customers and in an amount that reflects the consideration for which the entity expects to be entitled in exchange for those goods or services. The effective date for ASU 2014-09 was for annual and interim periods beginning on or after December 15, 2017.

The Company adopted ASU 2014-09 as of January 1, 2018 utilizing a modified retrospective approach, which resulted in a cumulative adjustment to "Accumulated deficit" of $1 on the date of adoption. ASU 2014-09 was applied to all open contracts as of the date of adoption and resulted only in timing differences for recognition of certain revenue items. The cumulative effects of the changes made to the Company's Consolidated Balance Sheet on January 1, 2018 for the adoption of ASU 2014-09 were as follows:

| | Balance at December 31, 2017 | Adjustments due to ASU 2014-09 | Balance at January 1, 2018 |
|---|---|---|---|
| **Assets** | | | |
| Inventory | $ 221 | $ (11) | $ 210 |
| Other current assets | 44 | 12 | 56 |
| | | | |
| **Deficit** | | | |
| Accumulated deficit | (2,964) | 1 | (2,963) |

In accordance with the new revenue standard requirements, the impact of adoption on the Company's Consolidated Statements of Operations and Consolidated Balance Sheets were as follows:

**Consolidated Statements of Operations**

| | For the year ended December 31, 2018 | | |
|---|---|---|---|
| | As reported | Balances without Adoption of ASC 606 | Effect of change higher/(lower) |
| Net sales | $ 3,797 | $ 3,797 | $ — |
| Cost of sales | 3,226 | 3,227 | (1) |
| Gross profit | 571 | 570 | 1 |

**Consolidated Balance Sheets**

| | Balance at December 31, 2018 | | |
|---|---|---|---|
| **Assets** | As reported | Balances without Adoption of ASC 606 | Effect of change higher/(lower) |
| Inventory | $ 240 | $ 249 | $ (9) |
| Other current assets | 57 | 46 | 11 |
| | | | |
| **Deficit** | | | |
| Accumulated deficit | (3,125) | (3,127) | 2 |

In August 2016, the FASB issued Accounting Standards Board Update No. 2016-15: *Statement of Cash Flows (Topic 230)* ("ASU 2016-15") as part of the FASB simplification initiative. ASU 2016-15 provides guidance on treatment in the statement of cash flows for eight specific cash flow topics, with the objective of reducing existing diversity in practice. Of the eight cash flow topics addressed in the new guidance, the topics which could have an impact on the Company include debt prepayment or debt extinguishment costs, accounts receivable factoring, proceeds from the settlement of insurance claims and distributions received from equity method investees. The guidance is effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted ASU 2016-15 as of January 1, 2018 and adoption of this standard had an immaterial impact on the Company's financial statements.

In November 2016, the FASB issued Accounting Standards Board Update No. 2016-18: *Statement of Cash Flows (Topic 230) Restricted Cash* ("ASU 2016-18") as part of the FASB simplification initiative. ASU 2016-18 requires that amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of period total amounts shown on the statement of cash flows. ASU 2016-18 also requires supplemental disclosure regarding the nature of restrictions on a company's cash and cash equivalents, such as the purpose and terms of the restriction, expected duration of the restriction and the amount of cash subject to restriction. The guidance was effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company retrospectively adopted ASU 2016-18 as of January 1, 2018. As a result of adopting ASU 2016-18, the beginning and ending cash balances within the Consolidated Statements of Cash Flows now include restricted cash as of December 31, 2018 and 2017. The impact of the adoption of this standard on the Company's Consolidated Statements of Cash Flows is disclosed above in the cash and cash equivalents section of this footnote.

In January 2017, the FASB issued Accounting Standards Board Update No. 2017-01: *Clarifying the Definition of a Business (Topic 805)* ("ASU 2017-01"). ASU 2017-01 clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The definition of a business affects many areas of accounting including acquisitions, disposals, goodwill, and consolidation. The guidance was effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted ASU 2017-01 as of January 1, 2018 and the adoption of this standard had no impact on the Company's financial statements.

In March 2017, the FASB issued Accounting Standards Board Update No. 2017-07: *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* ("ASU 2017-07"). ASU 2017-07 requires that an employer report the service cost component of its net periodic pension and postretirement benefit costs ("net benefit cost") in the same line item or items as other compensation costs arising from services rendered by employees during the period. Additionally, ASU 2017-07 only allows the service cost component of net benefit cost to be eligible for capitalization into inventory. All other components of net benefit cost, which primarily include interest cost, expected return on assets and the annual mark-to-market liability remeasurement, are required to be presented in the income statement separately from the service cost component and outside of income from operations. The guidance was effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted ASU 2017-07 as of January 1, 2018. The components of the net (benefit) cost are shown in Note 10.

The impact of these pension and OPEB accounting policy changes were applied through retrospective adoption of the new ASU 2017-07 to all periods presented. Accordingly, all relevant information for the year ended December 31, 2018 and all prior periods have been adjusted to reflect the application of the changes.

**Consolidated Statements of Operations for the year ended December 31, 2017:**

| | Previous Accounting Method | Effect of Accounting Change | As Reported |
|---|---|---|---|
| Cost of sales | $ 3,090 | $ (2) | $ 3,088 |
| Gross profit | 501 | 2 | 503 |
| Selling, general and administrative expense | 307 | 14 | 321 |
| Operating income | 112 | (12) | 100 |
| Other non-operating (income) expense, net | — | (12) | (12) |

**Consolidated Statements of Operations for the year ended December 31, 2016:**

| | Previous Accounting Method | Effect of Accounting Change | As Reported |
|---|---|---|---|
| Cost of sales | $ 3,038 | $ (18) | $ 3,020 |
| Gross profit | 400 | 18 | 418 |
| Selling, general and administrative expense | 328 | (10) | 318 |
| Operating income | 244 | 28 | 272 |
| Other non-operating (income) expense, net | (7) | 28 | 21 |

In January 2017, the FASB issued Accounting Standards Board Update No. 2017-04: *Simplifying the Test for Goodwill Impairment (Topic 350)* ("ASU 2017-04") as part of the FASB simplification initiative. To simplify the subsequent measurement of goodwill, ASU 2017-04 eliminated Step 2 from the goodwill impairment test. Instead, under the amendments in ASU 2017-04, an entity should perform its annual, or interim, goodwill impairment test by comparing the fair value of the reporting unit with its carrying amount, which is Step 1 of the goodwill impairment test. An impairment charge should be recognized for the amount by which the carrying amount exceeds the reporting unit's fair value, not to exceed the total amount of goodwill allocated to that reporting unit. The guidance is effective for goodwill impairment tests performed after December 15, 2019 and early adoption is permitted. The Company early adopted ASU 2017-04 during the third quarter 2017. See Note 6 for more information.

**4. Restructuring and Business Realignment**

***Restructuring Activities***

In November 2017, the Company initiated new restructuring actions with the intent to optimize its cost structure. The total one-time cash costs expected to be incurred for these restructuring activities are estimated at $27, consisting primarily of workforce reduction costs.

The following table summarizes restructuring information by reporting segment:

| | Epoxy, Phenolic and Coating Resins | Forest Products Resins | Corporate and Other | Total |
|---|---|---|---|---|
| Total restructuring costs expected to be incurred | $ 14 | $ 9 | $ 4 | $ 27 |
| Restructuring costs incurred through December 31, 2018 | $ 13 | $ 8 | $ 4 | $ 25 |
| | | | | |
| Accrued liability at December 31, 2017 | $ 11 | $ 3 | $ 3 | $ 17 |
| Restructuring charges | 1 | 3 | 1 | 5 |
| Payments | (10) | (4) | (2) | (16) |
| Accrued liability at December 31, 2018 | $ 2 | $ 2 | $ 2 | $ 6 |

***Oilfield***

During the first quarter of 2018, the Company indefinitely idled an oilfield manufacturing facility within its Epoxy, Phenolic and Coating Resins segment, and production was shifted to another facility within the oilfield manufacturing group. This represented a triggering event resulting in an impairment evaluation of the fixed and intangible assets within the U.S. oilfield asset group. As a result, an asset impairment of $20 was recorded in the first quarter of 2018 related to the fixed assets at the idled manufacturing facility. In addition, the remaining U.S. oilfield asset group was evaluated for impairment utilizing a discounted cash flow approach, resulting in an additional impairment of $5 that was recorded during the first quarter of 2018 related to an existing customer relationship intangible asset. Overall, the Company incurred $25 of total impairment related to these assets, which is included in "Asset impairments" in the Consolidated Statements of Operations for the year ended December 31, 2018.

During the third quarter of 2017, the Company indefinitely idled an oilfield manufacturing facility within its Epoxy, Phenolic and Coating Resins segment, and production was ceased at this facility. As a result, the estimated useful lives of certain long-lived assets related to this facility were shortened, and consequently, the Company incurred $14 of accelerated depreciation related to these assets, which is included in "Cost of sales" in the unaudited Condensed Consolidated Statements of Operations.

In addition, during the third quarter of 2016, the Company indefinitely idled two oilfield manufacturing facilities within its Epoxy, Phenolic and Coating Resins segment, and production was ceased at these facilities. As a result, the estimated useful lives of certain long-lived assets related to these facilities were shortened, and consequently, during the year ended December 31, 2016, the Company incurred $21 of accelerated depreciation related to these assets, which is included in "Cost of sales" in the Consolidated Statements of Operations.

***Norco***

In the first quarter of 2016, the Company announced a planned rationalization at its Norco, LA manufacturing facility within its Epoxy, Phenolic and Coating Resins segment, and production was ceased at this facility during the second quarter of 2016. As a result of this facility rationalization, the Company recorded one-time costs in 2016 related to the early termination of certain contracts for utilities, site services, raw materials and other items. The Company also recorded a conditional asset retirement obligation ("ARO") in 2016 related to certain contractually obligated future demolition, decontamination and repair costs associated with this facility rationalization. The Company does not expect to incur any additional contract termination or ARO charges related to this facility rationalization.

As a result of the Norco, LA facility rationalization, the estimated useful lives of certain long-lived assets related to this facility were shortened, and consequently, during the twelve months ended December 31, 2016, the Company incurred $76 of accelerated depreciation related to these assets, which is included in "Cost of sales" in the Consolidated Statements of Operations. These assets were fully depreciated in the second quarter of 2016. In addition, at June 30, 2016 the Company recorded a conditional ARO of $30 related to certain contractually obligated future demolition, decontamination and repair costs associated with this facility rationalization. During the twelve months ended December 31, 2016, the Company recorded an additional $30 of accelerated depreciation related to this ARO, which is also included in "Cost of sales" in the Consolidated Statements of Operations, rendering this item fully depreciated as of June 30, 2016. In the third quarter of 2016, this ARO liability was reduced by $11 as a result of revised cost estimates, primarily due to a reduction in the scope of expected future demolition. This $11 reduction in costs is included in "Business realignment costs" in the Consolidated Statements of Operations for the twelve months ended December 31, 2016.

During the year ended December 31, 2017, the Company incurred additional costs of less than $3 related to other ongoing site closure expenses related to this facility rationalization, which are included in "Business realignment costs" in the Consolidated Statements of Operations. During the twelve months ended December 31, 2016, the Company incurred costs of $24 related to the early termination of certain contracts for utilities, site services, raw materials and other items related to this facility rationalization and $16 related to abnormal production overhead, severance and other expenses to the facility closure. All of these costs are included in "Business realignment costs" in the Consolidated Statements of Operations.

## 5. Related Party Transactions

***Administrative Service, Management and Consulting Arrangement***

The Company is subject to a Management Consulting Agreement with Apollo (the "Management Consulting Agreement") that renews on an annual basis, unless notice to the contrary is given by either party. Under the Management Consulting Agreement, the Company receives certain structuring and advisory services from Apollo and its affiliates. The Management Consulting Agreement provides indemnification to Apollo, its affiliates and their directors, officers and representatives for potential losses arising from these services. Apollo is entitled to an annual fee equal to the greater of $3 or 2% of the Company's Adjusted EBITDA. Apollo elected to waive charges of any portion of the annual management fee due in excess of $3 for the years ended December 31, 2018, 2017, and 2016.

During each of the years ended December 31, 2018, 2017, and 2016, the Company recognized expense under the Management Consulting Agreement of $3. This amount is included in "Other operating expense, net" in the Company's Consolidated Statements of Operations.

***Transactions with MPM***

**Shared Services Agreement**

On October 1, 2010, the Company entered into a shared services agreement with Momentive Performance Materials Inc. ("MPM") (which, from October 1, 2010 through October 24, 2014, was a subsidiary of Hexion Holdings), as amended in October 2014 (the "Shared Services Agreement"). Under this agreement, the Company provided to MPM, and MPM provided to the Company, certain services, including, but not limited to, executive and senior management, administrative support, human resources, information technology support, accounting, finance, legal and procurement services. The Shared Services Agreement established certain criteria upon which the costs of such services are allocated between the Company and MPM. The Shared Services Agreement was renewed for one year starting October 2018, subject to termination rights of each of the Company or MPM, without cause, on not less than 30 days' written notice.

On February 11, 2019, MPM provided notice of its intention to terminate the Shared Services Agreement, effective March 14, 2019. The termination triggers a period of up to 14 months during which time the parties will work together to facilitate an orderly transition of services provided under the Shared Services Agreement.

Pursuant to the Shared Services Agreement, the below table summarizes the transactions between the Company and MPM:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Total cost pool - Hexion [(1)] | $ 28 | $ 48 | $ 63 |
| Total cost pool - MPM [(1)] | 21 | 38 | 50 |

(1) Included in the cost pools during the years ended December 31, 2018, 2017, and 2016, were net billings from Hexion to MPM of $14, $26, and $30, respectively, to bring the percentage of total net incurred costs for shared services under the Shared Services Agreement to the applicable agreed upon allocation. The allocation percentages for Hexion and MPM, respectively, were 57% and 43% in 2018 and 56% and 44% in 2017 and 2016. The scope of services and allocation percentages are reviewed by the Steering Committee pursuant to the terms of the Shared Services Agreement.

| | Year Ended December 31, | |
|---|---|---|
| | 2018 | 2017 |
| Accounts receivable from MPM | $ 2 | $ 3 |

**Sales and Purchases of Products and Services with MPM**

The Company also sells products to, and purchases products from, MPM. During each of the years ended December 31, 2018, 2017 and 2016, the Company sold less than $1 of products to MPM. During the years ended December 31, 2018, 2017, and 2016, the Company earned $1 from MPM as compensation for acting as distributor of products. Refer to the below table for the summary of the purchases of products with MPM:

| | Year ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Purchases from MPM | $ 32 | $ 24 | $ 27 |

| | Year ended December 31, | |
|---|---|---|
| | 2018 | 2017 |
| Accounts payable to MPM | $ 3 | $ 2 |

***Purchases and Sales of Products and Services with Affiliates Other than MPM***

The Company sells products to and purchases raw materials and services from various Apollo affiliates other than MPM. These sales were $2, $4, and $6 for the years ended December 31, 2018, 2017, and 2016. Accounts receivable from these affiliates were less than $1 at both December 31, 2018 and 2017. There were no purchases for the years ended December 31, 2018 and 2017 and purchases of less than $1 for the year ended December 31, 2016. The Company had no accounts payable to these affiliates at December 31, 2018 and 2017.

***Other Transactions and Arrangements***

The Company sells products and provides services to, and purchases products from, its other joint ventures which are recorded under the equity method of accounting. Refer to the below table for a summary of the sales and purchases with the Company and its joint ventures which are recorded under the equity method of accounting:

| | Year ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Sales to joint ventures | $ 9 | $ 17 | $ 43 |
| Purchases from joint ventures | 6 | 14 | 17 |

| | Year ended December 31, | |
|---|---|---|
| | 2018 | 2017 |
| Accounts receivable from joint ventures | $ 2 | $ 6 |
| Accounts payable to joint ventures | <1 | 1 |

In addition to the joint ventures disclosed above, the Company had a loan receivable of $7 and $6 at December 31, 2018 and 2017 from its unconsolidated forest products joint venture in Russia.

**6. Goodwill and Intangible Assets**

The Company's gross carrying amount and accumulated impairments of goodwill consist of the following as of December 31, 2018 and 2017:

| | 2018 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | Gross Carrying Amount | Accumulated Impairments | Accumulated Foreign Currency Translation | Net Book Value | Gross Carrying Amount | Accumulated Impairments | Accumulated Foreign Currency Translation | Net Book Value [(1)] |
| Epoxy, Phenolic and Coating Resins | $ 111 | $ (70) | $ — | $ 41 | $ 111 | $ (70) | $ 1 | $ 42 |
| Forest Products Resins | 80 | — | (12) | 68 | 81 | — | (10) | 71 |
| **Total** | $ 191 | $ (70) | $ (12) | $ 109 | $ 192 | $ (70) | $ (9) | $ 113 |

(1) Includes $1 of goodwill related to the ATG Business, within the Forest Products Resins segment, included in "Long-term assets held for sale" in the Consolidated Balance Sheets.

The changes in the net carrying amount of goodwill by segment for the years ended December 31, 2018 and 2017 are as follows:

| | Epoxy, Phenolic and Coating Resins | Forest Products Resins | Total |
|---|---|---|---|
| Goodwill balance at December 31, 2016 | $ 54 | $ 67 | $ 121 |
| Goodwill impairment | (13) | — | (13) |
| Foreign currency translation | 1 | 4 | 5 |
| Goodwill balance at December 31, 2017 (1) | 42 | 71 | 113 |
| Divestitures | — | (1) | (1) |
| Foreign currency translation | (1) | (2) | (3) |
| Goodwill balance at December 31, 2018 | $ 41 | $ 68 | $ 109 |

(1) Includes $1 of goodwill related to the ATG Business, within the Forest Products Resins segment, included in "Long-term assets held for sale" in the Consolidated Balance Sheets.

In 2017, the Company lowered its forecast of estimated earnings and cash flows for its oilfield business from those previously projected, and indefinitely idled a manufacturing facility within its oilfield business. This was due to the slower than previously assumed recovery in the oil and gas market. As of September 30, 2017, the estimated fair value of the Company's oilfield reporting unit was less than the carrying value of the net assets of the reporting unit. In estimating the fair value of the oilfield reporting unit, the Company relied solely on a discounted cash flow model income approach. This was due to the Company's belief that the reporting unit's EBITDA, a key input under the market approach, was not representative and consistent with the reporting unit's historical performance and long-term outlook and, therefore, was not consistent with assumptions that a market participant would use in determining the fair value of the reporting unit. When the fair value of the reporting unit was determined, an impairment charge was recognized for the amount by which the carrying amount of oilfield's net assets exceeded its fair value. As such, the entire oilfield reporting unit's goodwill balance of $13 was impaired during the third quarter of 2017, and the Company recognized a goodwill impairment charge of $13 in its Epoxy, Phenolic and Coating Resins segment, which is included in "Asset impairments" in the Consolidated Statements of Operations. Significant unobservable inputs in the discounted cash flow analysis included projected long-term future cash flows, projected growth rates and discount rates associated with this reporting unit. Future projected long-term cash flows and growth rates were derived from models based upon forecasts prepared by the Company's management. These projected cash flows were discounted using a rate of 13.5%.

The Company's intangible assets with identifiable useful lives consist of the following as of December 31, 2018 and 2017:

| | 2018 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | Gross Carrying Amount | Accumulated Impairments | Accumulated Amortization | Net Book Value | Gross Carrying Amount | Accumulated Impairments | Accumulated Amortization | Net Book Value |
| Patents and technology | $ 112 | $ — | $ (100) | $ 12 | $ 112 | $ — | $ (97) | $ 15 |
| Customer lists and contracts | 109 | (22) | (83) | 4 | 109 | (17) | (79) | 13 |
| Other | 25 | — | (14) | 11 | 25 | — | (11) | 14 |
| **Total** | $ 246 | $ (22) | $ (197) | $ 27 | $ 246 | $ (17) | $ (187) | $ 42 |

The impact of foreign currency translation on intangible assets is included in accumulated amortization.

In 2018, as a result of the indefinite idling of an oilfield manufacturing facility with the Epoxy, Phenolic and Coating Resins segment, the remaining U.S. oilfield asset group was evaluated for impairment utilizing a discounted cash flow approach, resulting in an additional impairment of $5 that was recorded during the first quarter of 2018 related to an existing customer relationship intangible asset, which is included in "Asset impairments" in the Consolidated Statements of Operations for the year ended December 31, 2018.

Total intangible amortization expense for the years ended December 31, 2018, 2017, and 2016 was $10, $12 and $12, respectively.

Estimated annual intangible amortization expense for 2019 through 2023 is as follows:

| | |
|---|---|
| 2019 | $ 6 |
| 2020 | 6 |
| 2021 | 2 |
| 2022 | 2 |
| 2023 | 1 |

## 7. Fair Value

Fair value is the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Fair value measurement provisions establish a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. This guidance describes three levels of inputs that may be used to measure fair value:

- **Level 1:** Inputs are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- **Level 2:** Pricing inputs are other than quoted prices in active markets included in Level 1, which are either directly or indirectly observable as of the reported date.
- **Level 3:** Unobservable inputs that are supported by little or no market activity and are developed based on the best information available in the circumstances. For example, inputs derived through extrapolation or interpolation that cannot be corroborated by observable market data.

***Recurring Fair Value Measurements***

As of December 31, 2018, the Company had derivative liabilities related to foreign exchange, electricity and natural gas contracts of less than $1, which were measured using Level 2 inputs, and consist of derivative instruments transacted primarily in over-the-counter markets. There were no transfers between Level 1, Level 2 or Level 3 measurements during the years ended December 31, 2018 and 2017.

The Company calculates the fair value of its Level 2 derivative liabilities using standard pricing models with market-based inputs, adjusted for nonperformance risk. When its financial instruments are in a liability position, the Company evaluates its credit risk as a component of fair value. At December 31, 2018 and 2017, no adjustment was made by the Company to reduce its derivative liabilities for nonperformance risk.

When its financial instruments are in an asset position, the Company is exposed to credit loss in the event of nonperformance by other parties to these contracts and evaluates their credit risk as a component of fair value.

***Non-derivative Financial Instruments***

The following table summarizes the carrying amount and fair value of the Company's non-derivative financial instruments:

| | | Fair Value | | | |
|---|---|---|---|---|---|
| | **Carrying Amount[1]** | **Level 1** | **Level 2** | **Level 3** | **Total** |
| **December 31, 2018** | | | | | |
| Debt | $ 3,815 | $ — | $ 2,679 | $ 66 | $ 2,745 |
| **December 31, 2017** | | | | | |
| Debt | $ 3,750 | $ — | $ 3,206 | $ 49 | $ 3,255 |

(1) Debt carrying amounts exclude unamortized deferred debt issuance costs of $41 at December 31, 2017.

Fair values of debt classified as Level 2 are determined based on other similar financial instruments, or based upon interest rates that are currently available to the Company for the issuance of debt with similar terms and maturities. Level 3 amounts represent capital leases whose fair value is determined through the use of present value and specific contract terms. The carrying amounts of cash and cash equivalents, short term investments, accounts receivable, accounts payable and other accrued liabilities are considered reasonable estimates of their fair values due to the short-term maturity of these financial instruments.

**8. Debt and Lease Obligations**

Debt outstanding at December 31, 2018 and 2017 is as follows:

| | 2018 | | 2017 | |
|---|---|---|---|---|
| | Long-Term | Due Within One Year | Long-Term | Due Within One Year |
| ABL Facility | $ — | $ 137 | $ 81 | $ — |
| **Senior Secured Notes:** | | | | |
| 6.625% First-Priority Senior Secured Notes due 2020 (includes $2 of unamortized debt premium at December 31, 2017) | — | 1,550 | 1,552 | — |
| 10.00% First-Priority Senior Secured Notes due 2020 | — | 315 | 315 | — |
| 10.375% First-Priority Secured Notes due 2022 | — | 560 | 560 | — |
| 13.75% Senior Secured Notes due 2022 | — | 225 | 225 | — |
| 9.00% Second-Priority Senior Secured Notes due 2020 | — | 574 | 574 | — |
| **Debentures:** | | | | |
| 9.2% debentures due 2021 | — | 74 | 74 | — |
| 7.875% debentures due 2023 | — | 189 | 189 | — |
| **Other Borrowings:** | | | | |
| Australia Facility due 2021 at 4.8% and 4.6% at December 31, 2018 and 2017, respectively | 30 | 4 | — | 50 |
| Brazilian bank loans at 10.0% and 9.9% at December 31, 2018 and 2017, respectively | 12 | 41 | 9 | 34 |
| Lease obligations | 56 | 10 | 44 | 5 |
| Other at 5.3% and 5.0% at December 31, 2018 and 2017, respectively | 1 | 37 | 2 | 36 |
| Unamortized debt issuance costs | — | — | (41) | — |
| **Total** | $ 99 | $ 3,716 | $ 3,584 | $ 125 |

As discussed in Note 1, the Company believes there is substantial doubt about its ability to continue as a going concern for the next twelve months, including its ability to fund its debt service obligations. The inability of the Company to fund such debt service obligations is an event of default under the ABL Facility (described below) and under the indentures that govern the Company's notes. As such, all outstanding debt as of December 31, 2018 related to the ABL Facility, the Senior Secured Notes and Debentures has been classified as "Debt payable within one year" in the Consolidated Balance Sheets and related footnote disclosures. Also during the year ended December 31, 2018, the Company wrote-off $29 of unamortized debt issuance costs related to the going concern conclusion. See Note 3 for further information.

The Bankruptcy Petitions constitute an event of default that accelerated the Company's obligations under its ABL Facility and 6.625% First-Priority Senior Secured Notes, 10.00% First-Priority Senior Secured Notes, 10.375% First-Priority Senior Secured Notes, 13.75% Senior Secured Notes, 9.00% Second-Priority Senior Secured Notes, 9.2% debentures and 7.875% debentures. These debt instruments provide that as a result of the Bankruptcy Petitions, the principal and interest due thereunder are immediately due and payable; however, any efforts to enforce such payment obligations under these instruments are automatically stayed as a result of the Bankruptcy Petitions and the creditors' rights of enforcement in respect of these instruments are subject to the applicable provisions of the Bankruptcy Code.

**Debtor-in-Possession Financing**

In connection with the Bankruptcy Petitions, on April 3, 2019, the Company, Hexion LLC and certain of its subsidiaries entered into the DIP ABL Facility and the DIP Term Loan Facility, as further described in Note 2.

***2017 Refinancing Transactions***

- In February 2017, the Company issued $485 aggregate principal amount of 10.375% First-Priority Senior Secured Notes due 2022 (the "New First Lien Notes") and $225 aggregate principal amount of 13.75% Senior Secured Notes due 2022 (the "New Senior Secured Notes"). Upon the closing of these offerings, the Company used the net proceeds from these offerings, together with cash on its balance sheet, to redeem all of the Company's outstanding 8.875% Senior Secured Notes due 2018 (the "Old Senior Secured Notes"), which occurred in March 2017. In connection with the extinguishment of the Old Senior Secured Notes, the Company wrote off $3 of unamortized deferred debt issuance costs and discounts, which are included in "Loss (gain) on extinguishment of debt" in the Consolidated Statements of Operations.

- In May 2017, the Company issued an additional $75 aggregate principal amount of New First Lien Notes at an issue price of 100.5%. These notes mature on February 1, 2022 and have the same terms as the New First Lien Notes issued in February 2017. The Company used the net proceeds from these notes for general corporate purposes.

- The Company also amended and restated its ABL Facility in December 2016 with modifications to, among other things, permit the refinancing of the Old Senior Secured Notes. In connection with the issuance of the new notes in February 2017, certain lenders under the ABL Facility provided extending revolving credit facility commitments in an aggregate principal amount of $350 with a maturity date of December 5, 2021 (subject to certain early maturity triggers), the existing commitments were terminated and the size of the ABL Facility was reduced from $400 to $350.

These transactions are collectively referred to as the “2017 Refinancing Transactions.”

***ABL Facility***

In March 2013, the Company entered into a $400 asset-based revolving loan facility, subject to a borrowing base (the “ABL Facility”). The ABL Facility replaced the Company's senior secured credit facilities, which included a $171 revolving credit facility and the $47 synthetic letter of credit facility at the time of the termination of facilities upon the Company's entry into the ABL Facility.

In December 2016, the Company amended and restated the ABL Facility, with modifications to, among other things, permit the refinancing of the Old Senior Secured Notes with new first-priority senior secured notes, new senior secured notes and/or other secured or unsecured indebtedness. In connection with the issuance of the new notes in February 2017, certain lenders under the ABL Facility provided extended revolving facility commitments in an aggregate principal amount of approximately $350 with a maturity date of December 5, 2021 (subject to the early maturity triggers described below), the existing commitments were terminated and the size of the ABL Facility was reduced from $400 to $350.

As amended, the ABL Facility has a maturity date of December 5, 2021 unless, if 91 days prior to the scheduled maturity of the 6.625% First-Priority Senior Notes due 2020 and the 10.00% First-Priority Senior Secured Notes, more than $50 aggregate principal amount of these notes are outstanding, in which case the ABL Facility will mature on such earlier date. Additionally, if 91 days prior to the scheduled maturity of the 9.00% Second-Priority Senior Secured Notes due 2020, more than $50 aggregate principal amount of these notes are outstanding, the ABL Facility will mature on such earlier date.

Availability under the ABL Facility is $350, subject to a borrowing base based on a specified percentage of eligible accounts receivable and inventory. In 2015, the ABL Facility was amended to include certain international property plant and equipment as collateral up to $70. The borrowers under the ABL Facility include the Company and Hexion Canada Inc., Hexion B.V., Hexion UK Limited and Borden Chemical UK Limited, each a wholly owned subsidiary of the Company. In 2015, the ABL Facility was also amended to include Hexion Gmbh as a borrower.

The ABL Facility bears interest at a floating rate based on, at the Company's option, an adjusted LIBOR rate plus an initial applicable margin of 2.25% or an alternate base rate plus an initial applicable margin of 1.25%. From and after the date of delivery of the Company's financial statements for the first fiscal quarter ended after the effective date of the ABL Facility, the applicable margin for such borrowings will be adjusted depending on the availability under the ABL Facility. As of December 31, 2018, the applicable margin for LIBOR rate loans was 2.25% and for alternate base rate loans was 1.25%. In addition to paying interest on outstanding principal under the ABL Facility, the Company is required to pay a commitment fee to the lenders in respect of the unutilized commitments at an initial rate equal to 0.50% per annum, subject to adjustment depending on the usage. The ABL Facility does not have any financial maintenance covenants, other than a fixed charge coverage ratio of 1.0 to 1.0 that only applies if availability under the ABL Facility is less than the greater of (a) $35 and (b) 12.5% of the lesser of the borrowing base and the total ABL Facility commitments at such time. The fixed charge coverage ratio under the credit agreement governing the ABL Facility is generally defined as the ratio for the most recent four consecutive fiscal quarters of (a) Adjusted EBITDA minus non-financed capital expenditures and cash taxes to (b) debt service plus cash interest expense plus certain restricted payments, each measured for the four most recent quarters in which financial statements have been delivered. The ABL Facility is secured by, among other things, first-priority liens on most of the inventory and accounts receivable and related assets of the Company, its domestic subsidiaries and certain of its foreign subsidiaries (the “ABL Priority Collateral”), and by second-priority liens on certain collateral that generally includes most of the Company’s, its domestic subsidiaries’ and certain of its foreign subsidiaries’ assets other than the ABL Priority Collateral, in each case subject to certain exceptions and permitted liens. Available borrowings under the ABL Facility were $165 as of December 31, 2018, and there were $137 of outstanding borrowings and $48 of outstanding letters of credit under the ABL Facility as of December 31, 2018.

***Senior Secured Notes***

**First-Priority Senior Secured Notes**

In March 2012, the Company issued $450 aggregate principal amount of 6.625% First-Priority Senior Secured Notes due 2020 at an issue price of 100%. In January 2013, the Company issued an additional $1,100 aggregate principal amount of 6.625% First-Priority Senior Secured Notes due 2020 at an issue price of 100.75% (the “First-Priority Senior Secured Notes”).

The First-Priority Senior Secured Notes are due on April 15, 2020 and are secured by first-priority liens on collateral that generally includes most of the Company's and its domestic subsidiaries' assets other than inventory and accounts receivable and related assets (the “Notes Priority Collateral”), and by second-priority liens on the domestic portion of the collateral for the ABL Facility (the “ABL Priority Collateral”), which generally includes most of the inventory and accounts receivable and related assets of the Company, its domestic subsidiaries and certain of its foreign subsidiaries, in each case subject to certain exceptions and permitted liens.

**10.00% First-Priority Senior Secured Notes**

In April 2015, the Company issued $315 aggregate principal amount of 10.00% First-Priority Senior Secured Notes due 2020 (the “10.00% First Lien Notes”). The Company used the net proceeds to redeem or repay all $40 of its outstanding 8.375% Sinking Fund Debentures due 2016, and to repay all amounts outstanding under its ABL facility at the closing of the offering.

The 10.00% First Lien Notes are due April 15, 2020 and are secured by first-priority liens on collateral that generally includes most of the Company and its domestic subsidiaries’ assets other than inventory and accounts receivable and related assets and by second-priority liens on the domestic portion of the collateral for the ABL Facility, which generally includes most of the inventory and accounts receivable and related assets of the Company, its domestic subsidiaries and certain of its foreign subsidiaries, in each case subject to certain exceptions and permitted liens.

**8.875% Senior Secured Notes**

In January 2010, through the Company’s wholly owned finance subsidiaries, Hexion U.S. Finance Corp. and Hexion Nova Scotia Finance, ULC, the Company issued $1,000 aggregate principal amount of the Old Senior Secured Notes. In January 2013 the Company also issued $200 aggregate principal amount of Old Senior Secured Notes at an issue price of 100%, to lenders in exchange for loans of Hexion LLC, which were retired in full.

The priority of the collateral liens securing the 8.875% Senior Secured Notes is senior to the collateral liens securing the existing Second-Priority Senior Secured Notes, and is junior to the collateral liens securing the Company’s First-Priority Senior Secured Notes.

On February 8, 2017, the Company satisfied and discharged its obligations under the Old Senior Secured Notes by depositing the net proceeds of the offerings of the New First Lien Notes and New Senior Secured Notes, together with cash on its balance sheet, with the trustee for the Old Senior Secured Notes for the purpose of redeeming all of the Company’s outstanding aggregate principal amount of Old Senior Secured Notes, which were redeemed on March 10, 2017.

**Second-Priority Senior Secured Notes**

In November 2010, through the Company’s wholly owned finance subsidiaries, Hexion U.S. Finance Corp. and Hexion Nova Scotia Finance, ULC, the Company refinanced its existing 9.75% Second-Priority Senior Secured Notes due 2014 (the “Old Second Lien Notes”) through the issuance of $574 aggregate principal amount of 9.00% Second-Priority Senior Secured Notes due 2020, which mature on November 15, 2020 (the “New Second Lien Notes”). $440 aggregate principal amount was offered through a private placement with unaffiliated investors (the “Offering”). The remaining $134 aggregate principal amount of the New Second Lien Notes was issued in exchange for $127 aggregate principal amount of the Old Second Lien Notes that were held by an affiliate of Apollo Global Management, LLC at the time of the Offering (the “Apollo Exchange”). The exchange ratio was determined based on the consideration offered to holders of the Old Second Lien Notes to redeem the Old Second Lien Notes, which was intended to give Apollo an aggregate value equivalent to that which it would have received if it had received the total consideration upon the Company’s redemption of the Old Second Lien Notes and used the proceeds received to invest in the New Second Lien Notes. The new debt issued to Apollo has the same terms as the notes issued by the Company in the Offering.

***Debentures***

| | Origination Date | Interest Payable | Early Redemption |
|---|---|---|---|
| 9.2% debentures due 2021 | March 1991 | March 15<br>September 15 | None |
| 7.875% debentures due 2023 | May 1993 | February 15<br>August 15 | None |

***Other Borrowings***

The Company’s Australian Term Loan Facility has a variable interest rate equal to the 90 day Australian or New Zealand Bank Bill Rates plus an applicable margin. The agreement also provides access to a $7 revolving credit facility of which there were no outstanding borrowings at December 31, 2018 and 2017. In February 2018, the Company extended its Australian Term Loan Facility through January 2021.

The Brazilian bank loans represent various bank loans, primarily for working capital purposes and to finance the construction of manufacturing facilities.

The Company’s lease obligations classified as debt on the Consolidated Balance Sheets include capital leases and sale leaseback financing transactions, which range from one to fifteen year terms for equipment, pipeline, land and buildings.

The Company’s other debt obligations represent various international credit facilities in China, Colombia and Korea to fund working capital needs and capital expenditures. While these facilities are primarily unsecured, portions of the lines are collateralized by equipment and cash and short term investments at December 31, 2018.

***General***

The Company and certain of its domestic subsidiaries have pledged, to the applicable collateral agents, 100% of non-voting and 65% of voting equity interests in the Company's and such domestic subsidiaries' first-tier foreign subsidiaries, in each case to secure the obligations of the Company and the other domestic obligors under the ABL Facility, the 6.625% First-Priority Senior Secured Notes, the 10.00% First Lien Notes, the New First Lien Notes, the New Senior Secured Notes and the 9.00% Second-Priority Senior Secured Notes.

As of December 31, 2018 and 2017, the Company did not satisfy the Adjusted EBITDA to fixed charges incurrence test contained within the indentures that govern our 6.625% First-Priority Senior Secured Notes, 10.00% First Lien Notes, the New First Lien Notes, New Senior Secured Notes and 9.00% Second-Priority Senior Secured Notes. As a result, the Company is subject to restrictions on its ability to incur additional indebtedness or to make investments; however, there are exceptions to these restrictions, including exceptions that permit indebtedness under the ABL Facility (available borrowings of which were $165 at December 31, 2018).

***Scheduled Maturities***

Aggregate maturities of debt, minimum payments under capital leases and minimum rentals under operating leases at December 31, 2018 for the Company are as follows:

| Year | Debt | Minimum Rentals Under Operating Leases | Minimum Payments Under Capital Leases |
|---|---|---|---|
| 2019 | $ 3,706 | $ 33 | $ 15 |
| 2020 | 34 | 24 | 20 |
| 2021 | 2 | 20 | 13 |
| 2022 | 1 | 13 | 26 |
| 2023 | — | 10 | 9 |
| 2024 and thereafter | 6 | 61 | 1 |
| Total minimum payments | $ 3,749 | $ 161 | 84 |
| Less: Amount representing interest | | | (18) |
| Present value of minimum payments | | | $ 66 |

The Company's operating leases consist primarily of vehicles, equipment, land and buildings. Rental expense under operating leases amounted to $33, $30, and $32 for each of the years ended December 31, 2018, 2017 and 2016, respectively.

**9. Commitments and Contingencies**

**Environmental Matters**

The Company's operations involve the use, handling, processing, storage, transportation and disposal of hazardous materials. The Company is subject to extensive environmental regulation at the federal, state and local levels as well as foreign laws and regulations, and is therefore exposed to the risk of claims for environmental remediation or restoration. In addition, violations of environmental laws or permits may result in restrictions being imposed on operating activities, substantial fines, penalties, damages or other costs, any of which could have a material adverse effect on the Company's business, financial condition, results of operations or cash flows.

The following table summarizes all probable environmental remediation, indemnification and restoration liabilities, including related legal expenses, at December 31, 2018 and 2017:

| | Liability | | Range of Reasonably Possible Costs as of 12/31/18 | |
|---|---|---|---|---|
| Site Description | December 31, 2018 | December 31, 2017 | Low | High |
| Geismar, LA | $ 13 | $ 14 | $ 9 | $ 22 |
| Superfund and offsite landfills – allocated share: | | | | |
| Less than 1% | 3 | 2 | 2 | 6 |
| Equal to or greater than 1% | 5 | 6 | 5 | 14 |
| Currently-owned | 6 | 4 | 4 | 11 |
| Formerly-owned: | | | | |
| Remediation | 22 | 26 | 20 | 39 |
| Monitoring only | 1 | — | 1 | 4 |
| **Total** | $ 50 | $ 52 | $ 41 | $ 96 |

These amounts include estimates for unasserted claims that the Company believes are probable of loss and reasonably estimable. The estimate of the range of reasonably possible costs is less certain than the estimates upon which the liabilities are based. To establish the upper end of a range, assumptions less favorable to the Company among the range of reasonably possible outcomes were used. As with any estimate, if facts or circumstances change, the final outcome could differ materially from these estimates. At both December 31, 2018 and 2017, $11 has been included in “Other current liabilities” in the Consolidated Balance Sheets with the remaining amount included in “Other long-term liabilities.”

Following is a discussion of the Company’s environmental liabilities and the related assumptions at December 31, 2018:

**Geismar, LA Site**—The Company formerly owned a basic chemicals and polyvinyl chloride business that was taken public as Borden Chemicals and Plastics Operating Limited Partnership (“BCPOLP”) in 1987. The Company retained a 1% interest, the general partner interest and the liability for certain environmental matters after BCPOLP’s formation. Under a Settlement Agreement approved by the United States Bankruptcy Court for the District of Delaware among the Company, BCPOLP, the United States Environmental Protection Agency and the Louisiana Department of Environmental Quality, the Company agreed to perform certain of BCPOLP’s obligations for soil and groundwater contamination at BCPOLP’s Geismar, Louisiana site. The Company bears the sole responsibility for these obligations because there are no other potentially responsible parties (“PRP”) or third parties from whom the Company could seek reimbursement.

A groundwater pump and treat system to remove contaminants is operational, and natural attenuation studies are proceeding. If closure procedures and remediation systems prove to be inadequate, or if additional contamination is discovered, costs that would approach the higher end of the range of possible outcomes could result.

Due to the long-term nature of the project, the reliability of timing and the ability to estimate remediation payments, a portion of this liability was recorded at its net present value, assuming a 3% discount rate and a time period of 20 years. The range of possible outcomes is discounted in a similar manner. The undiscounted liability, which is expected to be paid over the next 20 years, is approximately $16. Over the next five years, the Company expects to make ratable payments totaling $5.

**Superfund Sites and Offsite Landfills**—The Company is currently involved in environmental remediation activities at a number of sites for which it has been notified that it is, or may be, a PRP under the United States Comprehensive Environmental Response, Compensation and Liability Act or similar state “superfund” laws. The Company anticipates approximately 50% of the estimated liability for these sites will be paid within the next five years, with the remainder over the next twenty-five years. The Company generally does not bear a significant level of responsibility for these sites, and as a result, has little control over the costs and timing of cash flows.

The Company’s ultimate liability will depend on many factors including its share of waste volume, the financial viability of other PRPs, the remediation methods and technology used, the amount of time necessary to accomplish remediation and the availability of insurance coverage. The range of possible outcomes takes into account the maturity of each project, resulting in a more narrow range as the project progresses. To estimate both its current reserves for environmental remediation at these sites and the possible range of additional costs, the Company has not assumed that it will bear the entire cost of remediation of every site to the exclusion of other known PRPs who may be jointly and severally liable. The Company has limited information to assess the viability of other PRPs and their probable contribution on a per site basis. The Company’s insurance provides very limited, if any, coverage for these environmental matters.

**Sites Under Current Ownership**—The Company is conducting environmental remediation at a number of locations that it currently owns, of which ten sites are no longer in operation. As the Company is performing a portion of the remediation on a voluntary basis, it has some control over the costs to be incurred and the timing of cash flows. The factors influencing the ultimate outcome include the methods of remediation elected, the conclusions and assessment of site studies remaining to be completed, and the time period required to complete the work. No other parties are responsible for remediation at these sites.

**Formerly-Owned Sites**—The Company is conducting, or has been identified as a PRP in connection with, environmental remediation at a number of locations that it formerly owned and/or operated. Remediation costs at these former sites, such as those associated with our former phosphate mining and processing operations, could be material. The Company has accrued those costs for formerly-owned sites which are currently probable and reasonably estimable. One such site is the Coronet Industries, Inc. Superfund Alternative Site in Plant City, Florida. The Company signed a settlement agreement in 2016 with the current site owner and a past site owner, pursuant to which the Company paid $10 for past remediation costs and accepted a 40% allocable share of specified future remediation costs at this site. The Company estimates its allocable share of future remediation costs to be approximately $13. The final costs to the Company will depend on natural variations in remediation cots, including unforeseen circumstances, agency requests, new contaminants of concern and the ongoing financial viability of the other PRPs.

**Monitoring Only Sites**—The Company is responsible for a number of sites that require monitoring where no additional remediation is expected. The Company has established reserves for costs related to these sites. Payment of these liabilities is anticipated to occur over the next ten or more years. The ultimate cost to the Company will be influenced by fluctuations in projected monitoring periods or by findings that are different than anticipated.

**Indemnifications**—In connection with the acquisition of certain of the Company’s operating businesses, the Company has been indemnified by the sellers against certain liabilities of the acquired businesses, including liabilities relating to both known and unknown environmental contamination arising prior to the date of the purchase. The indemnifications may be subject to certain exceptions and limitations, deductibles and indemnity caps. While it is reasonably possible that some costs could be incurred, except for those sites identified above, the Company has inadequate information to allow it to estimate a potential range of liability, if any.

**Non-Environmental Legal Matters**

The Company is involved in various legal proceedings in the ordinary course of business and had reserves of $2 and $3 at December 31, 2018 and 2017, respectively, for all non-environmental legal defense costs incurred and settlement costs that it believes are probable and estimable. At December 31, 2018 and 2017, $2 has been included in “Other current liabilities” in the Consolidated Balance Sheets with the remaining amount included in “Other long-term liabilities.”

**Other Legal Matters**—The Company is involved in various other product liability, commercial and employment litigation, personal injury, property damage and other legal proceedings in addition to those described above, including actions that allege harm caused by products the Company has allegedly made or used, containing silica, vinyl chloride monomer and asbestos. The Company believes it has adequate reserves and that it is not reasonably possible that a loss exceeding amounts already reserved would be material. Furthermore, the Company has insurance to cover claims of these types.

**Other Commitments and Contingencies**

The Company has entered into contractual agreements with third parties for the supply of site services, utilities, materials and facilities and for operation and maintenance services necessary to operate certain of the Company’s facilities on a stand-alone basis. The duration of the contracts range from less than one year to 20 years, depending on the nature of services. These contracts may be terminated by either party under certain conditions as provided for in the respective agreements; generally, 90 days notice is required for short-term contracts and three years notice is required for longer-term contracts (generally those contracts in excess of five years). Contractual pricing generally includes a fixed and variable component.

In addition, the Company has entered into contractual agreements with third parties to purchase feedstocks or other services. The terms of these agreements vary from one to fifteen years and may be extended at the Company’s request and are cancelable by either party as provided for in each agreement. Feedstock prices are based on market prices less negotiated volume discounts or cost input formulas. The Company is required to make minimum annual payments under these contracts as follows:

| Year | Minimum Annual Purchase Commitments |
| --- | --- |
| 2019 | $ 234 |
| 2020 | 117 |
| 2021 | 119 |
| 2022 | 44 |
| 2023 | 37 |
| 2024 and beyond | 314 |
| Total minimum payments | 865 |
| Less: Amount representing interest | (102) |
| Present value of minimum payments | $ 763 |

**10. Pension and Non-Pension Postretirement Benefit Plans**

The Company sponsors defined benefit pension plans covering certain U.S. associates and certain non-U.S. associates primarily in Netherlands, Germany, Canada and Belgium. Benefits under these plans are generally based on eligible compensation and / or years of credited service. Retirement benefits in other foreign locations are primarily structured as defined contribution plans. During 2009, the Company implemented a change in its U.S. retirement benefits to shift to a defined contribution platform. Benefits under the defined benefit U.S. pension plan were frozen and the Company added an annual Company contribution to the U.S. defined contribution plan for eligible participants. Effective March 1, 2018, the Canadian pension plan was frozen to new entrants.

The Company also provides non-pension postretirement benefit plans to certain U.S. associates, to Canadian associates, to Brazilian associates and to certain associates in the Netherlands. The U.S. benefit primarily consists of a life insurance benefit for a grandfathered group of retirees, for which premiums are paid by the Company. Effective December 31, 2018, this life insurance benefit was transferred to MetLife, which moved the liability from Hexion to MetLife. The Canadian plans provide retirees and their dependents with medical and life insurance benefits, which are supplemental benefits to the respective provincial healthcare plan in Canada. The Brazilian plan became effective in 2012 as a result of a change in certain regulations, and provides retirees that contributed towards coverage while actively employed with access to medical benefits, with the retiree being responsible for 100% of the premiums. In 2014, the plan was amended such that 100% of the premiums of active employees are paid by the Company. The Netherlands’ plan provides a lump sum payment at retirement for grandfathered associates.

The following table presents the change in benefit obligation, change in plan assets and components of funded status for the Company's defined benefit pension and non-pension postretirement benefit plans for the years ended December 31:

| | Pension Benefits | | | | Non-Pension Postretirement Benefits | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 | | 2017 | | 2018 | | 2017 | |
| | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans |
| **Change in Benefit Obligation** | | | | | | | | |
| Benefit obligation at beginning of year | $ 238 | $ 636 | $ 242 | $ 548 | $ 5 | $ 11 | $ 6 | $ 10 |
| Service cost | 3 | 17 | 3 | 16 | — | — | — | — |
| Interest cost | 7 | 10 | 7 | 9 | — | 1 | — | 1 |
| Actuarial (gains) losses | (12) | (38) | 6 | (6) | (1) | 2 | (1) | — |
| Foreign currency exchange rate changes | — | (32) | — | 77 | — | (1) | — | — |
| Benefits paid | (17) | (11) | (17) | (11) | — | — | — | — |
| Plan settlements | — | — | — | 2 | (4) | — | — | — |
| Expenses paid from assets | (3) | — | (3) | — | — | — | — | — |
| Employee contributions | — | 1 | — | 1 | — | — | — | — |
| Benefit obligation at end of year | $ 216 | $ 583 | $ 238 | $ 636 | $ — | $ 13 | $ 5 | $ 11 |
| **Change in Plan Assets** | | | | | | | | |
| Fair value of plan assets at beginning of year | $ 213 | $ 412 | $ 207 | $ 349 | $ — | $ — | $ — | $ — |
| Actual return on plan assets | (8) | (1) | 26 | 4 | — | — | — | — |
| Foreign currency exchange rate changes | — | (20) | — | 48 | — | — | — | — |
| Employer contributions | — | 23 | — | 21 | 5 | — | 1 | — |
| Benefits paid | (17) | (11) | (17) | (11) | — | — | (1) | — |
| Expenses paid from assets | (3) | — | (3) | — | — | — | — | — |
| Plan settlements | — | — | — | — | (5) | — | — | — |
| Employee contributions | — | 1 | — | 1 | — | — | — | — |
| Fair value of plan assets at end of year | 185 | 404 | 213 | 412 | — | — | — | — |
| Funded status of the plan at end of year | $ (31) | $ (179) | $ (25) | $ (224) | $ — | $ (13) | $ (5) | $ (11) |

| | Pension Benefits | | | | Non-Pension Postretirement Benefits | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 | | 2017 | | 2018 | | 2017 | |
| | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans |
| Amounts recognized in the Consolidated Balance Sheets at December 31 consist of: | | | | | | | | |
| Noncurrent assets | $ — | $ — | $ — | $ 1 | $ — | $ — | $ — | $ — |
| Other current liabilities | — | (5) | — | (5) | — | (1) | — | (1) |
| Long-term pension and post employment benefit obligations | (31) | (174) | (25) | (220) | — | (12) | (5) | (10) |
| Accumulated other comprehensive loss | — | — | — | — | (2) | — | (2) | 1 |
| Net amounts recognized | $ (31) | $ (179) | $ (25) | $ (224) | $ (2) | $ (13) | $ (7) | $ (10) |
| Amounts recognized in Accumulated other comprehensive income at December 31 consist of: | | | | | | | | |
| Net prior service cost (benefit) | $ 1 | $ (1) | $ 1 | $ (1) | $ — | $ 1 | $ — | $ 2 |
| Deferred income taxes | (1) | 1 | (1) | 1 | (2) | (1) | (2) | (1) |
| Net amounts recognized | $ — | $ — | $ — | $ — | $ (2) | $ — | $ (2) | $ 1 |
| Accumulated benefit obligation | $ 216 | $ 548 | $ 238 | $ 587 | | | | |
| Accumulated benefit obligation for funded plans | 216 | 380 | 238 | 393 | | | | |
| Pension plans with underfunded or non-funded accumulated benefit obligations at December 31: | | | | | | | | |
| Aggregate projected benefit obligation | $ 216 | $ 187 | $ 238 | $ 615 | | | | |
| Aggregate accumulated benefit obligation | 216 | 181 | 238 | 567 | | | | |
| Aggregate fair value of plan assets | 185 | 12 | 213 | 391 | | | | |
| Pension plans with projected benefit obligations in excess of plan assets at December 31: | | | | | | | | |
| Aggregate projected benefit obligation | $ 216 | $ 584 | $ 238 | $ 615 | | | | |
| Aggregate fair value of plan assets | 185 | 403 | 213 | 391 | | | | |

The foreign currency impact reflected in these rollforward tables are primarily for changes in the euro versus the U.S. dollar.

The Pension Protection Act of 2006 (the “2006 PPA”) provides for minimum funding levels on U.S. plans, and plans not meeting the minimum funding requirement may be subject to certain restrictions.

Following are the components of net pension and postretirement expense (benefit) recognized for the years ended December 31, 2018, 2017 and 2016:

| | Pension Benefits | | | | | |
|---|---|---|---|---|---|---|
| | U.S. Plans | | | Non-U.S. Plans | | |
| | 2018 | 2017 | 2016 | 2018 | 2017 | 2016 |
| Service cost | $ 3 | $ 3 | $ 3 | $ 17 | $ 16 | $ 14 |
| Interest cost on projected benefit obligation | 7 | 7 | 8 | 10 | 9 | 10 |
| Expected return on assets | (14) | (13) | (14) | (13) | (11) | (10) |
| Amortization of prior service cost (benefit) | — | — | 1 | — | (1) | (1) |
| Unrealized actuarial loss (gain) | 11 | (6) | 1 | (26) | 1 | 35 |
| Net expense (benefit) | $ 7 | $ (9) | $ (1) | $ (12) | $ 14 | $ 48 |

| | Non-Pension Postretirement Benefits | | | | | |
|---|---|---|---|---|---|---|
| | U.S. Plans | | | Non-U.S. Plans | | |
| | 2018 | 2017 | 2016 | 2018 | 2017 | 2016 |
| Interest cost on projected benefit obligation | $ — | $ — | $ — | $ 1 | $ 1 | $ 1 |
| Amortization of prior service benefit | — | — | (1) | — | — | — |
| Unrealized actuarial (gain) loss | — | (1) | — | 2 | 1 | (1) |
| Net (benefit) expense | $ — | $ (1) | $ (1) | $ 3 | $ 2 | $ — |

***Determination of actuarial assumptions***

The Company's actuarial assumptions are determined based on the demographics of the population, target asset allocations for funded plans, regional economic trends, statutory requirements and other factors that could impact the benefit obligation and plan assets. For our European plans, most assumptions are set by country, as the plans within these countries have similar demographics, and are impacted by the same regional economic trends and statutory requirements.

The discount rates selected reflect the rate at which pension obligations could be effectively settled. The Company selects the discount rates based on cash flow models using the yields of high-grade corporate bonds or the local equivalent with maturities consistent with the Company's anticipated cash flow projections. The Company's pension and OPEB liabilities and related service and interest cost are calculated using a split-rate interest discounting methodology, whereby expected future cash flows related to these liabilities are discounted using multiple interest rates on a forward curve that correspond to the timing of the expected cash flows.

The expected rates of future compensation level increases are based on salary and wage trends in the chemical and other similar industries, as well as the Company's specific long-term compensation targets by country. Input is obtained from the Company's internal Human Resources group and from outside actuaries. These rates include components for wage rate inflation and merit increases.

The expected long-term rates of return on plan assets are determined based on the plans' current and projected asset mix. To determine the expected overall long-term rate of return on assets, the Company takes into account the rates on long-term debt investments held within the portfolio, as well as expected trends in the equity markets, for plans including equity securities. Peer data and historical returns are reviewed and the Company consults with its actuaries, as well as the Plan's investment advisors, to confirm that the Company's assumptions are reasonable.

The weighted average rates used to determine the benefit obligations were as follows at December 31, 2018 and 2017:

| | Pension Benefits | | | | Non-Pension Postretirement Benefits | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 | | 2017 | | 2018 | | 2017 | |
| | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans |
| Discount rate | 4.1% | 1.9% | 3.5% | 1.9% | 4.1% | 6.3% | 3.2% | 5.3% |
| Rate of increase in future compensation levels | — | 2.3% | — | 2.4% | — | — | — | — |
| The weighted average assumed health care cost trend rates are as follows at December 31: | | | | | | | | |
| Health care cost trend rate assumed for next year | — | — | — | — | 6.4% | 6.2% | 6.6% | 5.8% |
| Rate to which the cost trend rate is assumed to decline (the ultimate trend rate) | — | — | — | — | 4.5% | 4% | 4.5% | 4.5% |
| Year that the rate reaches the ultimate trend rate | — | — | — | — | 2029 | 2040 | 2029 | 2023 |

The weighted average rates used to determine net periodic pension expense (benefit) were as follows for the years ended December 31, 2018, 2017 and 2016:

| | Pension Benefits | | | | | | Non-Pension Postretirement Benefits | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | U.S. Plans | | | Non-U.S. Plans | | | U.S. Plans | | | Non-U.S. Plans | | |
| | 2018 | 2017 | 2016 | 2018 | 2017 | 2016 | 2018 | 2017 | 2016 | 2018 | 2017 | 2016 |
| Discount rate | 3.5% | 3.9% | 4.1% | 1.9% | 1.9% | 2.3% | 3.2% | 3.4% | 3.4% | 5.3% | 6.1% | 5.5% |
| Rate of increase in future compensation levels | — | — | — | 2.4% | 2.4% | 2.4% | — | — | — | — | — | — |
| Expected long-term rate of return on plan assets | 6.7% | 6.7% | 6.7% | 3.1% | 2.9% | 3.1% | — | — | — | — | — | — |

A one-percentage-point change in the assumed health care cost trend rates would change the projected benefit obligation for international non-pension postretirement benefits by $2 and service cost and interest cost by a negligible amount. The impact on U.S. plans is negligible.

***Pension Investment Policies and Strategies***

The Company's investment strategy for the assets of its North American defined benefit pension plans is to maximize the long-term return on plan assets using a mix of equities, fixed income and alternative investments with a prudent level of risk. Risk tolerance is established through careful consideration of plan liabilities, plan funded status and expected timing of future cash flow requirements. The investment portfolio contains a diversified blend of equity, fixed-income and alternative investments. For U.S. plans, equity investments are also diversified across U.S. and international stocks, as well as growth, value and small and large capitalization investments, while the Company's Canadian plan includes a blend of Canadian securities with U.S. and other foreign investments. The alternative investments are allocated in a diversified fund structure with exposure to a variety of hedge fund strategies. Investment risk and performance is measured and monitored on an ongoing basis through periodic investment portfolio reviews, annual liability measurements and periodic asset and liability studies. As plan funded status changes, adjustments to the diversified portfolio may be considered to reduce funded status volatility and better match the duration of plan liabilities.

The Company periodically reviews its target allocation of North American plan assets among the various asset classes. The targeted allocations are based on anticipated asset performance, discussions with investment professionals and on the projected timing of future benefit payments.

The Company observes local regulations and customs governing its European pension plans in determining asset allocations, which generally require a blended weight leaning toward more fixed income securities, including government bonds.

| | Actual | | |
|---|---|---|---|
| | **2018** | **2017** | **Target 2018** |
| Weighted average allocations of U.S. pension plan assets at December 31: | | | |
| Equity securities | 32% | 34% | 35% |
| Debt securities | 55% | 55% | 55% |
| Cash, short-term investments and other | 13% | 11% | 10% |
| **Total** | 100% | 100% | 100% |
| Weighted average allocations of non-U.S. pension plan assets at December 31: | | | |
| Equity securities | 19% | 22% | 20% |
| Debt securities | 78% | 76% | 80% |
| Cash, short-term investments and other | 3% | 2% | —% |
| **Total** | 100% | 100% | 100% |

***Fair Value of Plan Assets***

Fair value is the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Fair value measurement provisions establish a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. This guidance describes three levels of inputs that may be used to measure fair value:

- **Level 1:** Inputs are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- **Level 2:** Pricing inputs are other than quoted prices in active markets included in Level 1, which are either directly or indirectly observable as of the reported date.
- **Level 3:** Unobservable inputs that are supported by little or no market activity and are developed based on the best information available in the circumstances. For example, inputs derived through extrapolation or interpolation that cannot be corroborated by observable market data.

Certain investments measured at net asset value ("NAV"), as a practical expedient for fair value, have been excluded from the fair value hierarchy.

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The following table presents U.S. pension plan investments measured at fair value on a recurring basis as of December 31, 2018 and 2017:

| | Fair Value Measurements Using | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 | | | | 2017 | | | |
| | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Unobserv-able Inputs (Level 3) | Total | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Unobserv-able Inputs (Level 3) | Total |
| Large cap equity funds [1] | $ — | $ 33 | $ — | $ 33 | $ — | $ 38 | $ — | $ 38 |
| Small/mid cap equity funds [1] | — | 5 | — | 5 | — | 6 | — | 6 |
| International equity funds [1] | — | 22 | — | 22 | — | 30 | — | 30 |
| Fixed income securities [1] | — | 102 | — | 102 | — | 116 | — | 116 |
| Cash equivalents [2] | — | 3 | — | 3 | — | 6 | — | 6 |
| | $ — | $ 165 | $ — | $ 165 | $ — | $ 196 | $ — | $ 196 |
| Investments measured at fair value using net asset value as a practical expedient: | | | | | | | | |
| Other funds [3] | | | | $ 20 | | | | $ 17 |
| Total | | | | $ 185 | | | | $ 213 |

The following table presents non-U.S. pension plan investments measured at fair value on a recurring basis as of December 31, 2018 and 2017:

| | Fair Value Measurements Using | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 | | | | 2017 | | | |
| | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Unobserv-able Inputs (Level 3) | Total | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Unobserv-able Inputs (Level 3) | Total |
| Pooled insurance products with fixed income guarantee [1] | $ — | $ 12 | $ — | $ 12 | $ — | $ 11 | $ — | $ 11 |
| | $ — | $ 12 | $ — | $ 12 | $ — | $ 11 | $ — | $ 11 |
| Investments measured at fair value using net asset value as a practical expedient: | | | | | | | | |
| Other international equity funds [3] | | | | $ 77 | | | | $ 90 |
| Other fixed income securities [3] | | | | 315 | | | | 311 |
| Total | | | | $ 404 | | | | $ 412 |

(1) Level 2 equity and fixed income securities are primarily in pooled asset and mutual funds and are valued based on underlying net asset value multiplied by the number of shares held. The underlying asset values are based on observable inputs and quoted market prices.

(2) Cash equivalents represent investment in a collective short term investment fund, which is a cash sweep for uninvested cash that earns interest monthly. For these investments, book value is assumed to equal fair value due to the short duration of the investment term.

(3) Represents investments in commingled funds with exposure to a variety of hedge fund strategies, which are not publicly traded and have ongoing redemption restrictions. The Company's interest in these investments is measured at net asset value per share as a practical expedient for fair value, which is derived from the underlying asset values in these funds, only some of which represent observable inputs and quoted market prices. In accordance with ASU 2015-07, these investments are excluded from the fair value hierarchy.

***Projections of Plan Contributions and Benefit Payments***

The Company expects to make contributions totaling $30 to its defined benefit pension plans in 2019.

Estimated future plan benefit payments as of December 31, 2018 are as follows:

| | Pension Benefits | | Non-Pension Postretirement Benefits | |
|---|---|---|---|---|
| Year | U.S. Plans | Non-U.S. Plans | U.S. Plans | Non-U.S. Plans |
| 2019 | $ 18 | $ 13 | $ — | $ 1 |
| 2020 | 18 | 12 | — | — |
| 2021 | 18 | 13 | — | — |
| 2022 | 17 | 14 | — | — |
| 2023 | 16 | 15 | — | 1 |
| 2024-2028 | 73 | 99 | — | 3 |

***Defined Contribution Plans***

The Company sponsors a number of defined contribution plans for its associates, primarily in the U.S., Canada, Europe and in the Asia-Pacific region. Full-time associates are generally eligible to participate immediately and may make pre-tax and after-tax contributions subject to plan and statutory limitations. For certain plans, the Company has the option to make contributions above the match provided in the plan based on financial performance.

As previously discussed, U.S retirement income benefits are provided under the Company's defined contribution plan (the “401(k) Plan”). This plan allows eligible associates to make pre-tax contributions from 1% to 15% of eligible earnings for associates who meet the IRS definition of a highly compensated employee and up to 25% for all other associates up to the federal limits for qualified plans. Associates contributing to the 401(k) are eligible to receive matching contributions from the Company at 100% on contributions of up to 5% of eligible earnings. An additional matching contribution may be made if the Company achieves specified annual financial targets established at the beginning of each plan year. In addition, the Company makes an annual retirement contribution ranging from 3% to 7% of eligible compensation depending on years of benefit service. All associates who are actively employed on the last day of the year are eligible for the true-up match and annual retirement contribution, unless otherwise determined by collective bargaining agreements. Effective January 2, 2018, the 401(k) Plan added the option for eligible participants to make after-tax contributions to a Roth 401(k).

The Company incurred expense for contributions under its defined contribution plans of $17, $16 and $14 during the years ended December 31, 2018, 2017, and 2016, respectively.

***Non-Qualified and Other Retirement Benefit Plans***

The Company provides key executives in some locations with non-qualified benefit plans that provide participants with an opportunity to elect to defer compensation or to otherwise provide supplemental retirement benefits in cases where executives cannot fully participate in the defined benefit or defined contribution plans because of plan or local statutory limitations. Most of the Company's supplemental benefit plans are unfunded and benefits are paid from the general assets of the Company. The liabilities related to defined benefit supplemental benefits are included in the previously discussed defined benefit pension disclosures.

The Company maintains a non-qualified defined contribution plan (the “SERP”) that provides annual employer credits to eligible U.S. associates of 5% of eligible compensation above the IRS limit for qualified plans. The Company can also make discretionary credits under the SERP; however, no participant contributions are permitted. The account credits are made annually to an unfunded phantom account, in the following calendar year. Certain executives also previously earned benefits under U.S. non-qualified executive supplemental plans that were frozen prior to 2010.

The Company’s liability for these non-qualified benefit plans was $5 and $6 at December 31, 2018 and 2017, and is included in “Other long-term liabilities” in the Consolidated Balance Sheets.

The Company’s German subsidiaries offer a government subsidized early retirement program to eligible associates called Altersteilzeit or ATZ Plans. The German government provides a subsidy in certain cases where the participant is replaced with a qualifying candidate. The Company had liabilities for these arrangements of $1 at both December 31, 2018 and 2017. The Company incurred expense for these plans of less than $1 for each of the years ended December 31, 2018, 2017, and 2016.

Also included in the Consolidated Balance Sheets at December 31, 2018 and 2017 are other post-employment benefit obligations relating to long-term disability and for liabilities relating to European jubilee benefit plans of $4 and $3, respectively.

**11. Stock Option Plans and Stock Based Compensation**

The following is a summary of existing stock based compensation plans and outstanding shares as of December 31, 2018:

| Plan Name | Shares Outstanding | Plan Expiration | Vesting Terms/Status | Option Term | Number of Shares Authorized |
|---|---|---|---|---|---|
| **Momentive Performance Materials Holdings LLC 2011 Equity Incentive Plan** | | February 2021 | | 10 years | 20,800,000 |
| Unit Options and Restricted Deferred Units ("RDUs"): | | | | | |
| ***2011 Grant*** | | | | | |
| Tranche A Options and RDUs | Options: 1,999,720 | | Time-vest ratably over 4 years; Accelerated vesting six months after certain change of control transactions as defined by the 2011 Equity Plan | | |
| Tranche B Options and RDUs | Options: 970,865<br><br>RDUs: 323,619 | | Performance-based: Vest upon the earlier of i) the two year anniversary from the date of the achievement of the targeted common unit value following certain corporate transactions or ii) the six month anniversary from the date the targeted common unit value is achieved following certain change of control transactions | | |
| Tranche C Options and RDUs | Options: 970,865<br><br>RDUs: 323,619 | | Performance-based: Vest upon the earlier of i) the one year anniversary from the date of the achievement of the targeted common unit value following certain corporate transactions or ii) the six month anniversary from the date the targeted common unit value is achieved following certain change of control transactions | | |
| ***2013 Grant*** | | | | | |
| Unit Options | 3,880,591 | | Time-vest ratably over 4 years; Accelerated vesting six months after a change of control event as defined by the 2011 Equity Plan | 10 years | |
| RDUs | 2,966,894 | | Performance-based: Vest upon the earlier of 1) one year from the achievement of the targeted common unit value and a realization event or 2) six months from the achievement of the targeted common unit value and a change in control event, as such terms are defined by the 2011 Equity Plan | N/A | |

***Summary of Plans***

In 2011, the Compensation Committee of the Board of Managers of Hexion Holdings approved the Momentive Performance Materials Holdings LLC 2011 Equity Incentive Plan (the "2011 Equity Plan"). Under the 2011 Equity Plan, Hexion Holdings can award unit options, unit awards, restricted units, restricted deferred units, and other unit-based awards. The restricted deferred units are non-voting units of measurement which are deemed to be equivalent to one common unit of Hexion Holdings. The unit options are options to purchase common units of Hexion Holdings. The awards contain restrictions on transferability and other typical terms and conditions.

***Unit Options***

In 2013, the Company granted Unit Options with an aggregate grant date fair value of approximately $2. The fair value was estimated at the grant date using a Monte Carlo valuation method. The Monte Carlo valuation method requires the use of a range of assumptions. The range of risk-free interest rates was 0.11% to 2.06%, expected volatility rates ranged from 28.1% to 35.5% and the dividend rate was 0%. The expected life assumption is not used in the Monte Carlo valuation method, but the output of the model indicated a weighted-average expected life of 6.2 years.

In 2011, the Company granted Tranche A Options with an aggregate grant date fair value of approximately $6. The fair value of each option was estimated at the grant date using a Black-Scholes option pricing model. The assumptions used to estimate the fair value were a 2.17% risk-free interest rate, a 6.3 year expected life, a 37.5% expected volatility rate and a 0% dividend rate.

In 2011, the Company granted Tranche B and Tranche C Options with performance and market conditions, each with an aggregate grant date fair value of approximately $3. The fair value was estimated at the grant date using a Monte Carlo valuation method, which is a commonly accepted valuation model for awards with market and performance conditions. The Monte Carlo valuation method requires the use of a range of assumptions. The range of risk-free interest rates was 0.16% to 3.44%, expected volatility rates ranged from 34.6% to 41.7% and the dividend rate was 0%. The expected life assumption is not used in the Monte Carlo valuation method, but the output of the model indicated a weighted-average expected life of 9.2 years. As of December 31, 2018 it is not probable the related options will vest. Compensation cost will be recognized over the service period once the satisfaction of the performance condition is probable.

***Restricted Deferred Units***

In 2013, the Company granted RDUs with performance and market conditions with an aggregate grant date fair value of approximately $4. The fair value was estimated at the grant date using the same Monte Carlo valuation method and assumptions used for the Unit Options. The RDUs have an indefinite life, thus the term used in the valuation model was 30 years, which resulted in a weighted-average expected life of 22 years. As of December 31, 2018, it is not probable the related RDUs will vest. Compensation cost will be recognized over the service period once the satisfaction of the performance condition is probable.

In 2011, the Company granted Tranche A RDUs with an aggregate grant date fair value of approximately $4.

In 2011, the Company granted Tranche B and Tranche C RDUs with performance and market conditions, each with an aggregate grant date fair value of approximately $2. The fair value was estimated at the grant date using the same Monte Carlo valuation method and assumptions used for the Tranche B and Tranche C Options. The RDUs have an indefinite life, thus the term used in the valuation model was 30 years, which resulted in a weighted-average expected life of 21.4 years. As of December 31, 2018 it is not probable the related RDUs will vest. Compensation cost will be recognized over the service period once the satisfaction of the performance condition is probable.

Although the 2011 Equity Plan was issued by Hexion Holdings, the underlying compensation cost represents compensation costs paid for by Hexion Holdings on Hexion's behalf, as a result of the employees' service to Hexion. All compensation cost is recorded over the requisite service period on a graded-vesting basis.

***Financial Statement Impact***

Share-based compensation expense is recognized, net of estimated forfeitures, over the requisite service period on a graded-vesting basis. The Company adjusts compensation expense periodically for forfeitures.

The Company recognized no share-based compensation expense for the year ended December 31, 2018 and less than $1 for the years ended December 31, 2017 and 2016, respectively. The amounts are included in "Selling, general and administrative expense" in the Consolidated Statements of Operations. The Company expects additional compensation expense of $17, which will be recognized upon an initial public offering or other future contingent event.

***Options Activity***

Following is a summary of the Company's stock option plan activity for the year ended December 31, 2018:

| | **Hexion Holdings Common Units** | **Weighted Average Exercise Price** |
|---|---|---|
| Options outstanding at December 31, 2017 [(1)] | 10,512,385 | $ 4.01 |
| Options granted | — | $ — |
| Options forfeited [(1)] | (2,470,024) | $ 6.82 |
| Options outstanding at December 31, 2018 | 8,042,361 | $ 3.14 |
| Exercisable at December 31, 2018 | 6,100,631 | $ 2.54 |

(1) Includes 2,318,200 of options that expired on December 31, 2017.

At December 31, 2018, exercise prices for options outstanding ranged from $1.21 to $29.42, with a weighted average remaining contractual life of 2.2 years. The weighted average remaining contractual life for options exercisable and options expected to vest was 2.5 and 0
years, respectively. At December 31, 2018, the aggregate intrinsic value of both options exercisable and options expected to vest was $0.

The total amount of cash received and total intrinsic value (which is the amount by which the stock price exceeded the exercise price of the options on the date of exercise) of options exercised during the years ended December 31, 2018, 2017, and 2016 was $0.

***Restricted Unit Activity***

Following is a summary of the Company's restricted unit plan activity for the year ended December 31, 2018:

| | Hexion Holdings Common Units | Weighted Average Grant Date Fair Value |
|---|---|---|
| Nonvested at December 31, 2017 | 3,744,917 | $ 1.95 |
| Restricted units forfeited | (130,785) | $ 2.06 |
| Nonvested at December 31, 2018 | 3,614,132 | $ 1.94 |

As of December 31, 2018, there are no outstanding unvested time-based vesting restricted units.

***Stock-Based Deferred Compensation Plan***

In 2004, in connection with the acquisition of Borden Chemical by Apollo, certain key employees of the Company deferred the receipt of compensation and were credited with a number of deferred stock units that were equal in value to the amount of compensation deferred. In total, the Company granted 1,007,944 deferred common stock units under the Hexion LLC 2004 Deferred Compensation Plan (the "2004 DC Plan"), which is an unfunded plan. Each unit gives the grantee the right to one common stock unit of Hexion Holdings. Under the 2004 DC Plan, the deferred common stock units are not distributed to participants until their employment with the Company ends. At December 31, 2018, there were 198,394 undistributed units under the 2004 DC Plan. Under certain limited circumstances this award could be distributed in the form of a cash payment.

**12. Dispositions**

***ATG***

On January 8, 2018, the Company completed the sale of its Additives Technology Group business ("ATG") to MÜNZING CHEMIE GmbH. ATG was previously included within the Company's Forest Products Resins segment and includes manufacturing sites located in Somersby, Australia and Sungai Petani, Malaysia. The ATG business produced a range of specialty chemical materials for the engineered wood, paper impregnation and laminating industries, including catalysts, release agents and wetting agents.

The Company received gross cash consideration for the ATG business in the amount of $49, which was used for general corporate purposes. The Company recorded a gain on this disposition of $44 which is included in "Gain on dispositions" in the Consolidated Statements of Operations for the year ended December 31, 2018. At December 31, 2017, the assets and liabilities related to the sale are classified as "Current assets held for sale", "Long-term assets held for sale", and "Current liabilities associated with assets held for sale" within the Consolidated Balance Sheets.

***HAI***

On May 31, 2016, the Company sold its 50% interest in HA-International, LLC ("HAI"), a joint venture within the Epoxy, Phenolic and Coating Resins segment serving the North American foundry industry, to its joint venture partner HA-USA, Inc., for a purchase price of $136, which included $2 representing the Company's 50% share of HAI's cash balance at closing. Sale proceeds consisted of $61 in cash and a $75 buyer's note issued by HA-USA, Inc. to the Company. As of December 31, 2016, the entire $75 of cash was received on the buyer's note. The Company recognized a gain on this disposition of $120, which is recorded as a component of "Gain on dispositions" in the Consolidated Statements of Operations.

***PAC Business***

On June 30, 2016, the Company completed the sale of its Performance Adhesives, Powder Coatings, Additives & Acrylic Coatings and Monomers business (the "PAC Business") pursuant to the terms of a purchase agreement with Synthomer plc (the "Buyer") dated March 18, 2016. The PAC Business includes manufacturing sites in Sokolov, Czech Republic; Sant'Albano, Italy; Leuna, Germany; Ribecourt, France; Asua, Spain; Roebuck, South Carolina; and Chonburi, Thailand. The PAC Business produced resins, polymers, monomers and additives that provide enhanced performance for adhesives, sealants, paints, coatings, mortars and cements used primarily in consumer, industrial and building and construction applications.

The Company received gross cash consideration for the PAC Business in the amount of $226, less approximately $6 relating to liabilities, net of cash and estimated working capital, that transferred to the Buyer as part of the Purchase Agreement. A subsequent post-closing adjustment to the purchase price of less than $1 was made in accordance with the purchase agreement. The Company recorded a gain on this disposition of $120, which is recorded in "Gain on dispositions" in the Consolidated Statements of Operations.

The PAC Business had pre-tax income of $14 for the years ended December 31, 2016, which is reported as a component of "Loss before income tax and earnings from unconsolidated entities" in the Consolidated Statements of Operations.

**13. Income Taxes**

On December 22, 2017, the United States enacted tax reform legislation that included a broad range of business tax provisions, including but not limited to a reduction in the U.S. federal tax rate from 35% to 21% as well as provisions that limit or eliminate various deductions or credits. The legislation also causes U.S. expenses, such as interest and general administrative expenses, to be taxed and imposes a new tax on U.S. cross-border payments.

In response to the enactment of U.S. tax reform, the SEC issued guidance (referred to as "SAB 118") to address the complexity in accounting for this new legislation. When the initial accounting for items under the new legislation is incomplete, the guidance allows companies to recognize provisional amounts when reasonable estimates can be made or to continue to apply the prior tax law if a reasonable estimate of the impact cannot be made. The SEC has provided up to a one-year window for companies to finalize the accounting for the impacts of this new legislation and the Company finalized its accounting during 2018.

The 2017 provision for income taxes included a provisional one-time charge of $65 for the transition tax on accumulated foreign earnings and profits, which resulted in an associated one-time reduction estimated at $185 in the Company's net operating loss carryforward. Upon filing the 2017 income tax return, the final transition tax calculated was $64 and the related net operating loss utilized was $181.

During 2018, the Company recognized income tax expense of $40, primarily as a result of income from certain foreign operations. In the United States, as a result of Tax Reform, disallowed interest expense resulted in current year taxable income which utilized a net operating loss carryforward. The disallowed interest expense carryforward of $283 generated a deferred tax asset. The decrease in the valuation allowance due to the net operating loss utilization was offset by an increase in the valuation allowance recorded on the interest expense carryforward deferred tax asset. Tax Reform also resulted in the inclusion of Global Intangible Low Tax Income ("GILTI") of $21, which was fully offset by our net operating loss. This further reduced our valuation allowance.

Additionally, certain provisions of Tax Reform were not effective until 2018. The Company evaluated and recorded the impact of these provisions in the financial statements and the Company has made its accounting policy elections with respect to these items. The Company elected to account for GILTI as a current period expense in the reporting period in which the tax is incurred.

As a result of U.S. tax reform the Company recognized the earnings of non-U.S. operations in its 2017 U.S. consolidated income tax return under the transition tax. The previously taxed earnings are expected to be repatriated to the U.S. The Company has accrued the incremental tax expense expected to be incurred upon the repatriation of these earnings. In addition, the Company has certain intercompany arrangements that, if settled, may trigger taxable gains or losses based on foreign currency exchange rates in place at the time of settlement. As a result of the conditions related to the Company's ability to continue as a going concern described in Note 1, in the fourth quarter of 2018, the Company is no longer able to assert permanent reinvestment with respect to certain intercompany arrangements previously considered indefinite, and the impact to deferred taxes on the associated foreign currency translation resulted in no tax expense.

During 2017, the Company recognized income tax expense of $18, primarily as a result of income from certain foreign operations. Losses in the United States created a deferred income tax benefit which was completely offset by an increase to the valuation allowance. The Company incurred a provisional income tax expense of $167 associated with revaluing its net U.S. deferred tax attributes to reflect the new U.S. corporate tax rate of 21%, as well as an additional $65 provisional income tax expense associated with the estimated transition tax. The Company's valuation allowance was reduced by $234 as a result of the impact Tax Reform had on reducing its net deferred tax assets.

Due to the previously enacted U.S. tax rate change, estimated balances as of December 31, 2017 represented timing differences, which changed when those estimates were finalized with the filing of the 2017 income tax return. The Company updated its provisional estimate of the transition tax and assessed the impact on its valuation allowance during 2018.

During 2016, the Company recognized income tax expense of $38, primarily as a result of income from certain foreign operations. Losses in the United States created a deferred income tax benefit which was completely offset by an increase to the valuation allowance. Income tax expense detail for the Company for the years ended December 31, 2018, 2017 and 2016 is as follows:

| | 2018 | 2017 | 2016 |
|---|---|---|---|
| **Current:** | | | |
| State and local | $ 2 | $ 2 | $ 2 |
| Foreign | 26 | 19 | 34 |
| Total current | 28 | 21 | 36 |
| **Deferred:** | | | |
| Federal | 1 | (5) | — |
| State and local | — | — | (1) |
| Foreign | 11 | 2 | 3 |
| Total deferred | 12 | (3) | 2 |
| Income tax expense | $ 40 | $ 18 | $ 38 |

A reconciliation of the Company's combined differences between income taxes computed at the federal statutory tax rate of 21% and provisions for income taxes for the year ended December 31, 2018 and the federal statutory tax rate of 35% and provisions for income taxes for the years ended December 31, 2017 and 2016 is as follows:

| | 2018 | 2017 | 2016 |
|---|---|---|---|
| Income tax benefit computed at federal statutory tax rate | $ (26) | $ (77) | $ (4) |
| State tax provision, net of federal benefits | 1 | — | — |
| Foreign tax rate expense (benefit) differential | 9 | (2) | (18) |
| Foreign source income (loss) subject to U.S. taxation | 2 | (45) | 21 |
| Losses (gains) and other expenses (income) not deductible (excluded) for tax | 10 | 20 | (4) |
| Increase (decrease) in the taxes due to changes in valuation allowance | 25 | (129) | 42 |
| Additional expense (benefit) on foreign unrepatriated earnings | 1 | — | (16) |
| Additional expense (benefit) for uncertain tax positions | 18 | 5 | (3) |
| Tax recognized in other comprehensive income | — | (3) | — |
| Changes in enacted tax laws and tax rates | — | 167 | — |
| Transition tax expense | — | 65 | — |
| Write-off of deferred tax assets | — | 17 | 20 |
| Income tax expense | $ 40 | $ 18 | $ 38 |

In December 2017, the United States enacted tax reform legislation. As a result, in 2017 the Company incurred a provisional income tax expense of $167 associated with revaluing its net U.S. deferred tax attributes to reflect the new U.S. corporate tax rate of 21%, as well as an additional $65 provisional income tax expense associated with the estimated transition tax. The Company's valuation allowance was reduced by $234 as a result of the impact Tax Reform had on reducing its net deferred tax assets.

The domestic and foreign components of the Company's loss before income taxes for the years ended December 31, 2018, 2017 and 2016 is as follows:

| | 2018 | 2017 | 2016 |
|---|---|---|---|
| Domestic | $ (195) | $ (143) | $ (115) |
| Foreign | 69 | (77) | 104 |
| **Total** | $ (126) | $ (220) | $ (11) |

The tax effects of significant temporary differences and net operating loss, interest expense limitation, and credit carryforwards, which comprise the Company's deferred tax assets and liabilities at December 31, 2018 and 2017 is as follows:

| | 2018 | 2017 |
|---|---|---|
| **Assets:** | | |
| Non-pension post-employment | $ 5 | $ 5 |
| Accrued and other expenses | 56 | 53 |
| Property, plant and equipment | 4 | 1 |
| Loss, expense, and credit carryforwards | 488 | 477 |
| Intangibles | 5 | 6 |
| Pension and postretirement benefit liabilities | 37 | 47 |
| Gross deferred tax assets | 595 | 589 |
| Valuation allowance | (547) | (522) |
| Net deferred tax asset | 48 | 67 |
| **Liabilities:** | | |
| Property, plant and equipment | (47) | (52) |
| Unrepatriated earnings of foreign subsidiaries | (10) | (9) |
| Intangible assets | (6) | (9) |
| Gross deferred tax liabilities | (63) | (70) |
| Net deferred tax liability | $ (15) | $ (3) |

The following table summarizes the presentation of the Company's net deferred tax liability in the Consolidated Balance Sheets at December 31, 2018 and 2017:

| | 2018 | 2017 |
|---|---|---|
| **Assets:** | | |
| Long-term deferred income taxes | $ — | $ 8 |
| **Liabilities:** | | |
| Long-term deferred income taxes | (15) | (11) |
| Net deferred tax liability | $ (15) | $ (3) |

Hexion LLC, the Company's parent, is not a member of the registrant. Hexion LLC and its eligible subsidiaries file a consolidated U.S. Federal income tax return. Therefore, the Company can utilize Hexion LLC's tax attributes or vice versa. Cumulative income at Hexion LLC has reduced the amount of net operating loss carryforwards otherwise available to the Company by $26. However, since the Company accounts for Hexion LLC under the separate return method, the utilization is not reflected in the above gross deferred tax asset - loss, expense, and credit carryforwards. Further, the valuation allowance above does not reflect the related $26 offset.

As of December 31, 2018, the Company had a $547 valuation allowance for its net deferred tax assets that management believes, more likely than not, will not be realized. The Company's deferred tax assets include federal, state and foreign net operating loss carryforwards as well as an interest expense carryforward. The federal net operating loss carryforwards available are $1,048, which excludes the cumulative income from Hexion LLC, as described above. The federal net operating loss carryforwards expire beginning in 2027. The interest expense carryforward available is $283. A full valuation allowance has been recorded against these loss and expense carryforwards. The Company has provided a full valuation allowance against its state deferred tax assets, primarily related to state net operating loss carryforwards of $77. A valuation allowance of $115 has been recorded against a portion of foreign net operating loss carryforwards, primarily in Germany and the Netherlands.

The Company continues to not assert indefinite reinvestment of undistributed earnings of its foreign subsidiaries outside of the United States. Accordingly, a related deferred tax liability of $10 is recorded.

The following table summarizes the changes in the valuation allowance for the years ended December 31, 2018, 2017, and 2016:

| | Balance at Beginning of Period | Changes in Related Gross Deferred Tax Assets/Liabilities | Charge | Balance at End of Period |
|---|---|---|---|---|
| Valuation allowance on Deferred tax assets: | | | | |
| Year ended December 31, 2016 | $ 611 | $ (2) | $ 42 | $ 651 |
| Year ended December 31, 2017 | 651 | — | (129) | 522 |
| Year ended December 31, 2018 | 522 | — | 25 | 547 |

For 2018, previous losses in the U.S. and previous and current losses in certain foreign operations for recent periods continue to provide sufficient negative evidence requiring a full valuation allowance against the net federal, state, and foreign deferred tax assets. The Company's risk of not being able to continue as a going concern further supports the maintenance of a full valuation allowance.

***Examination of Tax Returns***

The Company conducts business globally and, as a result, certain of its subsidiaries file income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. In the normal course of business, the Company is subject to examinations by taxing authorities throughout the world, including major jurisdictions such as the United States, Brazil, Canada, China, Germany, Italy, Netherlands and the United Kingdom.

With minor exceptions, the Company's closed tax years for major jurisdictions are years prior to: 2014 for United States, 2012 for Brazil, 2010 for Canada, 2013 for China, 2014 for Germany, 2007 for Italy, 2010 for Netherlands and 2014 for the United Kingdom.

The Company continuously reviews issues that are raised from ongoing examinations and open tax years to evaluate the adequacy of its liabilities. As the various taxing authorities continue with their audit/examination process, the Company will adjust its reserves accordingly to reflect the current status and settlements.

***Unrecognized Tax Benefits***

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

| | 2018 | 2017 |
|---|---|---|
| Balance at beginning of year | $ 80 | $ 73 |
| Additions based on tax positions related to the current year | 4 | 2 |
| Additions for tax positions of prior years | 16 | 1 |
| Reductions for tax positions of prior years | (2) | (1) |
| Settlements | — | — |
| Foreign currency translation | (4) | 5 |
| Balance at end of year | $ 94 | $ 80 |

During the year ended December 31, 2018, the Company increased the amount of its unrecognized tax benefits, including its accrual for interest and penalties, by $16, primarily as a result of increases in the unrecognized tax benefit for various intercompany transactions, offset by releases of unrecognized tax benefits from negotiations with foreign jurisdictions and lapses of statute of limitations. During the years ended December 31, 2018, 2017, and 2016, the Company recognized approximately $3, $5 and $6, respectively, in interest and penalties. The Company had approximately $51 and $49 accrued for the payment of interest and penalties at December 31, 2018 and 2017, respectively.

$94 of unrecognized tax benefits, if recognized, would affect the effective tax rate; however, a portion of the unrecognized tax benefit would be in the form of a net operating loss carryforward, which would be subject to a full valuation allowance. The Company anticipates recognizing less than $25 of the total amount of unrecognized tax benefits within the next 12 months as a result of lapses of statute of limitations, negotiations with foreign jurisdictions, settlements, and completion of audit examinations.

**14. Summarized Financial Information of Unconsolidated Affiliates**

The Company has included financial statements as of December 31, 2018 and 2017 and for the years ended December 31, 2018, 2017 and 2016 of the unconsolidated affiliate Momentive UV Coatings (Shanghai) Co., Ltd as Exhibit 10.101 of this Annual Report on Form 10-K.

Summarized financial information of the unconsolidated affiliate HAI for the year ended December 31, 2016 is as follows:

| | Year Ended December 31, 2016[(1)] |
|---|---|
| Net sales | $ 59 |
| Gross profit | 25 |
| Pre-tax income | 14 |
| Net income | 14 |

(1) Amounts for the year ended December 31, 2016 represent activity through May 31, 2016, the date on which the Company sold its 50% interest in HAI (see Note 12).

Summarized financial information of the Company’s remaining unconsolidated affiliates, which are listed below, as of December 31, 2018 and 2017 and for the years ended December 31, 2018, 2017, and 2016 is as follows:

- Hexion Shchekinoazot Holding B.V.
- Sanwei Hexion Company Limited
- Hexion Australia Pty Ltd
- MicroBlend Columbia S.A.S

| | December 31, 2018 | December 31, 2017 |
|---|---|---|
| Current assets | $ 18 | $ 21 |
| Non-current assets | 15 | 18 |
| Current liabilities | 9 | 13 |
| Non-current liabilities | 11 | 10 |

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Net sales | $ 75 | $ 78 | $ 71 |
| Gross profit | 17 | 16 | 15 |
| Pre-tax income | 1 | 3 | 6 |
| Net income | — | 2 | 4 |

## 15. Segment and Geographic Information

The Company's business segments are based on the products that the Company offers and the markets that it serves. At December 31, 2018, the Company had three reportable segments: Epoxy, Phenolic and Coating Resins; Forest Products Resins; and Corporate and Other. A summary of the major products and items associated with the Company's reportable segments are as follows:

- **Epoxy, Phenolic and Coating Resins:** epoxy specialty resins, phenolic encapsulated substrates, versatic acids and derivatives, basic epoxy resins and intermediates, phenolic specialty resins and molding compounds
- **Forest Products Resins:** forest products resins and formaldehyde applications
- **Corporate and Other:** primarily corporate general and administrative expenses that are not allocated to the other segments, such as shared service and administrative functions, foreign exchange gains and losses and legacy company costs.

### Reportable Segments

Following are net sales and Segment EBITDA (earnings before interest, income taxes, depreciation and amortization) by reportable segment. Segment EBITDA is defined as EBITDA adjusted for certain non-cash items and other income and expenses. Segment EBITDA is the primary performance measure used by the Company's senior management, the chief operating decision-maker and the board of directors to evaluate operating results and allocate capital resources among segments. Segment EBITDA is also the profitability measure used to set management and executive incentive compensation goals.

**Net Sales[(1)]:**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Epoxy, Phenolic and Coating Resins | $ 2,115 | $ 2,052 | $ 2,094 |
| Forest Products Resins | 1,682 | 1,539 | 1,344 |
| **Total** | $ 3,797 | $ 3,591 | $ 3,438 |

**Segment EBITDA:**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Epoxy, Phenolic and Coating Resins [(2)] | $ 226 | $ 174 | $ 258 |
| Forest Products Resins [(3)] | 285 | 257 | 240 |
| Corporate and Other | (71) | (66) | (65) |
| **Total** | $ 440 | $ 365 | $ 433 |

**Depreciation and Amortization Expense:**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Epoxy, Phenolic and Coating Resins | $ 69 | $ 71 | $ 87 |
| Forest Products Resins | 40 | 40 | 40 |
| Corporate and Other | 4 | 4 | 4 |
| **Total** | $ 113 | $ 115 | $ 131 |

**Total Assets:**

| | As of December 31, | |
|---|---|---|
| | 2018 | 2017 |
| Epoxy, Phenolic and Coating Resins | $ 1,031 | $ 1,100 |
| Forest Products Resins | 779 | 880 |
| Corporate and Other | 151 | 117 |
| **Total** | $ 1,961 | $ 2,097 |

**Capital Expenditures[4]:**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Epoxy, Phenolic and Coating Resins | $ 56 | $ 73 | $ 72 |
| Forest Products Resins | 31 | 40 | 67 |
| Corporate and Other | 3 | 5 | 2 |
| **Total** | $ 90 | $ 118 | $ 141 |

(1) Intersegment sales are not significant and, as such, are eliminated within the selling segment.
(2) Included in the Epoxy, Phenolic and Coating Resins Segment EBITDA are "Earnings from unconsolidated entities, net of taxes" of $2, $3 and $11 for the years ended December 31, 2018, 2017, and 2016, respectively.
(3) Included in the Forest Products Resins Segment EBITDA are "Earnings from unconsolidated entities, net of taxes" of $1, $1 and less than $1 for the years ended December 31, 2018, 2017, and 2016, respectively.
(4) Includes capitalized interest costs that are incurred during the construction of property and equipment.

**Reconciliation of Net Loss to Segment EBITDA:**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Net loss attributable to Hexion Inc. | $ (162) | $ (234) | $ (38) |
| Net loss attributable to noncontrolling interest | 1 | — | — |
| Net loss | (163) | (234) | (38) |
| Income tax expense | 40 | 18 | 38 |
| Interest expense, net | 365 | 329 | 310 |
| Depreciation and amortization | 113 | 115 | 131 |
| Accelerated depreciation | 4 | 14 | 129 |
| EBITDA | $ 359 | $ 242 | $ 570 |
| Items not included in Segment EBITDA: | | | |
| Asset impairments and write-downs | $ 32 | $ 13 | $ — |
| Business realignment costs | 29 | 52 | 55 |
| Realized and unrealized foreign currency losses (gains) | 27 | 3 | (11) |
| Gain on dispositions | (44) | — | (240) |
| Loss (gain) on extinguishment of debt | — | 3 | (48) |
| Unrealized (gains) losses on pension and OPEB plan liabilities | (13) | (4) | 34 |
| Transaction costs | 13 | 8 | 17 |
| Other | 37 | 48 | 56 |
| Total adjustments | 81 | 123 | (137) |
| Segment EBITDA | $ 440 | $ 365 | $ 433 |
| | | | |
| **Segment EBITDA:** | | | |
| Epoxy, Phenolic and Coating Resins | $ 226 | $ 174 | $ 258 |
| Forest Products Resins | 285 | 257 | 240 |
| Corporate and Other | (71) | (66) | (65) |
| **Total** | $ 440 | $ 365 | $ 433 |

***Items Not Included in Segment EBITDA***

Not included in Segment EBITDA are certain non-cash items and other income and expenses. For 2018 and 2017, these other items primarily included expenses from retention programs, management fees and expenses related to legacy liabilities. For 2016, these other items primarily included expenses from retention programs, management fees and expenses related to legacy liabilities, partially offset by gains on the disposal of assets and a gain on a step acquisition. Transaction costs included certain professional fees related to strategic projects.

Business realignment costs for 2018 and 2017 primarily included costs related to in-process cost reduction programs and certain in-process and recently completed facility rationalizations. Business realignment costs for 2016 primarily included costs related to the rationalization at our Norco, LA manufacturing facility and costs related to certain in-process cost reduction programs.

*Geographic Information*

**Net Sales[(1)]:**

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| United States | $ 1,662 | $ 1,513 | $ 1,389 |
| Netherlands | 628 | 595 | 583 |
| Canada | 365 | 344 | 302 |
| China | 230 | 270 | 296 |
| Germany | 201 | 198 | 180 |
| Brazil | 194 | 176 | 162 |
| Other international | 517 | 495 | 526 |
| **Total** | $ 3,797 | $ 3,591 | $ 3,438 |

(1) Sales are attributed to the country in which the individual business locations reside.

Following is revenue by reportable segment. Product sales within each reportable segment share economically similar risks. These risks include general economic and industrial conditions, competitive pricing pressures and the Company's ability to pass on fluctuations in raw material prices to its customers. A substantial number of the Company's raw material inputs are petroleum-based and their prices fluctuate with the price of oil. Due to differing regional industrial and economic conditions, the geographic distribution of revenue may impact the amount, timing and uncertainty of revenue and cash flows from contracts with customers.

Following is net sales by reportable segment disaggregated by geographic region[(1)]:

| | Year Ended December 31, 2018 | | | Year Ended December 31, 2017 | | |
|---|---|---|---|---|---|---|
| | Epoxy, Phenolic and Coating Resins | Forest Products Resins | Total | Epoxy, Phenolic and Coating Resins | Forest Products Resins | Total |
| North America | $ 902 | $ 1,125 | $ 2,027 | $ 837 | $ 1,020 | $ 1,857 |
| Europe | 920 | 203 | 1,123 | 882 | 194 | 1,076 |
| Asia Pacific | 290 | 135 | 425 | 325 | 130 | 455 |
| Latin America | 3 | 219 | 222 | 8 | 195 | 203 |
| **Total** | $ 2,115 | $ 1,682 | $ 3,797 | $ 2,052 | $ 1,539 | $ 3,591 |

(1) Intersegment sales are not significant and, as such, are eliminated within the selling segment.

**Long-Lived Assets:**

| | As of December 31, | |
|---|---|---|
| | 2018 | 2017 |
| United States | $ 435 | $ 495 |
| Germany | 124 | 127 |
| Netherlands | 120 | 119 |
| Brazil | 62 | 76 |
| Canada | 61 | 68 |
| Other international | 175 | 195 |
| **Total** | $ 977 | $ 1,080 |

**16. Changes in Accumulated Other Comprehensive Loss**

Following is a summary of changes in “Accumulated other comprehensive loss” for the years ended December 31, 2018 and 2017:

| | Year Ended December 31, 2018 | | | Year Ended December 31, 2017 | | |
|---|---|---|---|---|---|---|
| | Defined Benefit Pension and Postretirement Plans | Foreign Currency Translation Adjustments | Total | Defined Benefit Pension and Postretirement Plans | Foreign Currency Translation Adjustments | Total |
| Beginning balance | $ 1 | $ (9) | $ (8) | $ 3 | $ (42) | $ (39) |
| Other comprehensive (loss) income before reclassifications, net of tax | (2) | (8) | (10) | (2) | 33 | 31 |
| Ending balance | $ (1) | $ (17) | $ (18) | $ 1 | $ (9) | $ (8) |

**17. Subsequent Events**

In March 2019, the Company experienced a network security incident that prevented access to certain information technology systems and data within its network. The Company took immediate steps to isolate the issue and has implemented its technical recovery plan. Since the time of the incident, the Company’s manufacturing sites, which rely on different networks, have continued to operate safely and with limited interruption. The network security incident primarily impacted the Company’s corporate functions. The Company is evaluating the impact of this incident, including assessing any available insurance coverage. The Company is currently unable to determine the financial statement impact of this incident, which may be material to the periods impacted.

See Note 2 for a discussion of the Chapter 11 Cases, the Support Agreement and the Credit Facilities.

**18. Guarantor/Non-Guarantor Subsidiary Financial Information**

The Company’s 6.625% First-Priority Senior Secured Notes due 2020, 10.00% First-Priority Senior Secured Notes due 2020, 10.375% First Priority Senior Secured Notes due 2022, 13.75% Senior Secured Notes due 2022 and 9.00% Second-Priority Senior Secured Notes due 2020 are guaranteed by certain of its U.S. subsidiaries.

The following information contains the condensed consolidating financial information for Hexion Inc. (the parent), the combined subsidiary guarantors (Hexion Investments Inc.; Lawter International, Inc.; Hexion Deer Park LLC (became a subsidiary guarantor in June 2018); HSC Capital Corporation (dissolved in April 2017); Hexion International Inc.; Hexion CI Holding Company (China) LLC; NL COOP Holdings LLC and Oilfield Technology Group, Inc. (dissolved in September 2017)) and the combined non-guarantor subsidiaries, which includes all of the Company’s foreign subsidiaries.

All of the subsidiary guarantors are 100% owned by Hexion Inc. All guarantees are full and unconditional, and are joint and several. There are no significant restrictions on the ability of the Company to obtain funds from its domestic subsidiaries by dividend or loan. While the Company’s Australian, New Zealand and Brazilian subsidiaries are restricted in the payment of dividends and intercompany loans due to the terms of their credit facilities, there are no material restrictions on the Company’s ability to obtain cash from the remaining non-guarantor subsidiaries.

These financial statements are prepared on the same basis as the consolidated financial statements of the Company except that investments in subsidiaries are accounted for using the equity method for purposes of the consolidating presentation. The principal elimination entries relate to investments in subsidiaries and intercompany balances and transactions.

This information includes allocations of corporate overhead to the combined non-guarantor subsidiaries based on net sales. Income tax expense has been provided on the combined non-guarantor subsidiaries based on actual effective tax rates.

**HEXION INC.**
**CONDENSED CONSOLIDATING BALANCE SHEET**
**DECEMBER 31, 2018**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| **Assets** | | | | | |
| Current assets: | | | | | |
| Cash and cash equivalents (including restricted cash of $0 and $15, respectively) | $ 20 | $ — | $ 108 | $ — | $ 128 |
| Accounts receivable, net | 98 | — | 314 | — | 412 |
| Intercompany accounts receivable | 40 | — | 66 | (106) | — |
| Intercompany loans receivable | 82 | — | 101 | (183) | — |
| Inventories: | | | | | |
| Finished and in-process goods | 100 | — | 140 | — | 240 |
| Raw materials and supplies | 36 | — | 58 | — | 94 |
| Other current assets | 28 | — | 29 | — | 57 |
| Total current assets | 404 | — | 816 | (289) | 931 |
| Investments in unconsolidated entities | 134 | 12 | 19 | (146) | 19 |
| Deferred income taxes | — | — | — | — | — |
| Intercompany loans receivable | 1,114 | — | — | (1,114) | — |
| Other long-term assets | 10 | 7 | 17 | — | 34 |
| Property and equipment, net | 363 | — | 478 | — | 841 |
| Goodwill | 53 | — | 56 | — | 109 |
| Other intangible assets, net | 19 | — | 8 | — | 27 |
| Total assets | $ 2,097 | $ 19 | $ 1,394 | $ (1,549) | $ 1,961 |
| **Liabilities and Deficit** | | | | | |
| Current liabilities: | | | | | |
| Accounts payable | $ 126 | $ — | $ 258 | $ — | $ 384 |
| Intercompany accounts payable | 66 | — | 40 | (106) | — |
| Debt payable within one year | 3,563 | — | 153 | — | 3,716 |
| Intercompany loans payable within one year | 101 | — | 82 | (183) | — |
| Interest payable | 81 | — | 1 | — | 82 |
| Income taxes payable | 3 | — | 2 | — | 5 |
| Accrued payroll and incentive compensation | 22 | — | 30 | — | 52 |
| Other current liabilities | 61 | — | 45 | — | 106 |
| Total current liabilities | 4,023 | — | 611 | (289) | 4,345 |
| Long-term liabilities: | | | | | |
| Long-term debt | 52 | — | 47 | — | 99 |
| Intercompany loans payable | — | — | 1,114 | (1,114) | — |
| Accumulated losses of unconsolidated subsidiaries in excess of investment | 781 | 146 | — | (927) | — |
| Long-term pension and post employment benefit obligations | 34 | — | 187 | — | 221 |
| Deferred income taxes | 2 | — | 13 | — | 15 |
| Other long-term liabilities | 117 | — | 78 | — | 195 |
| Total liabilities | 5,009 | 146 | 2,050 | (2,330) | 4,875 |
| Total Hexion Inc. shareholder’s deficit | (2,912) | (127) | (654) | 781 | (2,912) |
| Noncontrolling interest | — | — | (2) | — | (2) |
| Total deficit | (2,912) | (127) | (656) | 781 | (2,914) |
| Total liabilities and deficit | $ 2,097 | $ 19 | $ 1,394 | $ (1,549) | $ 1,961 |

**HEXION INC.**
**CONDENSED CONSOLIDATING BALANCE SHEET**
**DECEMBER 31, 2017**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| **Assets** | | | | | |
| Current assets: | | | | | |
| Cash and cash equivalents (including restricted cash of $0 and $19, respectively) | $ 13 | $ — | $ 102 | $ — | $ 115 |
| Accounts receivable, net | 126 | 1 | 335 | — | 462 |
| Intercompany accounts receivable | 121 | — | 80 | (201) | — |
| Intercompany loans receivable | 1 | — | 22 | (23) | — |
| Inventories: | | | | | |
| Finished and in-process goods | 85 | — | 136 | — | 221 |
| Raw materials and supplies | 36 | — | 56 | — | 92 |
| Current assets held-for-sale | 1 | — | 5 | — | 6 |
| Other current assets | 19 | — | 25 | — | 44 |
| Total current assets | 402 | 1 | 761 | (224) | 940 |
| Investments in unconsolidated entities | 158 | 13 | 20 | (171) | 20 |
| Deferred income taxes | — | — | 8 | — | 8 |
| Long-term assets held for sale | — | — | 2 | — | 2 |
| Other long-term assets | 17 | 8 | 24 | — | 49 |
| Intercompany loans receivable | 1,114 | — | 190 | (1,304) | — |
| Property and equipment, net | 410 | — | 514 | — | 924 |
| Goodwill | 52 | — | 60 | — | 112 |
| Other intangible assets, net | 32 | — | 10 | — | 42 |
| Total assets | $ 2,185 | $ 22 | $ 1,589 | $ (1,699) | $ 2,097 |
| **Liabilities and Deficit** | | | | | |
| Current liabilities: | | | | | |
| Accounts payable | $ 129 | $ — | $ 273 | $ — | $ 402 |
| Intercompany accounts payable | 80 | — | 121 | (201) | — |
| Debt payable within one year | 10 | — | 115 | — | 125 |
| Intercompany loans payable within one year | 22 | — | 1 | (23) | — |
| Interest payable | 80 | — | 2 | — | 82 |
| Income taxes payable | 6 | — | 6 | — | 12 |
| Accrued payroll and incentive compensation | 22 | — | 25 | — | 47 |
| Current liabilities associated with assets held for sale | — | — | 2 | — | 2 |
| Other current liabilities | 70 | — | 65 | — | 135 |
| Total current liabilities | 419 | — | 610 | (224) | 805 |
| Long-term liabilities: | | | | | |
| Long-term debt | 3,507 | — | 77 | — | 3,584 |
| Intercompany loans payable | 190 | — | 1,114 | (1,304) | — |
| Accumulated losses of unconsolidated subsidiaries in excess of investment | 668 | 171 | — | (839) | — |
| Long-term pension and post employment benefit obligations | 31 | — | 231 | — | 262 |
| Deferred income taxes | 2 | — | 9 | — | 11 |
| Other long-term liabilities | 109 | — | 68 | — | 177 |
| Total liabilities | 4,926 | 171 | 2,109 | (2,367) | 4,839 |
| Total Hexion Inc shareholder’s deficit | (2,741) | (149) | (519) | 668 | (2,741) |
| Noncontrolling interest | — | — | (1) | — | (1) |
| Total deficit | (2,741) | (149) | (520) | 668 | (2,742) |
| Total liabilities and deficit | $ 2,185 | $ 22 | $ 1,589 | $ (1,699) | $ 2,097 |

**HEXION INC.**
**CONDENSED CONSOLIDATING STATEMENT OF OPERATIONS**
**YEAR ENDED DECEMBER 31, 2018**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| Net sales | $ 1,730 | $ — | $ 2,261 | $ (194) | $ 3,797 |
| Cost of sales | 1,452 | — | 1,968 | (194) | 3,226 |
| Gross profit | 278 | — | 293 | — | 571 |
| Selling, general and administrative expense | 146 | — | 149 | — | 295 |
| Gain on dispositions | (24) | — | (20) | — | (44) |
| Asset impairments | 25 | — | 3 | — | 28 |
| Business realignment costs | 16 | — | 13 | — | 29 |
| Other operating expense (income), net | 13 | (1) | 24 | — | 36 |
| Operating income | 102 | 1 | 124 | — | 227 |
| Interest expense, net | 349 | — | 16 | — | 365 |
| Intercompany interest (income) expense, net | (83) | — | 83 | — | — |
| Other non-operating expense (income), net | 40 | — | (52) | — | (12) |
| (Loss) income before income tax, earnings from unconsolidated entities | (204) | 1 | 77 | — | (126) |
| Income tax expense | (7) | — | 47 | — | 40 |
| (Loss) income before earnings from unconsolidated entities | (197) | 1 | 30 | — | (166) |
| Earnings from unconsolidated entities, net of taxes | 35 | 24 | 3 | (59) | 3 |
| Net (loss) income | (162) | 25 | 33 | (59) | (163) |
| Net loss attributable to noncontrolling interest | — | — | 1 | — | 1 |
| Net (loss) income attributable to Hexion Inc. | $ (162) | $ 25 | $ 34 | $ (59) | $ (162) |
| Comprehensive (loss) income attributable to Hexion Inc. | $ (172) | $ 25 | $ 48 | $ (73) | $ (172) |

**HEXION INC.**
**CONDENSED CONSOLIDATING STATEMENT OF OPERATIONS**
**YEAR ENDED DECEMBER 31, 2017**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| Net sales | $ 1,586 | $ — | $ 2,203 | $ (198) | $ 3,591 |
| Cost of sales | 1,374 | — | 1,912 | (198) | 3,088 |
| Gross profit | 212 | — | 291 | — | 503 |
| Selling, general and administrative expense | 148 | — | 173 | — | 321 |
| Asset impairments | 13 | — | — | — | 13 |
| Business realignment costs | 24 | — | 28 | — | 52 |
| Other operating expense (income), net | 3 | (1) | 15 | — | 17 |
| Operating income | 24 | 1 | 75 | — | 100 |
| Interest expense, net | 315 | — | 14 | — | 329 |
| Intercompany interest (income) expense, net | (75) | — | 75 | — | — |
| Loss on extinguishment of debt | 3 | — | — | — | 3 |
| Other non-operating (income) expense, net | (79) | — | 67 | — | (12) |
| (Loss) income before income tax, (losses) earnings from unconsolidated entities | (140) | 1 | (81) | — | (220) |
| Income tax (benefit) expense | (7) | — | 25 | — | 18 |
| (Loss) income before (losses) earnings from unconsolidated entities | (133) | 1 | (106) | — | (238) |
| (Losses) earnings from unconsolidated entities, net of taxes | (101) | (64) | 4 | 165 | 4 |
| Net loss | (234) | (63) | (102) | 165 | (234) |
| Comprehensive loss attributable to Hexion Inc. | $ (203) | $ (63) | $ (108) | $ 171 | $ (203) |

**HEXION INC.**
**CONDENSED CONSOLIDATING STATEMENT OF OPERATIONS**
**YEAR ENDED DECEMBER 31, 2016**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| Net sales | $ 1,449 | $ — | $ 2,171 | $ (182) | $ 3,438 |
| Cost of sales | 1,371 | — | 1,831 | (182) | 3,020 |
| Gross profit | 78 | — | 340 | — | 418 |
| Selling, general and administrative expense | 145 | — | 173 | — | 318 |
| Gain on dispositions | (188) | — | (52) | — | (240) |
| Business realignment costs | 39 | — | 16 | — | 55 |
| Other operating expense (income), net | 18 | 5 | (10) | — | 13 |
| Operating income (expense) | 64 | (5) | 213 | — | 272 |
| Interest expense, net | 300 | — | 10 | — | 310 |
| Intercompany interest (income) expense, net | (72) | — | 72 | — | — |
| Gain on extinguishment of debt | (48) | — | — | — | (48) |
| Other non-operating expense, net | 12 | — | 9 | — | 21 |
| (Loss) income before income tax, earnings from unconsolidated entities | (128) | (5) | 122 | — | (11) |
| Income tax (benefit) expense | (3) | — | 41 | — | 38 |
| (Loss) income before earnings from unconsolidated entities | (125) | (5) | 81 | — | (49) |
| Earnings from unconsolidated entities, net of taxes | 88 | 31 | 5 | (113) | 11 |
| Net (loss) income | (37) | 26 | 86 | (113) | (38) |
| Comprehensive (loss) income attributable to Hexion Inc. | $ (62) | $ 25 | $ 66 | $ (91) | $ (62) |

**HEXION INC.**
**CONDENSED CONSOLIDATING STATEMENT OF CASH FLOWS**
**YEAR ENDED DECEMBER 31, 2018**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| **Cash flows (used in) provided by operating activities** | $ (416) | $ — | $ 393 | $ — | $ (23) |
| **Cash flows provided by (used in) investing activities** | | | | | |
| Capital expenditures | (30) | — | (60) | — | (90) |
| Proceeds from dispositions, net | 24 | — | 25 | — | 49 |
| Proceeds from sale of assets, net | — | — | 1 | — | 1 |
| Return of capital from subsidiary from sales of accounts receivable | 346 (a) | — | — | (346) | — |
| | 340 | — | (34) | (346) | (40) |
| **Cash flows provided by (used in) financing activities** | | | | | |
| Net short-term debt repayments | — | — | 10 | — | 10 |
| Borrowings of long-term debt | 305 | — | 235 | — | 540 |
| Repayments of long-term debt | (244) | — | (224) | — | (468) |
| Net intercompany loan borrowings (repayments) | 22 | — | (22) | — | — |
| Common stock dividends paid | — | — | — | — | — |
| Deferred financing fees paid | — | — | (1) | — | (1) |
| Return of capital to parent from sales of accounts receivable | — | — | (346) (a) | 346 | — |
| | 83 | — | (348) | 346 | 81 |
| Effect of exchange rates on cash and cash equivalents | — | — | (5) | — | (5) |
| Increase in cash and cash equivalents | 7 | — | 6 | — | 13 |
| Cash, cash equivalents and restricted cash at beginning of year | 13 | — | 102 | — | 115 |
| Cash, cash equivalents and restricted cash at end of year | $ 20 | $ — | $ 108 | $ — | $ 128 |

(a) During the year ended December 31, 2018, Hexion Inc. contributed receivables of $346 to a non-guarantor subsidiary as capital contributions, resulting in a non-cash transaction. During the year ended December 31, 2018, the non-guarantor subsidiary sold the contributed receivables to certain banks under various supplier financing agreements. The cash proceeds were returned to Hexion Inc. by the non-guarantor subsidiary as a return of capital. The sale of receivables has been included within cash flows from operating activities on the Combined non-guarantor subsidiaries. The return of the cash proceeds from the sale of receivables has been included as a financing outflow and an investing inflow on the Combined Non-Guarantor Subsidiaries and Hexion Inc., respectively.

**HEXION INC.**
**CONDENSED CONSOLIDATING STATEMENT OF CASH FLOWS**
**YEAR ENDED DECEMBER 31, 2017**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| **Cash flows (used in) provided by operating activities** | $ (278) | $ — | $ 126 | $ (1) | $ (153) |
| **Cash flows provided by (used in) investing activities** | | | | | |
| Capital expenditures | (40) | — | (77) | — | (117) |
| Capitalized interest | — | — | (1) | — | (1) |
| Proceeds from sale of assets, net | 5 | — | 3 | — | 8 |
| Return of capital from subsidiary from sales of accounts receivable | 182 (a) | — | — | (182) | — |
| | 147 | — | (75) | (182) | (110) |
| **Cash flows (used in) provided by financing activities** | | | | | |
| Net short-term debt repayments | 3 | — | 18 | — | 21 |
| Borrowings of long-term debt | 1,053 | — | 376 | — | 1,429 |
| Repayments of long-term debt | (921) | — | (330) | — | (1,251) |
| Net intercompany loan borrowings (repayments) | 1 | — | (1) | — | — |
| Common stock dividends paid | — | — | (1) | 1 | — |
| Deferred financing fees paid | (20) | — | (5) | — | (25) |
| Return of capital to parent from sales of accounts receivable | — | — | (182) (a) | 182 | — |
| | 116 | — | (125) | 183 | 174 |
| Effect of exchange rates on cash and cash equivalents | — | — | 8 | — | 8 |
| Decrease in cash and cash equivalents | (15) | — | (66) | — | (81) |
| Cash, cash equivalents and restricted cash at beginning of year | 28 | — | 168 | — | 196 |
| Cash, cash equivalents and restricted cash at end of year | $ 13 | $ — | $ 102 | $ — | $ 115 |

(a) During the year ended December 31, 2017, Hexion Inc. contributed receivables of $182 to a non-guarantor subsidiary as capital contributions, resulting in a non-cash transaction. During the year ended December 31, 2017, the non-guarantor subsidiary sold the contributed receivables to certain banks under various supplier financing agreements. The cash proceeds were returned to Hexion Inc. by the non-guarantor subsidiary as a return of capital. The sale of receivables has been included within cash flows from operating activities on the Combined non-guarantor subsidiaries. The return of the cash proceeds from the sale of receivables has been included as a financing outflow and an investing inflow on the Combined Non-Guarantor Subsidiaries and Hexion Inc., respectively.

**HEXION INC.**
**CONDENSED CONSOLIDATING STATEMENT OF CASH FLOWS**
**YEAR ENDED DECEMBER 31, 2016**

| | Hexion Inc. | Combined Subsidiary Guarantors | Combined Non-Guarantor Subsidiaries | Eliminations | Consolidated |
|---|---|---|---|---|---|
| **Cash flows (used in) provided by operating activities** | $ (202) | $ 4 | $ 182 | $ (4) | $ (20) |
| **Cash flows provided by (used in) investing activities** | | | | | |
| Capital expenditures | (67) | — | (73) | — | (140) |
| Capitalized interest | (1) | — | — | — | (1) |
| Proceeds from dispositions, net | 147 | — | 134 | — | 281 |
| Cash received on buyer's note | 75 | — | — | — | 75 |
| Proceeds from sale of assets, net | — | — | 5 | — | 5 |
| Capital contribution to subsidiary | (13) | (9) | — | 22 | — |
| Investment in unconsolidated affiliates, net | (1) | — | — | — | (1) |
| Return of capital from subsidiary from sales of accounts receivable | 95 (a) | — | — | (95) | — |
| | 235 | (9) | 66 | (73) | 219 |
| **Cash flows (used in) provided by financing activities** | | | | | |
| Net short-term debt repayments | (1) | — | (21) | — | (22) |
| Borrowings of long-term debt | 360 | — | 284 | — | 644 |
| Repayments of long-term debt | (601) | — | (255) | — | (856) |
| Net intercompany loan borrowings (repayments) | 176 | — | (176) | — | — |
| Capital contribution from parent | — | 9 | 13 | (22) | — |
| Common stock dividends paid | — | (4) | — | 4 | — |
| Deferred financing fees paid | (1) | — | — | — | (1) |
| Return of capital to parent from sales of accounts receivable | — | — | (95) (a) | 95 | — |
| | (67) | 5 | (250) | 77 | (235) |
| Effect of exchange rates on cash and cash equivalents | — | — | (4) | — | (4) |
| Increase in cash and cash equivalents | (34) | — | (6) | — | (40) |
| Cash, cash equivalents and restricted cash at beginning of year | 62 | — | 174 | — | 236 |
| Cash, cash equivalents and restricted cash at end of year | $ 28 | $ — | $ 168 | $ — | $ 196 |

(a) During the year ended December 31, 2016, Hexion Inc. contributed receivables of $95 to a non-guarantor subsidiary as capital contributions, resulting in a non-cash transaction. During the year ended December 31, 2016, the non-guarantor subsidiary sold the contributed receivables to certain banks under various supplier financing agreements. The cash proceeds were returned to Hexion Inc. by the non-guarantor subsidiary as a return of capital. The sale of receivables has been included within cash flows from operating activities on the Combined non-guarantor subsidiaries. The return of the cash proceeds from the sale of receivables has been included as a financing outflow and an investing inflow on the Combined Non-Guarantor Subsidiaries and Hexion Inc., respectively.

## Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of
Hexion Inc.

***Opinion on the Financial Statements***

We have audited the accompanying consolidated balance sheets of Hexion Inc. and its subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of operations, comprehensive loss, deficit and cash flows for each of the three years in the period ended December 31, 2018, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America.

*Substantial Doubt About the Company’s Ability to Continue as a Going Concern*

The accompanying consolidated financial statements have been prepared assuming that the Company will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the Company has stated its financial condition and its projected operating results, the defaults under its debt agreements, and the risks and uncertainties surrounding its Chapter 11 proceedings raise substantial doubt about its ability to continue as a going concern. Management's plans in regard to these matters are described in Note 2. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty.

*Change in Accounting Principle*

As discussed in Note 3 to the consolidated financial statements, the Company changed the manner in which it accounts for revenues from contracts with customers in 2018.

***Basis for Opinion***

These consolidated financial statements are the responsibility of the Company’s management. Our responsibility is to express an opinion on the Company’s consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits of these consolidated financial statements in accordance with the standards of the PCAOB and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP
Columbus, Ohio
April 11, 2019

We have served as the Company's auditor since 2005.

**Schedule II – Valuation and Qualifying Accounts**

| Column A | Column B | Column C | | Column D | Column E |
|---|---|---|---|---|---|
| | | Additions | | | |
| Description | Balance at Beginning of Period | Charged to cost and expenses[1] | Charged to other accounts | Deductions | Balance at End of Period |
| Allowance for Doubtful Accounts: | | | | | |
| Year Ended December 31, 2018 | $ 19 | $ — | $ — | $ (3) | $ 16 |
| Year ended December 31, 2017 | 17 | 3 | — | (1) | 19 |
| Year ended December 31, 2016 | 15 | 3 | — | (1) | 17 |
| Reserve for Obsolete Inventory: | | | | | |
| Year Ended December 31, 2018 | $ 9 | $ 3 | $ — | $ (3) | $ 9 |
| Year ended December 31, 2017 | 9 | 4 | — | (4) | 9 |
| Year ended December 31, 2016 | 7 | 9 | — | (7) | 9 |

(1) Includes the impact of foreign currency translation.

## ITEM 9 - CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

## ITEM 9A - CONTROLS AND PROCEDURES

***Evaluation of Disclosure Controls and Procedures***

As of the end of the period covered by this Annual Report on Form 10-K, we, under the supervision and with the participation of our Disclosure Committee and our management, including our President and Chief Executive Officer and our Executive Vice President and Chief Financial Officer, carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as such term is defined in Exchange Act Rules 13a-15(e) and 15d-15(e). Based on that evaluation, our President and Chief Executive Officer, and Executive Vice President and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2018.

***Management's Annual Report on Internal Control Over Financial Reporting***

We are responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

We have assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2018. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control - Integrated Framework* (2013). Based on our assessment, we have concluded that, as of December 31, 2018, the Company's internal control over financial reporting was effective based on those criteria.

***Changes in Internal Control Over Financial Reporting***

There have been no changes in the Company's internal control over financial reporting identified in connection with the evaluation described above in "Management's Annual Report on Internal Control Over Financial Reporting" that occurred during the Company's fourth quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

**ITEM 9B - OTHER INFORMATION**

On April 9, 2019, the Company entered into an agreement of resignation, appointment and acceptance (the "Tripartite Agreement"), effective as of April 10, 2019, with Wilmington Trust, National Association (the "Resigning Trustee") and U.S. Bank National Association (the "Successor Trustee"), with respect to (a) the indenture, dated as of March 14, 2012 (the "6.625% Notes Indenture"), by and among the Company, certain subsidiaries of the Company and the Resigning Trustee governing the Company's 6.625% First-Priority Senior Secured Notes due 2020 (the "6.625% Notes"), (b) the indenture, dated as of April 15, 2015 (the "10.00% Notes Indenture"), by and among the Company, certain subsidiaries of the Company and the Resigning Trustee governing the Company's 10.00% First-Priority Senior Secured Notes due 2020 (the "10.00% Notes") and (c) the indenture, dated as of February 8, 2017 (the "10.375% Notes Indenture" and, together with the 6.625% Notes Indenture and the 10.00% Notes Indenture, the "1L Indentures"), by and among the Company, certain subsidiaries of the Company and the Resigning Trustee governing the Company's 10.375% First-Priority Senior Secured Notes due 2022 (the "10.375% Notes" and, together with the 6.625% Notes and the 10.00% Notes, the "1L Notes").

The Tripartite Agreement provides, among other things, that (1) the Resigning Trustee assigns, transfers, delivers, and confirms to the Successor Trustee all right, title and interest of the Resigning Trustee in and to the trusts under each 1L Indenture and all the rights, powers, and trusts of the Resigning Trustee under such 1L Indenture, and the Resigning Trustee resigns as Trustee, Registrar, Paying Agent, Notes Custodian and Collateral Agent under each 1L Indenture, (2) the Company accepts the resignation of the Resigning Trustee as Trustee, Registrar, Paying Agent, Notes Custodian and Collateral Agent under each 1L Indenture and appoints the Successor Trustee as Trustee, Registrar, Paying Agent, Notes Custodian and Collateral Agent under each 1L Indenture, and (3) the Successor Trustee accepts its appointment as Trustee, Registrar, Paying Agent, Notes Custodian and Collateral Agent under each 1L Indenture.

The foregoing description of the Tripartite Agreement is qualified in its entirety by reference to the full text of the Tripartite Agreement, a copy of which is attached hereto as Exhibit 4.24 and is incorporated herein by reference.

**PART III**

**ITEM 10 - DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

**Directors, Executive Officers, Promoters and Control Persons**

The supervision of our management and the general course of the Company's affairs and business operations is entrusted to the Board of Managers of our indirect parent, Hexion Holdings LLC ("Hexion Holdings").

Set forth below are the names, ages and current positions of our executive officers and the members of the Hexion Holdings Board of Managers as of March 1, 2019.

| Name | Age | Position |
|---|---|---|
| Craig A. Rogerson | 62 | Director, Chairman, President and Chief Executive Officer |
| George F. Knight | 62 | Director, Executive Vice President and Chief Financial Officer |
| Dr. William H. Joyce | 83 | Director |
| Robert Kalsow-Ramos | 32 | Director |
| Geoffrey A. Manna | 57 | Director |
| Lee C. Stewart | 70 | Director |
| Samuel Feinstein | 35 | Director |
| Marvin O. Schlanger | 70 | Director |
| Joseph P. Bevilaqua | 63 | Executive Vice President and Chief Operating Officer |
| John P. Auletto | 53 | Executive Vice President – Human Resources |
| Nathan E. Fisher | 53 | Executive Vice President – Procurement |
| Douglas A. Johns | 61 | Executive Vice President and General Counsel |
| Matthew A. Sokol | 46 | Executive Vice President - Chief Administrative Officer |
| Paul G. Barletta | 60 | Executive Vice President - Operations |

***Craig A. Rogerson*** was elected Chairman, President and Chief Executive Officer and a director of the Company and Hexion Holdings LLC effective July 9, 2017. He served as Chairman, President and Chief Executive Officer of Chemtura Corporation from December 2008 to April 2017. He was President, Chief Executive Officer and Director of Hercules Incorporated from December 2003 to November 2008. Mr. Rogerson joined Hercules in 1979 and served in a number of management positions, including President of the FiberVisions and Pinova Divisions, Vice President of Global Procurement and Chief Operating Officer. He was President and Chief Executive Officer of Wacker Silicones Corporation from 1997-2000. In May 2000, he rejoined Hercules and became President of its BetzDearborn division in August 2000. Mr. Rogerson serves on the boards of PPL Corporation, the American Chemistry Council, the Society of Chemical Industry, and the Pancreatic Cancer Action Network. He also serves on the Advisory board of the Michigan State University Chemical Engineering & Materials Science College.

***George F. Knight*** was elected Executive Vice President and Chief Financial Officer and a director of the Company and Hexion Holdings effective January 1, 2016. He served as Senior Vice President - Finance and Treasurer of the Company from June 1, 2005 to December 31, 2015, having been Vice President, Finance and Treasurer since July 2002. Mr. Knight also served as Senior Vice President-Finance and Treasurer for MPM and Hexion Holdings from October 1, 2010 and November 1, 2010, respectively, until December 31, 2015. Mr. Knight joined the Company in 1997 and served until 1999 as Director and then Vice President of Mergers and Acquisitions - Finance for Borden, Inc. From 1999-2001 he served as Vice President of Finance for Borden Foods Corporation.

***Dr. William H. Joyce*** has been a member of the Board of Managers of Hexion Holdings since October 1, 2010. Since 2008, Dr. Joyce has been the Chairman and CEO of Advanced Fusion Systems. He is the retired, former chief executive officer and chairman of Nalco Holding Company, positions he held from November 2003 until his retirement in December 2007. Prior to his appointment as chief executive officer and chairman of Nalco Company, Dr. Joyce served as chief executive officer and chairman at Hercules Incorporated and prior to that at Union Carbide. Dr. Joyce holds a B.S. degree in Chemical Engineering from Penn State University, and M.B.A. and Ph.D. degrees from New York University. Dr. Joyce received the National Medal of Technology Award in 1993 from President Clinton, the Plastics Academy's Lifetime Achievement Award in 1997, and the Society of Chemical Industry Perkin Medal Award in 2003. He was selected by the American Institute of Chemical Engineers as of the hundred most successful engineers of the century. Dr. Joyce also serves as a trustee and Vice Chairman of the Universities Research Association, is Vice Chairman of the Fermi Research Alliance and is a board leadership fellow of the National Association of Corporate Directors. During the past five years, he also served on the board of directors of El Paso Corporation, CVS Caremark Corporation, Reynolds Metals Company, Celanese Corporation, Dow Chemical Company and Momentive Performance Materials Holdings Inc. He is a Chair of the Environmental, Health and Safety committee of the Hexion Holdings LLC Board of Managers. Dr. Joyce's extensive management experience, and his skills in business leadership and strategy, qualify him to serve on the Board of Managers of Hexion Holdings.

***Robert Kalsow-Ramos*** was elected a member of the Board of Managers of Hexion Holdings on October 27, 2014. Mr. Kalsow-Ramos is a Principal in Apollo Global Management's Private Equity Group, where he has worked since 2010. Prior to joining Apollo, Mr. Kalsow-Ramos was a member of the Transportation Investment Banking Group at Morgan Stanley from 2008 to 2010. He also serves on the Board of Directors of MPM Holdings Inc. and West Corporation, which are affiliated with Apollo. Mr. Kalsow-Ramos was previously a director of Noranda Aluminum Holding Corporation. He is Chair of the Hexion Holdings Board of Managers' Compensation Committee, Chair of its Audit Committee and a member of its Executive Committee. In light of our ownership structure and Mr. Kalsow-Ramos' extensive finance and business experience, we believe it is appropriate for Mr. Kalsow-Ramos to serve on the Board of Managers of Hexion Holdings.

***Geoffrey A. Manna*** was elected a director of the Company on September 30, 2013 and served until October 27, 2014 at which time he resigned and was elected a member of the Board of Managers of Hexion Holdings. Since May 2017 he has served CION Investments, a multi-billion AUM alternative asset manager focused on credit strategies, where he is a Senior Managing Director and a senior member of the investment team. From 2008 to 2017, he served as an independent consultant principally focused on financial advisory and interim management engagements such as Chief Operating Officer and Chief Financial Officer oriented roles for companies ranging from small middle market to multi-billion market capitalization public companies across several industry sectors, including media, healthcare, building products and energy distribution & logistics. He served in management and operating roles in leveraged finance and investment banking from 1995 to 2008. From June 2006 to June 2008 he served as Managing Director for The Royal Bank of Scotland. From June 2004 to June 2006 he served as Managing Director for BNP Paribas. From July 1999 to June 2004 he served as Chief Operating Officer-Financial Sponsors Group and Director for Credit Suisse First Boston. From July 1995 to July 1999 he served as Vice President for Deutsche Bank and its predecessor companies Bankers Trust Company and BT Securities. Prior to that, from July 1991 to January 1994 he held the position of Director-Finance for US WEST Capital where he directed financial management and merger and acquisition projects. Before that, he was employed at KPMG for eight years as a Senior Manager and managed over 50 audit engagements and special projects for major public and private companies, including General Electric and GE Capital Corporation. Mr. Manna also serves on the Board of Directors of Conisus Holdings, Inc and the Board of Managers of SMIR Parent, LLC. Until his resignation, Mr. Manna served as a member of the Company's Audit Committee. He currently serves as a member of the Audit Committee of the Board of Managers of Hexion Holdings and was elected member of the Compensation Committee in February 2019. Mr. Manna's extensive experience in finance and business qualifies him to serve on the Board of Managers of Hexion Holdings.

***Lee C. Stewart*** joined the Hexion Holdings Board on November 30, 2018. Since 2002, he has been a director of P.H. Glatfelter Company and was previously a Vice President at Union Carbide Corporation from 1996 to 2001, responsible for various treasury and financial functions, and from 2001 to 2002, the Chief Financial Officer of Foamex lnternational, Inc. Mr. Stewart was a director of ITC Holdings Corp., a New York Stock Exchange-issued electricity transmission company, from 2005 through 2016 when ITC was acquired by Fortis. Mr. Stewart also served as a director of AEP Industries, Inc., a NASDAQ-listed chemical company from 1996 until it was sold in 2017. He served as a director of Marsulex, Inc., a chemical company listed on the Toronto Stock Exchange, from 2000 until its sale in 2011, and Momentive Performance Materials Inc. from May 2013 through its successful emergence from bankruptcy in October 2014. Mr. Stewart has also serves on the Board of Mood Media, Inc. since October 2017 and on the board of Aqua America Inc., a NYSE company, since August 2018. He has significant experience with professional services, financial services, finance and banking, public-company accounting and financial reporting, strategic planning, operations, risk management and corporate governance. He was elected to the Audit Committee of Hexion Holdings on November 30, 2018. His 20 years of experience as a director of public companies and 25 years as a private financial consultant and investment banker qualify him to serve on the Board of Managers of Hexion Holdings.

***Samuel Feinstein*** was elected a member of the Board of Managers of Hexion Holdings on November 2, 2016. He has been an investment professional in Apollo's private equity business since 2007 and was previously a member of the Investment Banking Group at Morgan Stanley from September 2005 to May 2007. Mr. Feinstein currently serves on the board of MPM Holdings, Inc., New VAC Intermediate Holdings B.V., and Pinnacle Agriculture Holdings, LLC. Within the past five years, he has served on the board of directors of CEVA Holdings LLC, Vectra Co., and Taminco Corporation. He was appointed the Chair of the Executive Committee of the Board of Managers of Hexion Holdings in February 2019 and Compensation Committee of the Board of Managers of Hexion Holdings. Mr. Feinstein resigned from Audit Committee of Hexion Holdings on November 30, 2018. In light of our ownership structure and his extensive finance and business experience, we believe it is appropriate for Mr. Feinstein to serve on the Board of Managers of Hexion Holdings.

***Marvin O. Schlanger*** was appointed a member of the Board of Managers of Hexion Holdings on October 1, 2010 and serves on the Board's Environmental, Health and Safety Committee. Prior to that, Mr. Schlanger served as Vice Chair on the Board of Managers of Hexion Specialty Chemicals, Inc. from June 2005 to October 2010. Since October 1998, Mr. Schlanger has been a principal in the firm of Cherry Hill Chemical Investments, LLC, which provides management services and capital to the chemical and allied industries. Prior to October 1998, he held various positions with ARCO Chemical Company, serving as President and Chief Executive Officer from May 1998 to July 1998 and as Executive Vice President and Chief Operating Officer from 1994 to May 1998. He served as Chairman and Chief Executive Officer of Resolution Performance Products LLC and RPP Capital Corporation from November 2000 and Chairman of Resolution Specialty Materials Company from August 2004 until the formation of Hexion Specialty Chemicals, Inc. in May 2005. Mr. Schlanger is also a director of CEVA Logistics, AG, UGI Corporation and UGI Utilities Inc., and a director of Amerigas Partners, LP, Vectra Corporation, and MPM Holdings Inc. Mr. Schlanger was formerly Chairman of the Supervisory Board of Lyondell Basell Industries N.V., Chairman of the Board of CEVA Group Plc, and Chairman of Covalence Specialty Materials Corp. Mr. Schlanger's extensive finance and business experience qualifies him to serve on the Board of Managers of Hexion Holdings.

***Joseph P. Bevilaqua*** was appointed Executive Vice President and Chief Operating Officer of the Company effective October 5, 2016. On January 10, 2019, Hexion announced that Mr. Bevilaqua will be leaving the Company to pursue other opportunities outside the Company effective March 22, 2019. Until this appointment, he served as Executive Vice President and President of the Company's Epoxy, Phenolic and Coating Resins Division. Since August 10, 2008, he has been responsible for the epoxy and phenolic resins businesses and in October 2010, the coatings business was added to his division responsibilities. Prior to that, he was Executive Vice President and President of the Phenolic and Forest Products Division, a position he held from January 2004 to August 2008. Mr. Bevilaqua joined the Company in April 2002 as Vice President-Corporate Strategy and Development. From February 2000 to March 2002, he was the Vice President and General Manager of Alcan's global plastics packaging business. Prior to Alcan, Mr. Bevilaqua served in leadership positions with companies such as General Electric, Woodbridge Foam Corporation and Russell-Stanley Corporation.

***John P. Auletto*** was elected Executive Vice President - Human Resources effective May 15, 2016. Mr. Auletto joined the Company in September 1999 as Director of Human Resources for the Performance Resins Group. Since then he has held various positions with increasing responsibilities in human resources, including most recently, Vice President - Human Resources for the Epoxy, Phenolic and Coating Resins Division from April 2013 to May 15, 2016. Prior to joining the Company, Mr. Auletto served in human resources roles with Associates National Bank, W.L. Gore & Associates, and The Bank of New York.

***Nathan E. Fisher*** was elected Executive Vice President - Procurement of the Company on June 1, 2005. He also serves as Executive Vice President - Procurement of Momentive Performance Materials Inc., having been elected to that position on October 1, 2010. Mr. Fisher joined the Company in March 2003 as Director of Strategic Sourcing and was promoted to Vice President - Global Sourcing in September 2004.

***Douglas A. Johns*** joined the Company on May 9, 2015 but had served as Executive Vice President and General Counsel under the Shared Services Agreement with MPM since October 1, 2010. He also serves as Executive Vice President, General Counsel and Secretary of Hexion Holdings. Mr. Johns was employed by Momentive Performance Materials Inc., serving as its General Counsel and Secretary from its formation on December 4, 2006 until October 24, 2014. Prior to that time, Mr. Johns served as General Counsel for GE Advanced Materials, a division of the General Electric Company from 2004 to December 2006. Mr. Johns began his career as a trial lawyer at the U.S. Department of Justice and was in private practice before joining GE in 1991, where he served as Senior Counsel for global regulatory and environmental matters and Senior Business Counsel at GE Plastics' European headquarters in Bergen Op Zoom, The Netherlands from 2001 to 2004.

***Matthew A. Sokol*** was appointed Chief Administrative Officer of the Company effective February 21, 2019. Until this appointment, he served as Executive Vice President, Business Development and Strategy when he joined the Company in November 2017. Mr. Sokol joined the Company from Lanxess Solutions, Inc. (formerly Chemtura Corporation), where he served as Interim Vice President of HR and M&A (NAFTA) for Lanxess. Mr. Sokol joined Chemtura in October 2005 and held a number of senior leadership roles including leading M&A, which ultimately culminated in the sale of the company to Lanxess in April 2017. Previous roles at Chemtura included: Head of Corporate Development & Investor Relations; General Manager, Flame Retardants; and Director, Strategic Corporate Development. While at Chemtura, Mr. Sokol also served as Associate General Counsel, IEP Segment, and Assistant General Counsel. Prior to Chemtura, Mr. Sokol served as senior litigation associate at Tyler, Cooper & Alcon, LLP from September 1999 to October 2005.

***Paul G. Barletta*** was elected Executive Vice President of Operations of the Company as of February, 2019. Prior to that, he was Senior Vice President, Environmental Health and Safety and Global Epoxy Manufacturing in 2018. From 2005 to 2018 he held various management roles including Vice President of Global Epoxy Manufacturing. He was a Site Manager for Resolution Performance Products, Inc. from 2000 to 2005 when it was acquired by the Company from Shell Chemical. He joined Shell in 1980 and has held a variety of roles in manufacturing including Global Products & Engineering, Manufacturing Excellence, Process Safety, Process Technology, Quality, Security and Special Projects.

**Nominating Committee**

Since Hexion is a controlled company, Hexion Holdings has no Nominating Committee nor does it have written procedures by which security holders may recommend nominees to its Board of Managers.

**Audit Committee Financial Expert**

Since Hexion is not a listed issuer, there are no requirements that Hexion Holdings have an independent Audit Committee. Hexion Holdings' Audit Committee consists of Messrs. Kalsow-Ramos, Stewart and Manna, each of whom qualifies as an audit committee financial expert, as such term is defined in Item 407(d)(5) of Regulation S-K.

**Code of Conduct**

We have a Code of Conduct that applies to all associates, including our Chief Executive Officer and senior financial officers. These standards are designed to deter wrongdoing and to promote the honest and ethical conduct of all employees. Our Code of Conduct is posted on our website: *www.hexion.com* under "Investor Relations – Corporate Governance." Any substantive amendment to, or waiver from, any provision of the Code of Conduct with respect to any senior executive or financial officer shall be posted on this website.

## ITEM 11 - EXECUTIVE COMPENSATION

## COMPENSATION DISCUSSION AND ANALYSIS

In this Compensation Discussion and Analysis, we describe our process of determining the compensation and benefits provided to our "Named Executive Officers" ("NEOs"). Our 2018 NEOs are Craig A. Rogerson, President and Chief Executive Officer (our "CEO"); George F. Knight, Executive Vice President and Chief Financial Officer (our "CFO"); Joseph P. Bevilaqua, Executive Vice President and Chief Operating Officer; Nathan E. Fisher, Executive Vice President, Global Procurement; and Douglas A. Johns, Executive Vice President and General Counsel.

### Oversight of Executive Compensation

The Board of Managers of the Company's parent holding company, Hexion Holdings, is responsible for governance of the Company, including the responsibility for determining the compensation and benefits of our executive officers. All executive compensation decisions made during 2018 for our NEOs were made by the Compensation Committee of the Hexion Holdings Board of Managers (the "Committee").

The Committee sets the principles and strategies that guide the design of our executive compensation program. The Committee annually evaluates the performance and compensation levels of the NEOs. This annual compensation review process includes an evaluation of key objectives and measurable contributions to ensure that incentives are not only aligned with the Company's strategic goals, but also enable us to attract and retain a highly qualified and effective management team. Based on this evaluation, the Committee approves each executive officer's compensation level, including base salary, annual incentive opportunities and long-term incentive opportunities.

In order to obtain a general understanding of current compensation practices when setting total compensation levels for our NEOs, the Committee considers broad-based competitive market data on total compensation packages provided to executive officers with similar responsibilities at comparable companies. Such companies include those within the chemical industry, as well as those with similar revenues and operational complexity outside the chemical industry. As warranted, the Committee may use data obtained from third-party executive compensation salary surveys such as those published by Willis Towers Watson and AonHewitt when determining appropriate total compensation levels for our NEOs.

### Executive Summary

***Executive Compensation Objectives and Strategy***

Our executive compensation program is designed to set compensation and benefits at a level that is reasonable, internally fair and externally competitive. Specifically, the Committee is guided by the following objectives:

- ***Pay for Performance***. We emphasize pay for performance based on achievement of company operational and financial objectives and the realization of personal goals. We believe that a significant portion of each executive officer's total compensation should be variable and contingent upon the achievement of specific and measurable financial and operational performance goals.

- ***Align Incentives with Shareholders***. Our executive compensation program is designed to focus our NEOs on our key strategic, financial and operational goals that will translate into long-term value-creation for our shareholders.

- ***Balance Critical Short-Term Objectives and Long-Term Strategy***. We believe that the compensation packages we provide to our NEOs should include a mix of short-term, cash-based incentive awards that encourage the achievement of annual goals, and long-term cash and equity elements that reward long-term value-creation for the business.

- ***Attract, Retain and Motivate Top Talent***. We design our executive compensation program to be externally competitive in order to attract, retain and motivate the most talented executive officers who will drive company objectives.

- ***Pay for Individual Achievement***. We believe that each executive officer's total compensation should correlate to the scope of his or her responsibilities and relative contributions to the Company's performance.

***2018 Executive Compensation Updates***

- The Company continued its focus on (i) motivating our NEOs to deliver improved performance and (ii) retaining key talent during difficult business cycles through the use of the goals set in our annual incentive plan and long-term time- and performance-based cash awards made under our long-term incentive plan.

- The Committee reviewed the base salaries of our NEOs in the first quarter of the year. After considering the accomplishments of our NEOs, but also considering internal compensation equity and external market factors, the Committee determined to increase the base salary of one of our NEOs. We delivered Mr. Knight's annual merit base salary increase effective July 2018, consistent with our recent past practice.

- Apollo, as the Company's controlling shareholder, and its representatives continue to be actively involved in making recommendations regarding the structure of our executive compensation program and the amounts payable to our NEOs. The Company is not currently required to hold a shareholder advisory "say-on-pay" vote.

***Evaluating Company and Individual Performance***

In determining 2018 compensation, the Committee considered the following accomplishments of our NEOs in 2017:

- ***Mr. Rogerson, our Chairman, President and CEO:*** The Committee considered Mr. Rogerson's outstanding leadership of the business to achieve improved operating performance, operating cash flow, and overall safety performance in the third and fourth quarters of 2017. In addition, Mr. Rogerson provided excellent leadership by implementing significant cost-reduction actions, as well as pursuing and evaluating potential portfolio optimization opportunities.

- ***Mr. Knight, our Executive Vice President and Chief Financial Officer:*** The Committee recognized Mr. Knight's leadership in managing our leveraged balance sheet, exceptional management of the shared services relationship with MPM, implementing significant cost-reduction actions, and evaluating potential portfolio optimization opportunities in 2017.

- ***Mr. Bevilaqua, our Executive Vice President and Chief Operating Officer:*** The Committee recognized Mr. Bevilaqua's significant leadership in stabilizing the various business units in 2017, establishing a strong foundation and positioning the Company for success in the future.

- ***Mr. Fisher, our Executive Vice President, Global Procurement:*** The Committee considered Mr. Fisher's effective management of key supplier relationships for MPM and the Company, the significant cost-productivity contributions in 2017, and in directing the procurement organizations of both companies.

- ***Mr. Johns, our Executive Vice President and General Counsel:*** The Committee recognized the outstanding leadership that Mr. Johns provides in the management of major litigation risk areas, the key cross-functional leadership he provides and his cost-effective management of external legal resources, as well as his exceptional management of the shared services relationship with MPM.

**Components of Our Executive Compensation Program**

The principal components of our executive compensation program are as follows:

| Type | Components |
|---|---|
| **Annual Cash Compensation** | Base Salary<br>Annual Incentive Awards<br>Discretionary Awards |
| **Long-Term Incentives** | Equity Awards<br>Long-Term Cash Awards |
| **Benefits** | Health, Welfare and Retirement Benefits |
| **Other** | International Assignment Compensation<br>Change-in-Control and Severance Benefits |

The following section describes each of these components in further detail.

**1. Annual Cash Compensation**

***Base Salaries***

The annual base salaries of our NEOs are designed to be commensurate with professional status, accomplishments, scope of responsibility, overall impact on the organization, and the size and complexity of the business or functional operations managed. The annual base salaries of our NEOs are also intended to be externally competitive with the market.

The Committee reviews our NEOs' base salary levels (i) annually, in conjunction with annual performance reviews, and (ii) in conjunction with new hires, promotions or significant changes in job responsibilities. When approving base salary increases, the Committee considers various factors, such as job performance, total target compensation, impact on value-creation and the external competitive marketplace. The Committee reviews the performance and achievements of the NEOs in determining whether any increases are merited based on the prior year's performance.

The base salary change for each NEO is shown in the table below. Mr. Knight's merit increase in July took into consideration the accomplishments outlined above, internal equity, and external competitive market considerations. No other salary increases were delivered to our NEOs.

| Name | 2018 Base Salary | | 2017 Base Salary | | 2017 Increase (Decrease) |
|---|---|---|---|---|---|
| Mr. Rogerson | $ | 1,000,000 | $ | 1,000,000 | —% |
| Mr. Knight | | 506,350 | | 486,875 | 4.00% |
| Mr. Bevilaqua | | 631,108 | | 631,108 | —% |
| Mr. Fisher | | 408,230 | | 408,230 | —% |
| Mr. Johns | | 517,212 | | 517,212 | —% |

***Annual Incentive Awards***

Our annual incentive compensation plan is a short-term performance incentive designed to reward participants for delivering increased value to the organization against specific financial and other critical business objectives. Annual incentive compensation awards are targeted at a level that, when combined with base salaries and other components of our total rewards program, is intended to yield total annual compensation that is competitive in the external marketplace, while performance above the target is intended to yield total annual compensation above the market median.

The performance targets for the applicable components of the annual incentive compensation plan are identical for executives and other eligible, salaried associates. We strive to set annual incentive award targets that are achievable only through strong performance, believing that this motivates our executives and other participants to deliver ongoing value-creation, while allowing the Company to attract and retain highly talented senior executives. Annual incentive award targets are determined in connection with the development of an overall budget for Hexion Holdings and its subsidiaries. Performance measures may be based on a number of factors, such as our prior-year performance, current market trends, anticipated synergies, integration efforts around acquired assets or businesses, potential pricing actions, raw material projections, the realization of planned productivity initiatives, expansion plans, new product development, environmental, health and safety, and other strategic factors that could potentially impact operations.

**The 2018 Annual Incentive Compensation Plan**

In early 2018, the Committee approved the 2018 annual incentive compensation plan for associates of the Company and its subsidiaries, which we refer to as the "2018 ICP." Under the 2018 ICP, our NEOs and other eligible participants had the opportunity to earn annual cash incentive compensation based upon the achievement of certain financial and environmental health & safety ("EH&S") goals.

As mentioned above, during 2018 and 2017, Mr. Fisher continued to provide services to MPM under the Shared Services Agreement. The 2018 ICP included a specific incentive structure for associates providing shared services. Under the shared services incentive design, Mr. Fisher's target bonus opportunity is based 50% on the achievement of Hexion targets and 50% based on the achievement of MPM's targets under MPM's 2018 incentive compensation plan.

The Hexion performance goals were established based on the following measures:

- Segment EBITDA, which equals earnings before interest, taxes, depreciation and amortization, adjusted to exclude discontinued operations, certain non-cash and other unusual income and expense items. See Items 7 & 8 of Part II of this Annual Report on Form 10-K for a reconciliation of Hexion Net Loss to Segment EBITDA. For the 2018 ICP, the targeted Hexion Segment EBITDA was set at $440 million.

- Cash flow, which encompasses Segment EBITDA, net trading capital improvement and/or usage, capital spending and interest paid along with other operating cash flow items such as income taxes paid and pension contributions. For the 2018 ICP, the targeted cash flow for Hexion Holdings was $0 or break even.

- Environmental health & safety (EH&S) goals, which, for the 2018 ICP, included the following: (i) severe or high-potential incidents ("SIFs"), (ii) occupational illness and injury rate ("OIIR"), and (iii) total environmental incidents (ERI).

    - The target SIFs goal was to reduce the number of SIFs by 28.6% compared to 2017.
    - The Company's OIIR in 2017 was 0.68. The target goal for 2018 was to achieve a 25% reduction from 2017 or a rate of 0.51.
    - Hexion Holdings ended 2017 with 27 total environmental incidents. The 2018 goal was to reduce ERI to 24 or fewer incidents, which represents an approximate 10% improvement from the prior year.

Each of the 2018 performance goals was measured independently such that a payout for the achievement of one element was not dependent upon the achievement of any other performance measure. This was intended to keep associates focused on driving continuous improvement in EH&S and cash flow, in addition to EBITDA.

Awards under the 2018 ICP were calculated as follows: each participant was designated a target award under the 2018 ICP based on a percentage of his base salary, which varies by participant based on the scope of the participant's responsibilities and externally competitive benchmarks. For 2018, the target bonus percentage for our continuing NEOs as a percentage of base salary remained consistent with the prior year. In 2018, for the EBITDA and Cash Flow goals, the Committee established a minimum level of performance at or below which there is no payout for that component. Above the minimum level of performance, each NEO earns a payout calculated on a linear path up to and including the target level of performance (100% payout). Above the target level of performance, each NEO earns a payout calculated on a linear path up to and including the maximum level of performance (200% payout). The Committee established fixed payout percentages for our NEOs for the EH&S goals. A minimum level of performance was established for SIFs and OIIR at which each NEO earns a 30% payout. The Committee established target (100% payout) and maximum (200% payout) levels of performance for SIFs, OIIR and ERI.

The following table summarizes the target awards, performance measures, weightings, achievements and payouts for the 2018 ICP awards granted to our NEOs. The 2018 ICP award amounts are reflected in the "Non-Equity Incentive Plan Compensation" column of the Summary Compensation Table. Each NEO's actual bonus under the 2018 ICP is calculated based on the information provided in the table below. In each case, the "Target Award" amount for each NEO is multiplied by the weighting percentage and performance achieved percentage for each individual component to determine the payout for that component. The total bonus payout is the sum of the individual component payouts.

| Name | Incentive Target (% of Base Salary) | Target Award ($) | Performance Criteria / Weighting % | Performance Achieved (%) | 2018 ICP Payout ($) |
|---|---|---|---|---|---|
| C. Rogerson | 100% | 1,000,000 | Hexion Global EBITDA / 55% | 102% | 561,000 |
| | | | EH&S Goal / 10% | 40% | 40,000 |
| | | | Hexion Cash Flow / 35% | 90% | 315,000 |
| G. Knight | 70% | 354,445 | Hexion Global EBITDA / 55% | 102% | 198,844 |
| | | | EH&S Goal / 10% | 40% | 14,178 |
| | | | Hexion Cash Flow / 35% | 90% | 111,650 |
| J. Bevilaqua | 80% | 504,887 | Hexion Global EBITDA / 55% | 102% | 283,241 |
| | | | EH&S Goal / 10% | 40% | 20,195 |
| | | | Hexion Cash Flow / 35% | 90% | 159,039 |
| N. Fisher | 70% | 285,761 | Hexion Global EBITDA / 27.5% | 102% | 80,156 |
| | | | Hexion EH&S Goal / 5% | 40% | 5,715 |
| | | | Hexion Cash Flow / 17.5% | 90% | 45,007 |
| | | | Momentive Segment EBITDA / 35% | 198.9% | 198,933 |
| | | | Momentive EH&S Goal / 5% | 125% | 17,860 |
| | | | Momentive Working Capital / 10% | 39.3% | 11,230 |
| D. Johns | 70% | 362,049 | Hexion Global EBITDA / 55% | 102% | 203,109 |
| | | | EH&S Goal / 10% | 40% | 14,482 |
| | | | Hexion Cash Flow / 35% | 90% | 114,045 |

***Discretionary Awards***

The CEO periodically uses discretionary awards to reward exemplary efforts. Often, such efforts are required by atypical business conditions or are related to special projects impacting long-term business results. Discretionary awards are also used for retention purposes or in connection with a new hiring or promotion. Any discretionary award to an executive officer must be approved by the Committee. No discretionary awards were made to our NEOs for services performed in 2018.

**2. Long-Term Incentive Awards**

***Equity Awards***

The Committee believes that equity awards play an important role in creating incentives to maximize Company performance, motivating and rewarding long-term value-creation, and further aligning the interests of our executive officers with those of our shareholders. Our NEOs, as well as other members of the leadership team and other eligible associates, participate in equity plans sponsored by Hexion Holdings or Hexion LLC. Awards under these plans are factored into the executive compensation program established by the Committee.

Our long-term strategy includes the use of periodic grants, rather than ongoing annual grants of equity. We believe that periodic grants provide an incentive toward a long-term projected value. Our equity awards contain performance- and service-vesting requirements. Awards that are conditioned on service-vesting requirements function as a retention incentive, while awards that are conditioned on performance- and service-vesting requirements are linked to the attainment of specific long-term objectives.

We have historically used the following types of equity awards: (i) options to purchase common units and (ii) restricted deferred units. Prior to the combination of the Company and MPM in 2010, our NEOs received awards under the following plans administered by Hexion LLC, Hexion or MPM: the 2004 Stock Incentive Plan (the "2004 Stock Plan"), the 2004 Deferred Compensation Plan (the "2004 DC Plan"), the 2007 Long-Term Incentive Plan (the "2007 Long-Term Plan") and the Momentive Performance Materials Holdings Inc. 2007 Long-Term Incentive Plan (the "MPM 2007 Plan"). At the time of the combination of the Company and MPM in 2010, all outstanding equity awards that included common units of Hexion LLC and shares of MPM Holdings were converted into units of Hexion Holdings. In February 2011, the Hexion Holdings Committee approved and granted awards under a new long-term equity incentive plan for key leaders and directors of the Company and MPM (the "2011 Equity Plan"). These equity plans are described in the "Narrative to Outstanding Equity Awards Table" below.

***Cash Awards***

The Committee may, from time to time, approve long-term cash awards or plans for our key associates, including our NEOs. These awards are designed to pay over extended performance periods subject to the achievement of specified, measurable performance goals, and are further conditioned upon continued employment. As such, these awards are useful for providing a defined value for achievement of our financial targets, as well as leadership stability. In addition, long-term cash awards help complement equity awards that are not yet liquid.

Retaining key talent during difficult business cycles has been a critical focus for the Company in recent years. It became apparent to the Committee that the long-term performance goals established under our 2012 plan would likely never be achieved due to the MPM bankruptcy. Therefore, to ensure the continued retention of key talent during a critical period of challenging business conditions, the Committee granted new long-term cash awards to key leaders employed by the Company in November 2014, under the Momentive Performance Materials Holdings LLC Long-Term Cash Incentive Plan (the "LTIP"). The LTIP awards are subject to service-vesting requirements. Acceptance of this award was conditioned upon the participant's forfeiture of certain earlier awards.

In November 2016, new long-term cash awards were made under the LTIP to all of our NEOs. These awards vest based upon service and/or performance metrics, depending upon the grantee.

In July 2017, following the retirement announcement of Mr. Craig Morrison, our former CEO, a modification was made to the 2016 awards to ensure stability and retention of key associates; including the NEOs, except for Mr. Rogerson. A portion of these awards that were payable based on achievement of performance metrics were converted into time-based awards payable in 2020.

**3. <u>Benefits</u>**

The Company provides a comprehensive suite of benefits to eligible associates, including our NEOs. Our benefit programs are designed to provide market-competitive benefits for associates and their covered dependents. Each of our NEOs is covered under a health and welfare program that provides medical, prescription drug, dental, vision, life insurance and disability insurance benefits.

Each of our NEOs also participates in our savings plan, a defined contribution plan (the "401(k) Plan"), which allows eligible U.S. associates to make pre-tax contributions from 1% to 15% of eligible earnings for associates who meet the definition of a highly compensated employee and 25% for all other associates up to the U.S. tax limits for qualified plans. Those associates are also eligible to receive matching contributions from the Company equal to 100% on contributions of up to 5% of eligible earnings. In addition, the Company makes an annual retirement contribution, ranging from 3% to 7% of eligible earnings depending on years of service, to eligible associates actively employed on the last day of the year. An additional company contribution may be made if we achieve specified annual financial goals established at the beginning of each plan year.

Each of our NEOs, other than Messrs. Johns and Rogerson, participated in a qualified cash balance pension plan on substantially the same terms as other plan participants (the "Hexion U.S. Pension Plan"). The Hexion U.S. Pension Plan was frozen in 2009, as discussed further in the Narrative to the Pension Benefits table below. In addition, because individuals are subject to U.S. tax limitations on contributions to qualified retirement plans, the Company provided a non-qualified retirement plan intended to provide these associates, including our NEOs, with an incremental benefit on eligible earnings above the U.S. tax limits for the qualified plan (the "Hexion Supplemental Plan"). The benefits in the Hexion Supplemental Plan associated with the Hexion U.S. Pension Plan were also frozen in 2009. Our NEOs participated in the non-qualified plan on the same basis as our other highly compensated salaried associates.

Additionally, because individuals are subject to U.S. tax limitations on contributions to a qualified retirement plan, and following the freezing of the Hexion Supplemental Plan, in 2011 the Company established a non-qualified Supplemental Executive Retirement Plan ("SERP"), which provides a benefit on eligible earnings that exceed the U.S. tax limit applicable to our 401(k) Plan. In 2018, our NEOs were eligible to receive a 5% company contribution on eligible earnings in excess of $275,000, which is the same benefit received by our other highly compensated salaried employees.

There were no significant changes to the Company's benefit plans in 2018 that would impact our NEOs. There are descriptions of these plans in the Narrative to the Pension Benefits Table and Narrative to the Nonqualified Deferred Compensation Table below.

**4. Other**

***Temporary Assignment / Relocation***

The Company may provide certain additional benefits to an executive officer if he or she is on a temporary international or domestic assignment. These benefits are externally competitive and a means to compensate the executive officer for financial expenses that would not exist if the executive remained in his or her home. For example, the Company may provide family travel and housing allowances, other one-time allowances, tax equalization payments, and reimbursements or payments for relocation from the executive officer's home. In addition, pursuant to the Company's relocation policy, certain expenses are grossed up to protect the executive from the tax consequences associated with those certain relocation expenses. We believe that, as a global company, it is necessary to offer this benefit to encourage key associates and executives to temporarily relocate for strategic business reasons.

***Change-in-Control and Severance Benefits***

Our NEOs are generally entitled to change-in-control and severance protections. We believe that appropriate change-in-control and severance protections accomplish two objectives. First, they create an environment where key executives are able to take actions in the best interest of the Company without incurring undue personal risk. Second, they foster management stability during periods of potential uncertainty. We are also cognizant that excessive pay in the form of change-in-control and severance protection would not be in the best interest of the Company because such pay may encourage undue risk-taking. In an attempt to balance the delicate equation, the Committee has determined to provide these benefits very selectively. The change-in-control and severance benefits payable to our NEOs are discussed in the Narrative to the Summary Compensation Table and in the discussion on Potential Payments Upon Termination of Employment below.

## COMPENSATION COMMITTEE REPORT ON EXECUTIVE COMPENSATION[1]

The Committee has reviewed and discussed with management the disclosures contained in the above Compensation Discussion and Analysis. Based upon this review and discussion, the Committee recommended to our Board of Directors that the Compensation Discussion and Analysis section be included in our Annual Report on Form 10-K.

**Compensation Committee of the Board of Managers**

Robert Kalsow-Ramos (Chairman)
Geoffrey A. Manna
Samuel Feinstein

(1) SEC filings sometimes "incorporate information by reference." This means the Company is referring the reader to information that has previously been filed with the SEC, and that this information should be considered as part of the filing. Unless the Company specifically states otherwise, this report shall not be deemed to be incorporated by reference and shall not constitute soliciting material or otherwise be considered filed under the Securities Act or the Securities Exchange Act.

**SUMMARY COMPENSATION TABLE**

The following table provides information about the compensation of our Chief Executive Officer, Chief Financial Officer, and our three next most highly compensated executive officers whom we collectively refer to as our NEOs.

| Name and Principal Position(a) | Year (b) | Salary ($) (c) | Bonus ($) (d) (1) | Stock Awards ($) (e) | Options Awards ($) (f) | Non-Equity Incentive Plan Compensation ($) (g) (2) | Change in Pension Value and Nonqualified Deferred Compensation Earnings ($) (h) (3) | All Other Compensation ($) (i) (4) | Total ($) (j) |
|---|---|---|---|---|---|---|---|---|---|
| Craig A. Rogerson President and Chief Executive Officer | 2018 | 1,000,000 | — | — | — | 916,000 | — | 374,556 | 2,290,556 |
| | 2017 | 480,769 | 888,410 | — | — | 111,590 | — | 258,302 | 1,739,071 |
| | 2016 | — | — | — | — | — | — | — | — |
| George F. Knight Executive Vice President and Chief Financial Officer | 2018 | 496,612 | 475,000 | — | — | 324,672 | — | 53,412 | 1,349,696 |
| | 2017 | 480,937 | 272,267 | — | — | 76,063 | — | 54,778 | 884,045 |
| | 2016 | 475,000 | 272,267 | — | — | 81,562 | 10,839 | 50,142 | 889,810 |
| Joseph P. Bevilaqua Executive Vice President and Chief Operating Officer | 2018 | 631,108 | 583,333 | — | — | 462,476 | — | 70,090 | 1,747,007 |
| | 2017 | 631,108 | 743,600 | — | — | 112,681 | — | 77,118 | 1,564,507 |
| | 2016 | 631,108 | 743,600 | — | — | 182,883 | 9,856 | 109,745 | 1,677,192 |
| Nathan E. Fisher Executive Vice President, Global Procurement | 2018 | 408,230 | 392,529 | — | — | 620,588 | — | 46,870 | 1,468,217 |
| | 2017 | 400,380 | 596,232 | — | — | 196,344 | — | 43,564 | 1,236,520 |
| | 2016 | 383,183 | 596,232 | — | — | 199,876 | 5,769 | 40,006 | 1,225,066 |
| Douglas A. Johns Executive Vice President and General Counsel | 2018 | 517,213 | 517,213 | — | — | 331,637 | — | 50,548 | 1,416,611 |
| | 2017 | 517,213 | 594,880 | — | — | 80,802 | — | 48,768 | 1,241,663 |
| | 2016 | 517,212 | 594,880 | — | — | 88,811 | — | 75,331 | 1,276,234 |

(1) The amounts shown in column (d) for 2018 reflect time-based amounts paid under the LTIP to each NEO with the exception of Mr. Rogerson.

(2) The amounts shown in column (g) for 2018 reflect the amounts earned under the 2018 ICP, based on performance achieved for 2018. The material terms of the 2018 ICP are described in the Compensation Discussion & Analysis above. Payments under the 2018 ICP were made in March 2019. The amount for Mr. Fisher includes $261,686 under the LTIP for MPM performance-based achievement under the Shared Services Agreement.

(3) The amounts shown in column (h) reflect the net actuarial decrease in the present value of benefits under the Hexion U.S. Pension Plan and the Hexion Supplemental Plan for Knight, Bevilaqua, and Fisher. Mr. Rogerson and Mr. Johns are not participants in these plans. The decrease in net present value for 2018 includes: for Mr. Knight, a ($18,601) decrease; for Mr. Bevilaqua, a ($22,092) decrease; and for Mr. Fisher, a ($8,460) decrease in net present value. See the Pension Benefits Table below for additional information regarding our pension calculations, including the assumptions used for these calculations.

(4) The amounts shown in the All Other Compensation column for 2018 include: for Mr. Rogerson: $108,401 of company contributions made or accrued to the defined contribution plans, $126,192 in tax gross-ups, $36,000 in rental housing and furniture, and $103,963 in travel expenses; for Mr. Knight: $53,412 of company contributions made or accrued to the defined contribution plans; for Mr. Bevilaqua: $70,090 of company contributions made or accrued to the defined contribution plans; for Mr. Fisher: $46,870 of company contributions made or accrued to the defined contribution plans; and for Mr. Johns: $50,548 of company contributions made or accrued to the defined contribution plans.

## GRANTS OF PLAN-BASED AWARDS

The following table presents information about grants of awards during the year ended December 31, 2018, under the 2018 ICP and the 2016 LTIP grants that are subject to performance-vesting conditions.

| | Estimated Future Payouts Under Non-Equity Incentive Plan Awards | | |
|---|---|---|---|
| **Name (a)** | **Threshold ($) (c)** | **Target ($) (d)** | **Maximum ($) (e)** |
| Craig A. Rogerson | | | |
| 2018 ICP | 25,000 | 1,000,000 | 2,000,000 |
| George F. Knight | | | |
| 2018 ICP | 8,861 | 354,445 | 708,890 |
| Joseph P. Bevilaqua | | | |
| 2018 ICP | 12,622 | 504,887 | 1,009,773 |
| Nathan E. Fisher | | | |
| 2018 ICP | 3,572 | 285,761 | 571,523 |
| Douglas A. Johns | | | |
| 2018 ICP | 9,051 | 362,049 | 724,097 |

**Narrative to Summary Compensation Table and Grants of Plan-Based Awards Table**

***Employment Agreements***

The Company has employment agreements or employment letters with each of our NEOs, which provide for their terms of compensation, benefits, severance, and certain restrictive covenants. Details regarding the severance and restrictive covenant provisions are provided below under “Potential Payments upon a Termination or Change in Control.”

Mr. Rogerson’s Employment Agreement dated June 12, 2017, includes (i) a base salary at the rate of one million dollars ($1,000,000) per annum, (ii) an annual cash bonus with a target amount equal to 100% of his base salary, based on Mr. Rogerson’s and/or the Company’s attainment of certain criteria as determined by the Board, (iii) a long-term incentive award earned pursuant to the terms and conditions of the LTI Award Agreement dated June 12, 2017, and (iv) reimbursement of certain commuting and relocation costs.

Mr. Rogerson’s 2017 LTI Award Agreement generally provides for a cash bonus equal to 7.5% of the amount of any distribution of cash or property made by Hexion Holdings to one or more of its members during the term of his employment agreement and on or prior to December 31, 2020. Unless Mr. Rogerson’s employment is terminated before December 31, 2020, by the Company with cause or for by Mr. Rogerson without good reason, or due to his death or disability, Mr. Rogerson will be entitled to an additional cash bonus on each anniversary of the last day of the term of the employment agreement that occurs prior to a change in control of the Company, equal to 7.5% of the aggregate amount of any distributions of cash or property made by Hexion Holdings to its members during the preceding year. Upon a change in control of the Company, unless Mr. Rogerson’s employment is terminated by the Company with cause (or, following the term of the employment agreement, at a time when the Company would have had “cause” to terminate Mr. Rogerson had the employment agreement remained in effect) or by Mr. Rogerson without good reason, or due to his death or disability, Mr. Rogerson will be entitled to an amount equal to the sum of (x) 7.5% of any distributions made by Hexion Holdings to its members since the last of such cash bonuses, and (y) 7.5% of the net sale proceeds available for distribution to members of Hexion Holdings in connection with such change in control transaction.

Mr. Johns’ Terms of Employment from May 2015 include relocation benefits under the Company’s relocation policy, the extension of the equity awards held by Mr. Johns in Hexion Holdings and agreement that the put/call rights and obligations related to the common units of Hexion Holdings equity purchased by Mr. Johns continue so long as he remains an employee of the Company. Mr. Johns received service credit for his prior years of service with MPM and GE for purposes of calculating his retirement benefits.

***2018 Annual Incentive Compensation Plan (2018 ICP)***

Information on the 2018 ICP targets, performance components, weightings, and payouts for each of our NEOs can be found in the Compensation Discussion and Analysis section of this Report.

***2016 Long-Term Cash Incentive Awards (2016 Awards)***

In exchange for the award amounts originally granted in 2016, the Board granted new awards in July 2017 for Messrs. Knight, Johns and Fisher such that, for each of these NEOs, 67% of their target award is payable based upon continued service with the Company and the remaining 33% is payable based upon performance achievement.

## OUTSTANDING EQUITY AWARDS AT FISCAL YEAR-END

The following table presents information about outstanding and unexercised options and outstanding stock awards held by our NEOs at December 31, 2018. The securities underlying the awards are common units of Hexion Holdings, and the awards were granted under the 2004 Stock Plan, 2007 Long-Term Plan, the MPM 2007 Plan and the 2011 Equity Plan. See the Narrative to the Outstanding Equity Awards Table below for a discussion of these plans and the vesting conditions applicable to the awards.

| | Option Awards | | | | | Stock Awards | |
|---|---|---|---|---|---|---|---|
| Name (a) | Number of Securities Underlying Unexercised Options (#) Exercisable (b) | Number of Securities Underlying Unexercised Options (#) Unexercisable (c) | Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) (d) | Option Exercise Price ($) (e) | Option Expiration Date (f) | Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#) (g) | Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($) (h) (1) |
| **Craig A. Rogerson** | — | — | — | — | — | — | — |
| **George F. Knight** | | | | | | | |
| 2011 Equity Plan: | | | | | | | |
| 2011 Grant: | | | | | | | |
| Tranche A Options (2) | 32,375 | — | — | 4.85 | 2/23/2021 | — | — |
| Tranche B Options (3) | — | — | 16,187 | 4.85 | 2/23/2021 | — | — |
| Tranche C Options (4) | — | — | 16,187 | 4.85 | 2/23/2021 | — | — |
| Tranche B RDUs (3) | — | — | — | — | — | 5,396 | — |
| Tranche C RDUs (4) | — | — | — | — | — | 5,396 | — |
| 2013 Grant: | | | | | | | |
| Unit Options (5) | 35,044 | — | — | 1.42 | 3/8/2023 | — | — |
| RDUs (6) | — | — | — | — | — | 27,672 | — |
| **Joseph P. Bevilaqua** | | | | | | | |
| 2011 Equity Plan: | | | | | | | |
| 2011 Grant: | | | | | | | |
| Tranche A Options (2) | 183,517 | — | — | 4.85 | 2/23/2021 | — | — |
| Tranche B Options (3) | — | — | 91,758 | 4.85 | 2/23/2021 | — | — |
| Tranche C Options (4) | — | — | 91,758 | 4.85 | 2/23/2021 | — | — |
| Tranche B RDUs (3) | — | — | — | — | — | 30,586 | — |
| Tranche C RDUs (4) | — | — | — | — | — | 30,586 | — |
| 2013 Grant: | | | | | | | |
| Unit Options (5) | 416,189 | — | — | 1.42 | 3/8/2023 | — | — |
| RDUs (6) | — | — | — | — | — | 328,635 | — |
| **Nathan E. Fisher** | | | | | | | |
| 2011 Equity Plan: | | | | | | | |
| 2011 Grant: | | | | | | | |
| Tranche A Options (2) | 118,710 | — | — | 4.85 | 2/23/2021 | — | — |
| Tranche B Options (3) | — | — | 59,356 | 4.85 | 2/23/2021 | — | — |
| Tranche C Options (4) | — | — | 59,356 | 4.85 | 2/23/2021 | — | — |
| Tranche B RDUs (3) | — | — | — | — | — | 19,785 | — |
| Tranche C RDUs (4) | — | — | — | — | — | 19,785 | — |
| 2013 Grant: | | | | | | | — |
| Unit Options (5) | 244,906 | — | — | 1.42 | 3/8/2023 | — | — |
| RDUs (6) | — | — | — | — | — | 193,385 | — |
| **Douglas A. Johns** | | | | | | | |
| 2007 MPM Plan: | | | | | | | |
| Tranche A Options (7) | 89,979 | — | — | 2.59 | 12/31/2020 | — | — |
| 2011 Equity Plan: | | | | | | | |
| 2011 Grant: | | | | | | | |

| Name (a) | Option Awards: Number of Securities Underlying Unexercised Options (#) Exercisable (b) | Number of Securities Underlying Unexercised Options (#) Unexercisable (c) | Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#) (d) | Option Exercise Price ($) (e) | Option Expiration Date (f) | Stock Awards: Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#) (g) | Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($) (h) (1) |
|---|---|---|---|---|---|---|---|
| Tranche A Options (2) | 60,480 | — | — | 4.85 | 2/23/2021 | — | — |
| Tranche B Options (3) | — | — | 30,240 | 4.85 | 2/23/2021 | — | — |
| Tranche C Options (4) | — | — | 30,240 | 4.85 | 2/23/2021 | — | — |
| Tranche B RDUs (3) | — | — | — | — | — | 10,080 | — |
| Tranche C RDUs (4) | — | — | — | — | — | 10,080 | — |
| 2013 Grant: | | | | | | | |
| Unit Options (5) | 262,861 | — | — | 1.42 | 3/8/2023 | — | — |
| RDUs (6) | — | — | — | — | — | 207,563 | — |

(1) Because equity interests in our ultimate parent, Hexion Holdings, are not publicly traded, there is no closing market price at the completion of the fiscal year. The market values shown in column (h) are based on the value of a unit of Hexion Holdings as of December 31, 2018, as determined by Hexion Holdings' Board of Managers for management equity transaction purposes. In light of differences between the companies, including differences in capitalization, the value of a unit in Hexion Holdings does not necessarily equal the value of a share of the Company's common stock.

(2) This award vested in four equal annual installments on each December 31st of 2011 through 2014.

(3) This award vests on the earlier to occur of (i) the two-year anniversary of the date that the common unit value is at least $10 following certain corporate transactions and (ii) six months following the date that the common unit value is at least $10 following certain change-in-control transactions.

(4) This award vests on the earlier to occur of (i) the one-year anniversary of the date that the common unit value is at least $15 following certain corporate transactions and (ii) six months following the date that the common unit value is at least $15 following certain change-in-control transactions.

(5) This award vested in four equal annual installments on each December 31st of 2013 through 2016.

(6) This award vests on the earlier to occur of (i) the one-year anniversary of the date that the common unit value is at least $3.50 following certain corporate transactions and (ii) six months following the date that the common unit value is at least $3.50 following certain change-in-control transactions.

(7) This award time-vested over five years.

**Narrative to Outstanding Equity Awards Table**

***2011 Equity Plan***

**2011 Grant**

On February 23, 2011, our NEOs received awards of RDUs and unit options in Hexion Holdings under the 2011 Equity Plan. The RDUs are non-voting units of measurement that are deemed for bookkeeping purposes to be equivalent to one common unit of Hexion Holdings. Of the RDUs and options granted in 2011, approximately 50% are "Tranche A RDUs" and options with time-based vesting (subject to acceleration in the event of certain change-in-control transactions) and approximately 50% are "Tranche B and C RDUs" and options with performance-based vesting.

The vesting terms of the RDUs and options described in footnotes 3-5 to the table above, in each case, are conditioned on the executive's continued employment through the vesting dates mentioned above, subject to certain exceptions. With respect to any RDUs that vest as a result of a corporate or change-in-control transaction, such RDUs will be delivered promptly following the vesting date, or a cash payment will be delivered in settlement thereof, depending on the type of transaction. The RDUs and unit options contain restrictions on transferability and other customary terms and conditions. For information on the vested awards, see the Narrative to the Nonqualified Deferred Compensation Table.

**2013 Grant**

On March 8, 2013, our NEOs received awards of performance-based RDUs of Hexion Holdings and options to purchase units of Hexion Holdings under the 2011 Equity Plan. The RDUs are non-voting units of measurement which are deemed for bookkeeping purposes to be equivalent to one common unit of Hexion Holdings.

The vesting terms of the unit options and RDUs described in footnotes 6 and 7 to the table above are each conditioned on the NEO's continued employment through the vesting dates specified above, subject to certain exceptions. With respect to any RDUs that vest as a result of a corporate or change-in-control transaction, such RDUs will be delivered promptly following the vesting date, or a cash payment will be delivered in settlement thereof, depending on the type of transaction. The unit options and RDUs contain restrictions on transferability and other customary terms and conditions.

## OPTION EXERCISES AND STOCK VESTED

The Option Exercises and Stock Vested table is omitted since there were no such transactions for our NEOs during the year ended December 31, 2018.

## PENSION BENEFITS

The following table presents information regarding the benefits payable to each of our NEOs at, following, or in connection with their retirement under the qualified and non-qualified defined benefit pension plans of Hexion as of December 31, 2018. The table does not provide information regarding the Company's qualified or non-qualified defined contribution plans. The amounts shown in the table for each participant represent the present value of the annuitized benefit and do not represent the actual cash value of a participant's account.

| Name (a) | Plan Name (b) | Number of Years Credited Service (#) (c) (1) | Present Value of Accumulated Benefit ($) (d) | Payments During Last Fiscal Year ($) (e) |
|---|---|---|---|---|
| Craig A. Rogerson[(2)] | Hexion U.S. Pension Plan | — | — | — |
| | Hexion Supplemental Plan | — | — | — |
| George F. Knight | Hexion U.S. Pension Plan | 12.23 | 178,665 | — |
| | Hexion Supplemental Plan | 11.74 | 78,970 | — |
| Joseph P. Bevilaqua | Hexion U.S. Pension Plan | 7.25 | 114,998 | — |
| | Hexion Supplemental Plan | 6.76 | 143,811 | — |
| Nathan E. Fisher | Hexion U.S. Pension Plan | 6.33 | 88,764 | — |
| | Hexion Supplemental Plan | 5.84 | 25,996 | — |
| Douglas A. Johns (2) | | — | — | — |

(1) The number of years of credited service set forth in column (c) reflects the number of years between the NEO's hire date and the plan freeze date, and is used to determine benefit accrual under the applicable plan.

(2) Mr. Rogerson and Mr. Johns do not participate in the Hexion U.S. Pension Plan or the Hexion Supplemental Plan.

**Narrative to Pension Benefits Table**

***Hexion U.S. Pension Plan and Hexion Supplemental Plan***

The benefits associated with the Hexion U.S. Pension Plan and Hexion Supplemental Plan were frozen June 30, 2009, and January 1, 2009, respectively. Although participants will continue to receive interest credits under the plans, no additional benefit credits will be provided. Prior to the freeze, the Hexion U.S. Pension Plan provided benefit credits equal to 3% of earnings to the extent that this credit does not exceed the Social Security wage base for the year plus 6% of eligible earnings in excess of the social security wage base to covered U.S. associates, subject to the IRS-prescribed limit applicable to tax-qualified plans.

The Hexion Supplemental Plan provided non-qualified pension benefits in excess of allowable limits for the qualified pension plans. The benefit formula mirrored the qualified Hexion U.S. Pension Plan but applied only to eligible compensation above the federal limits for qualified plans. The accrued benefits are unfunded and are paid from our general assets upon the participant's termination of employment with the Company.

Under both the Hexion U.S. Pension Plan and Hexion Supplemental Plan, eligible earnings included annual incentive awards that were paid currently, but excluded any long-term incentive awards. Historically, the accrued benefits earned interest credits based on one-year Treasury bill rates until the participant begins to receive benefit payments. Effective January 1, 2012, the plans were amended to provide a minimum interest crediting rate of 300 basis points. The interest rate determined under the plan for fiscal 2016 was 3.0%. Participants vest after the completion of three years of service.

Mr. Knight and Mr. Bevilaqua are both currently eligible for early retirement under the Hexion U.S. Pension Plan, both having met the eligibility criteria of having reached age 55 with 10 years of service with the Company.

For a discussion of the assumptions applied in calculating the benefits reported in the table above, please see Note 10 to our Consolidated Financial Statements included in Part II of Item 8 in this Annual Report on Form 10-K.

**NONQUALIFIED DEFERRED COMPENSATION**

The following table presents information with respect to each defined contribution or other plan that provides for the deferral of compensation on a basis that is not tax-qualified.

| Name (a) | Executive Contributions in Last FY ($) (b) | Registrant Contributions in Last FY ($) (c) | Aggregate Earnings (Loss) in Last FY ($) (d) | Aggregate Withdrawals/ Distributions ($) (e) | Aggregate Balance at Last FYE ($) (f) |
|---|---|---|---|---|---|
| Craig A. Rogerson | — | 10,538 | 151 | — | 10,689 |
| George F. Knight | | | | | |
| Hexion Supplemental Plan | — | — | 6,022 | — | 204,017 |
| Hexion SERP (1) | — | 14,625 | 2,257 | — | 84,198 |
| Hexion 2004 DC Plan (2) | — | — | (8,367) | — | — |
| Joseph P. Bevilaqua | | | | | |
| Hexion Supplemental Plan | — | — | 11,749 | — | 398,057 |
| Hexion SERP (1) | — | 27,200 | 7,402 | — | 265,190 |
| Hexion 2004 DC Plan (2) | — | — | (31,357) | — | — |
| Nathan E. Fisher | | | | | |
| Hexion Supplemental Plan | — | — | 840 | — | 28,472 |
| Hexion SERP (1) | — | 16,513 | 2,051 | — | 78,233 |
| Hexion 2004 DC Plan (2) | — | — | (14,642) | — | — |
| Douglas A. Johns | | | | | |
| Hexion SERP (1) | — | 16,801 | 1,397 | — | 56,237 |

(1) The amount shown in column (c) for the Hexion SERP is included in the All Other Compensation column of the Summary Compensation Table for 2017. These amounts were earned in 2017 and credited to the accounts by Hexion in 2018.

(2) The amount shown in column (f) is based on the number of vested units multiplied by the value of a common unit of Hexion Holdings on December 31, 2018, as determined by Hexion Holdings' Board of Managers for management equity purposes.

**Narrative to the Nonqualified Deferred Compensation Table**

***Hexion Supplemental Plan***

Effective January 1, 2009, the benefits associated with this plan were frozen. This plan provided supplemental retirement benefits in the form of voluntary associate deferral opportunities and employer match on compensation earned above the IRS limit on qualified plans. The Hexion Supplemental Plan benefits are unfunded and paid from our general assets upon the associate's termination of employment. Effective January 1, 2016, interest credits are made to the participants' accounts at an interest rate determined by the Company, which has been defined as the greater of (i) the rate in the fixed income fund of the 401(k) Plan and (ii) 3%.

***Hexion SERP***

The Company adopted the Hexion SERP in 2011 to provide certain of its executives and other highly compensated associates, including our NEOs, an annual contribution of 5% of eligible earnings above the maximum limitations set by the IRS for contributions to a qualified defined contribution plan. Under the Hexion SERP, an unfunded non-qualified plan, eligible earnings are limited to base salary and amounts earned under the Company's annual incentive compensation plan. Account credits are made to the plan during the third quarter of each year. Interest credits are provided in participants' SERP accounts at an interest rate determined by the Company. Effective January 1, 2016, the interest rate determined by the Company is the greater of (i) the rate in the fixed income fund of the 401(k) Plan and (ii) 3%. This deferred compensation is paid six months following termination of employment.

***Hexion 2004 DC Plan***

In 2004, in connection with Apollo's acquisition of the Company, Messrs. Knight, Bevilaqua, and Fisher deferred the receipt of compensation and were credited with a number of deferred stock units (DCUs) in Hexion LLC equal in value to the amount of compensation deferred. The 2004 DC Plan is an unfunded plan. Any cash or units distributed pursuant to the 2004 DC Plan are distributable only upon a termination of employment or retirement. The NEOs mentioned above each have a put right, which can be exercised upon termination of employment to require the Company to pay them the then market value of the DCUs credited to their account. If the put right is not exercised, the NEO will be issued units in Hexion Holdings.

At December 31, 2018, the number of DCUs credited to the remaining NEOs were: Mr. Knight - 21,453; Mr. Bevilaqua - 80,403; and Mr. Fisher - 37,543.

**POTENTIAL PAYMENTS UPON TERMINATION OR CHANGE-IN-CONTROL**

The Company has employment agreements or letters with Rogerson, Knight, Bevilaqua, and Johns. The section below describes the payments that may be made to our Named Executive Officers upon separation, pursuant to these individual agreements, applicable corporate practices, or in connection with a change in control. For payments made upon a retirement, other than in connection with a separation or change in control, also see the discussion in the Pension Benefits and Nonqualified Deferred Compensation tables and related narratives above.

***Severance/Termination Payments***

The employment agreement with Mr. Rogerson provides that if Mr. Rogerson's employment is terminated by the Company without cause or he resigns for good reason (as defined in his employment agreement), the Company will provide him with an amount equal to 1.5 times the sum of (x) his annual base salary and (y) his target annual bonus, paid in equal installments for 18 months, and continued COBRA coverage for 18 months at the expense of the Company (or until Mr. Rogerson becomes ineligible for such coverage), subject to his execution of a release of claims against the Company and his continued compliance with post-termination covenants. In addition, any accrued but unpaid compensation through the termination date (such as accrued but unpaid base salary, earned but unpaid bonus, and accrued and unused vacation) will be paid in a lump-sum payment at the time of termination. The employment agreement also contains an agreement to not disclose non-public information and a 12 month post-termination non-competition and non-solicitation agreement.

The employment agreement with Mr. Bevilaqua provide that if the executive's employment is terminated by the Company without cause or the executive resigns for good reason (as defined in his employment agreement), the Company will provide him with continued base salary for 18 months and a lump sum payment equal to the estimated cost for the executive to continue COBRA coverage for 18 months. In addition, any accrued but unpaid compensation through the termination date will be paid in a lump-sum payment at the time of termination. The employment agreements also contain an agreement to not disclose non-public information; an agreement not to compete with the Company during the severance period, or, in the case of a termination by the Company for cause or by the executive without good reason, for 12 months following the date he ceases receiving any payments from the Company related to salary, bonus or severance; and a non-solicitation agreement for an additional year beyond the date he ceases receiving any payment from the Company related to salary, bonus or severance.

Under Mr. Knight's terms of employment, he would receive 18 months of continued base salary if his employment is terminated through no fault of his own. In addition to agreeing to not disclose non-public information, pursuant to the Management Investor Rights Agreement under the 2011 Equity Plan, Mr. Knight has agreed not to compete with the Company during the period he receives severance payments from the Company and not to solicit Company associates for one year following the date he ceases receiving severance payments from the Company.

Under applicable corporate severance guidelines based upon his position and length of service with the Company, Mr. Fisher would be entitled to continued base salary payments for 52 weeks in the event his employment is terminated without cause. Severance payments under such guidelines are conditioned upon compliance with non-competition and non-solicitation covenants. In addition to agreeing to not disclose non-public information, pursuant to the Management Investor Rights Agreement under the 2011 Equity Plan Mr. Fisher has agreed not to compete with the Company during the period he receives severance payments from the Company and not to solicit Company associates for one year following the date he ceases receiving severance payments from the Company.

Under Mr. Johns' terms of employment, he would receive 18 months of continued base salary if his employment is terminated by the Company without cause. In addition to agreeing to not disclose non-public information, pursuant to the Management Investor Rights Agreement under the 2011 Equity Plan, Mr. Johns has agreed not to compete with the Company during the period he receives severance payments from the Company and not to solicit Company associates for one year following the date he ceases receiving severance payments from the Company. Upon termination by the Company without cause or resignation for good reason, Mr. Johns has a right to require the Company to repurchase his Hexion Holdings units for their original cost, under the MPM 2007 Plan, as shown in the table below.

***Retirement Payments***

The following table describes payments our NEOs would have received had the individual's employment been terminated by the Company without cause, or in the case of Rogerson and Bevilaqua, by the executive for good reason, as of December 31, 2018.

| Name | Cash Severance ($) (1) | Estimated Value of Benefits ($) (2) | 2018 ICP ($) (3) | MPM 2007 Plan ($) (4) |
|---|---|---|---|---|
| Craig A. Rogerson | 3,000,000 | 43,728 | 916,000 | — |
| George F. Knight | 759,525 | 22,663 | 324,672 | — |
| Joseph P. Bevilaqua | 946,662 | 32,722 | 462,476 | — |
| Nathan E. Fisher | 408,230 | 40,345 | 620,588 | — |
| Douglas A. Johns | 775,820 | 43,728 | 331,637 | 250,000 |

(1) This column reflects cash severance payments due under the NEO's employment agreement, or under the applicable severance guidelines of the Company, as described above, based on salary as of December 31, 2018.

(2) This column reflects the estimated value of health care benefits and outplacement services. Under the Company's severance guidelines, each NEO would be entitled to 12 months of executive outplacement services in the event of a termination through no fault of his own. The values are based upon the Company's estimated cost of providing such benefits as of December 31, 2018.

(3) This column reflects the amount earned by each executive under the 2018 ICP, which would be paid if he or she was employed on December 31, 2018, but incurred a termination of employment by the Company without cause (or in the case of Mr. Bevilaqua, by the executive for good reason) prior to payment. The incentive payment would be forfeited if the executive resigns (in the case of Mr. Bevilaqua, without good reason) or incurs a termination of employment by the Company for cause prior to payment.

(4) This column reflects the cost of Mr. Johns' initial investment in Hexion Holdings, which he may require Hexion Holdings to purchase in the event he is terminated by the Company without cause, or leaves for good reason, as defined in the MPM 2007 Plan.

In addition to these benefits, our NEOs would also generally be entitled to receive the benefits set forth above in the Pension Benefits Table and Nonqualified Deferred Compensation Table following a termination of employment for any reason.

***Change-in-Control Payments***

As noted above in the Narrative to the Outstanding Equity Awards Table, our NEOs will be entitled to accelerated vesting of their outstanding unvested equity awards under the 2011 Equity Plan in connection with certain corporate transactions or change-in-control transactions. In addition, under the 2016 LTIP Awards, the service components of the awards would be deemed satisfied upon a change-in-control transaction but the performance conditions would not be accelerated. The exercise prices of all of the options held by our NEOs at December 31, 2018, exceeded the year-end unit value as determined by the Hexion Holdings' Board of Managers for management equity purposes.

## PAY RATIO DISCLOSURE

As required by Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act, and Item 402(u) of Regulation S-K, following is information about the relationship of the annual total compensation of our employees and the total compensation of Mr. Craig Rogerson, our CEO. The pay ratio included in this information is a reasonable estimate calculated in a manner consistent with Item 402(u) of Regulation S-K.

For the most recently completed fiscal year ended December 31, 2018:

- The median of the annual total compensation of all our employees (other than our CEO) was $66,685; and
- The total compensation of our CEO was $2,290,556.

***Pay Ratio***

| Annual Total Compensation of Mr. Rogerson, our CEO | Median of the Annual Total Compensation of All Employees | Pay Ratio |
|---|---|---|
| $2,290,556 | $66,685 | 34 to 1 |

*Methodology*

As there have been no changes in the employee population or the employee compensation arrangements that would significantly impact the pay ratio disclosure, as permitted by Item 402(u) of Regulation S-K, we have used the same median employee identified last year. December 2018 year-to-date average foreign exchange rates were used to translate the local currency to U.S dollars for the median paid employee's annual total compensation.

The table below lists the components of total compensation for Mr. Rogerson:

| **Compensation Component** | | **Annualized Amount** |
|---|---|---|
| Salary | $ | 1,000,000 |
| Non-Equity Incentive Plan | | 916,000 |
| *All Other Compensation:* | | |
| Employer 401(k) match *(qualified plan)* | | 13,750 |
| Employer annual retirement contribution *(qualified plan)* | | 8,250 |
| Employer supplemental executive retirement plan contribution, including interest credits *(non-qualified plan)* | | 86,401 |
| Commuting and housing allowance, including tax gross-up | | 266,155 |
| **Total annualized compensation** | **$** | **2,290,556** |

**DIRECTOR COMPENSATION**

The following table presents information regarding the compensation earned or paid during 2018 to our directors who are not also NEOs and who served on the Board of Managers of Hexion Holdings during the year.

| **Name** | **Fees Earned or Paid in Cash ($)** | **Total ($)** |
|---|---|---|
| Samuel Feinstein | 88,000 | 88,000 |
| William H. Joyce | 87,000 | 87,000 |
| Robert Kalsow-Ramos | 90,000 | 90,000 |
| Scott M. Kleinman(1) | 85,000 | 85,000 |
| Geoffrey A. Manna | 88,000 | 88,000 |
| Jonathan Rich(2) | 65,250 | 65,250 |
| Marvin O. Schlanger | 84,000 | 84,000 |
| Lee Stewart | 25,000 | 25,000 |

(1) On February 8, 2019, Scott M. Kleinman resigned from the Board of Managers of Hexion Holdings and from the Executive and Compensation Committees.
(2) On November 30, 2018, Jonathan Rich resigned from the Board of Managers of Hexion Holdings.

**Narrative to the Director Compensation Table**

Each of our directors who is not an associate or officer of the Company receives an annual retainer of $75,000 payable quarterly in advance. In addition, each such director receives $2,000 for each meeting of the Board that he attends in person and $1,000 for attending teleconference meetings or for participating in regularly scheduled in-person meetings via teleconference.

During 2018, there were no stock or option awards granted to directors, and there are no outstanding, unvested stock awards held by these directors. The aggregate number of unexercised option awards held by our directors at December 31, 2018 is shown in the following table.

| **Director** | **Unexercised Option Awards (#)** | **Vested (#)** |
|---|---|---|
| Samuel Feinstein | — | — |
| William H. Joyce | 127,103 | 127,103 |
| Robert Kalsow-Ramos | — | — |
| Scott M. Kleinman(1) | 127,103 | 127,103 |
| Geoffrey A. Manna | — | — |
| Jonathan Rich(2) | 1,013,795 | 1,013,795 |
| Marvin O. Schlanger | 127,103 | 127,103 |

(1) On February 8, 2019, Scott M. Kleinman resigned from the Board of Managers of Hexion Holdings and from the Executive and Compensation Committees.
(2) On November 30, 2018, Jonathan Rich resigned from the Board of Managers of Hexion Holdings.

## COMPENSATION COMMITTEE INTERLOCKS AND INSIDER PARTICIPATION

Messrs. Feinstein, and Kalsow-Ramos, whose names appear on the Compensation Committee Report above, are employed by Apollo Management, L.P., our indirect controlling shareholder. Neither of these directors is or has been an executive officer of the Company. None of our executive officers served as a director or a member of a compensation committee (or other committee serving an equivalent function) of any other entity, the executive officers of which served as a director or member of our Compensation Committee during the fiscal year ended December 31, 2018.

## ITEM 12 - SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Hexion Holdings is our ultimate parent company and indirectly owns 100% of our capital stock. The following table sets forth information regarding the beneficial ownership of Hexion Holdings common units, as of April 1, 2019, and shows the number of units and percentage owned by:

- each person known to beneficially own more than 5% of the common units of Hexion Holdings;
- each of Hexion’s 2018 Named Executive Officers;
- each current member of the Board of Managers of Hexion Holdings; and
- all of the executive officers and current members of the Board of Managers of Hexion Holdings as a group.

As of April 1, 2019, Hexion Holdings had 308,843,407 common units issued and outstanding. The amounts and percentages of common units beneficially owned are reported on the basis of regulations of the SEC governing the determination of beneficial ownership of securities. Under the rules of the SEC, a person is deemed to be a “beneficial owner” of a security if that person has or shares “voting power,” which includes the power to vote or to direct the voting of such security, or “investment power,” which includes the power to dispose of or to direct the disposition of such security. A person is also deemed to be a beneficial owner of any securities of which that person has a right to acquire beneficial ownership within 60 days. Under these rules, more than one person may be deemed a beneficial owner of the same securities and a person may be deemed a beneficial owner of securities as to which he has no economic interest. Except as otherwise indicated in the footnotes below, each of the beneficial owners has, to our knowledge, sole voting and investment power with respect to the indicated common units, and has not pledged any such units as security.

| | Beneficial Ownership of Equity Securities | |
|---|---|---|
| **Name of Beneficial Owner** | **Amount of Beneficial Ownership** | **Percent of Class** |
| Apollo Funds (1) | 278,426,128 | 87.0% |
| ASF Radio, L.P. (2) | 25,491,297 | 8.0% |
| Geoffrey A. Manna (3) | — | * |
| Samuel Feinstein (4) | — | * |
| William H. Joyce (5) (6) | 127,103 | * |
| Robert Kalsow-Ramos (4) | — | * |
| Marvin O. Schlanger (7) | 748,701 | * |
| Lee C. Stewart(8) | — | * |
| Craig A. Rogerson (11) | — | * |
| George F. Knight (9) (11) | 78,210 | * |
| Joseph P. Bevilaqua (10) (11) | 660,878 | * |
| Nathan E. Fisher (11) (12) | 403,187 | * |
| Douglas A. Johns (11) (13) | 529,860 | * |
| All Managers and Executive Officers as a group (14) | 6,910,667 | 2.2% |

* less than 1%

(1) Represents (i) 102,454,557 common units held of record by Apollo Investment Fund VI, L.P. (“AIF VI”); (ii) 94,365,980 common units held of record by AP Momentive Holdings LLC (“AP Momentive Holdings”); (iii) 75,154,788 common units held of record by AIF Hexion Holdings, L.P. (“AIF Hexion Holdings”); and (iv) 6,450,803 common units held of record by AIF Hexion Holdings II, L.P. (“AIF Hexion Holdings II,” and together with AIF VI, AP Momentive Holdings and AIF Hexion Holdings, the “Apollo Funds”). The amount reported as beneficially owned does not include common units held or beneficially owned by certain of the directors, executive officers and other members of our management or of Momentive Holdco, for which the Apollo Funds and their affiliates have voting power and the power to cause the sale of such shares under certain circumstances.

Apollo Advisors VI, L.P. (“Advisors VI”) is the general partner of AIF VI, and Apollo Capital Management VI, LLC (“ACM VI”) is the general partner of Advisors VI. AIF IV Hexion GP, LLC (“AIF IV Hexion GP”) and AIF V Hexion GP, LLC (“AIF V Hexion GP”) are the general partners of AIF Hexion Holdings. AIF Hexion Holdings II GP, LLC (“Hexion Holdings II GP”) is the general partner of AIF Hexion Holdings II. Apollo Investment Fund IV, L.P. and its parallel investment vehicle (collectively, the “AIF IV Funds”) are the members of AIF IV Hexion GP. Apollo Advisors IV, L.P. (“Advisors IV”) is the general partner or managing general partner of each of the AIF IV Funds, and Apollo Capital Management IV, Inc. (“ACM IV”) is the general partner of Advisors IV. Apollo Investment Fund V, L.P. and its parallel investment vehicles (collectively, the “AIF V Funds”) are the members of AIF V Hexion GP and of Hexion Holdings II GP. Apollo Advisors V, L.P. (“Advisors V”) is the general partner, managing general partner or managing limited partner of each of the AIF V Funds, and Apollo Capital Management V, Inc. (“ACM V”) is the general partner of Advisors V. Apollo Principal Holdings I, L.P. (“Principal Holdings I”) is the sole stockholder or sole member, as applicable, of each of ACM IV, ACM V and ACM VI. Apollo Principal Holdings I GP, LLC (“Principal Holdings I GP”) is the general partner of Principal Holdings I.

Apollo Management VI, L.P. (“Management VI”) is the manager of AP Momentive Holdings, and AIF VI Management, LLC (“AIF VI LLC”) is the general partner of Management VI. Apollo Management IV, L.P. (“Management IV”) is the manager of each of the AIF IV Funds. Apollo Management V, L.P. (“Management V”) is the manager of each of the AIF V Funds, and AIF V Management, LLC (“AIF V LLC”) is the general partner of Management V. Apollo Management, L.P. (“Apollo Management”) is the managing general partner of Management IV and the sole member and manager of AIF V LLC and AIF VI LLC. Apollo Management GP, LLC (“Management GP”) is the general partner of Apollo Management. Apollo Management Holdings, L.P. (“Management Holdings”) is the sole member and manager of Management GP, and Apollo Management Holdings GP, LLC (“Management Holdings GP”) is the general partner of Management Holdings.

Leon Black, Joshua Harris and Marc Rowan are the managers of each of Management Holdings GP and Principal Holdings I GP, as well as executive officers of Management Holdings GP, and as such may be deemed to have voting and dispositive control of the common units held of record by the Apollo Funds. The address of each of the Apollo Funds, AIF IV Hexion GP, AIF V Hexion GP, the AIF IV Funds, Advisors IV, ACM IV, the AIF V Funds, Advisors V, ACM V, Advisors VI, ACM VI, Principal Holdings I and Principal Holdings I GP is One Manhattanville Road, Suite 201, Purchase, New York 10577. The address of each of Management IV, Management V, AIF V LLC, Management VI, AIF VI LLC, Apollo Management, Management GP, Management Holdings, Management Holdings GP, and Messrs. Black, Harris and Rowan, is 9 West 57th Street, 43rd Floor, New York, New York 10019.

(2) Includes 6,003,363 shares issuable upon exercise of a warrant issued on December 4, 2006. Also includes 77,103 common units issuable upon the exercise of an option that is currently exercisable. The address of ASF Radio, L.P. is 1370 Avenue of the Americas, New York, New York 10019.

(3) The address for Mr. Manna is 8400 SW 54th Ave. Miami, FL 33143.

(4) The address for Messrs Feinstein and Kalsow-Ramos is c/o Apollo Management L.P., 9 West 57th Street, New York, New York 10019.

(5) Represents common units issuable upon the exercise of options currently exercisable, or exercisable by December 31, 2020.

(6) The address for Dr. Joyce is c/o Advanced Fusion Systems LLC, 11 Edmond Road, Newtown, CT 06470.

(7) Includes 127,103 common units issuable upon the exercise of options currently exercisable or exercisable by April 30, 2019. The address for Mr. Schlanger is c/o Cherry Hill Chemical Investments, One Greentree Centre, 10000 Lincoln Drive East, Suite 201, Marlton, NJ 08053.

(8) The address for Mr. Stewart is 10 Cemetery Road, Sharon, CT 06069.

(9) Includes 67,419 common units issuable upon the exercise of options currently exercisable or exercisable by April 30, 2019. Does not include 21,453 vested deferred units credited to Mr. Knight’s account.

(10) Includes 599,706 common units issuable upon the exercise of options currently exercisable or exercisable by April 30, 2019. Does not include 80,403 vested deferred units credited to Mr. Bevilaqua’s account.

(11) The address for Messrs. Rogerson, Knight, Bevilaqua, Fisher, and Johns is c/o Hexion Inc., 180 E. Broad St., Columbus, Ohio 43215.

(12) Includes 363,616 common units issuable upon the exercise of options currently exercisable or exercisable by April 30, 2019. Does not include 37,543 vested deferred units credited to Mr. Fisher’s account.

(13) Includes 413,320 common units issuable upon the exercise of options currently exercisable or exercisable by April 30, 2019.

(14) Includes 5,124,675 common units issuable upon the exercise of options granted to our directors and executive officers that are currently exercisable or exercisable by April 30, 2019. Does not include 139,399 of vested deferred common stock units.

We have no compensation plans that authorize issuing our common stock to employees or non-employees. In addition, there have been no sales or repurchases of our equity securities during the past fiscal year. However, we and our direct and indirect parent companies have in the past issued and may issue from time to time equity awards to our employees and directors that are denominated in or based upon the common units of our direct or ultimate parent. As the awards were granted in exchange for service to us these awards are included in our consolidated financial statements. For a discussion of these equity plans see Note 11 in Item 8 of Part II and Item 11 of Part III of this Annual Report on Form 10-K.

## ITEM 13 - CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

**Review, Approval or Ratification of Transactions with Related Persons**

We have a written Statement of Policy and Procedures Regarding Related Person Transactions that has been adopted by our Board of Directors.

The policy requires the Company to establish and maintain procedures for identifying potential or existing transactions between the Company and related persons. The policy generally adopts the definitions of “related person” and “transaction” set forth in Regulation S-K Item 404 under the Securities Act of 1933 and the Securities Exchange Act of 1934.

The types of transactions that are covered by our policy include financial and other transactions, arrangements or relationships in which the Company or any of its subsidiaries is a participant and in which a related person has a direct or indirect material interest, where the amount involved exceeds $75,000.

Related persons include directors and director nominees, executive officers, shareholders beneficially owning more than 5% of the Company’s voting stock, and immediate family members of any of the previously described persons. A related person could also be an entity in which a director, executive officer or 5% shareholder is an employee, general partner or 5% shareholder.

Transactions identified by management that are between the Company and a related person that involve amounts exceeding $75,000 will be reviewed by the Board of Directors, the Audit Committee, or another appropriate committee of the Board of Directors. In certain situations, the Board or a committee may delegate authority to an individual Board member to review related person transactions.

Under the policy, the Board of Directors or a committee of the Board of Directors is directed to approve only those related person transactions that are determined by them in good faith to be in, or not inconsistent with, the best interest of the Company and its shareholders. In making this determination, all available, relevant facts and circumstances will be considered, including the benefits to the Company; the impact of the transaction on the related person’s independence; the availability of other sources of comparable products or services; the terms of the transaction; and the terms available to unrelated third parties or to employees in general.

Our policy recognizes that there are situations where related person transactions may be in, or may not be inconsistent with, the best interests of the Company and its shareholders, especially while we are a “controlled company.”

There were no material related person transactions where our policies and procedures did not require review, approval or ratification or where such policies and procedures were not followed.

**Related Transactions**

***Management Consulting Agreement***

We are subject to an Amended and Restated Management Consulting Agreement with Apollo (the “Management Consulting Agreement”) that renews on an annual basis, unless notice to the contrary is given by either party. Under the Management Consulting Agreement, we receive certain structuring and advisory services from Apollo and its affiliates. The Management Consulting Agreement provides indemnification to Apollo, its affiliates and their directors, officers and representatives for potential losses arising from these services. Apollo is entitled to an annual fee equal to the greater of $3 million or 2% of our Adjusted EBITDA. Apollo elected to waive charges of any portion of the annual management fee due in excess of $3 million for the year ended December 31, 2018. During the year ended December 31, 2018, we recognized an expense under the Management Consulting Agreement of $3 million. The Management Consulting Agreement also provides for a lump-sum settlement equal to the net present value of the remaining annual management fees payable under the remaining term of the agreement in connection with a sale or initial public offering by us.

***Shared Services Agreement and Other Agreements with MPM and its Subsidiaries***

On October 1, 2010, we entered into a shared services agreement with Momentive Performance Materials Inc. (“MPM”) (which, from October 1, 2010 through October 24, 2014, was a subsidiary of Hexion Holdings), as amended in October 2014 (the “Shared Services Agreement”). Under this agreement, we provide to MPM, and MPM provides to us, certain services, including, but not limited to, executive and senior management, administrative support, human resources, information technology support, accounting, finance, legal and procurement services. The Shared Services Agreement establishes certain criteria upon which the costs of such services are allocated between the parties. The Shared Services Agreement was renewed for one year starting October 2018, subject to termination rights of each of the Company or MPM, without cause, on not less than 30 days’ written notice.

On February 11, 2019, MPM provided notice of its intention to terminate the Shared Services Agreement, effective March 14, 2019. The termination triggers a period of up to 14 months during which time the parties will work together to facilitate an orderly transition of services provided under the Shared Services Agreement.

Pursuant to this agreement, during the year ended December 31, 2018, we had a total cost pool of $28 million for shared services and MPM had a total cost pool of $21 million for shared services. Included in the cost pools during the year ended December 31, 2018 were net billings from us to MPM of $14 million. These net billings were made to bring the percentage of total net incurred costs for shared services under the Shared Services Agreement to 57% for us and 43% for MPM, as well as to reflect costs allocated 100% to one party. We had accounts receivable from MPM of $2 million as of December 31, 2018, and no accounts payable to MPM.

We also sell products to, and purchase products from, MPM. We sold less than $1 million of products to MPM during 2018, and we purchased $32 million of products from MPM. During 2017, we earned $1 million from MPM as compensation for acting as distributor of products. As of December 31, 2018, we had no accounts receivable from MPM and $3 million of accounts payable to MPM related to these agreements.

***Purchases and Sales of Products and Services with Affiliates Other than MPM***

We sell products to various Apollo affiliates other than MPM. These sales were $2 million for the year ended December 31, 2018. Accounts receivable from these affiliates were less than $1 million at December 31, 2018. We also purchase raw materials and services from various Apollo affiliates other than MPM. There were no purchases for the year ended December 31, 2018. We had no accounts payable to these affiliates at December 31, 2018.

***Other Transactions and Arrangements***

We sell products and provide services to, and purchase products from, our other joint ventures which are recorded under the equity method of accounting. These sales were $9 million for the year ended December 31, 2018. Accounts receivable from these joint ventures were $2 million at December 31, 2018. These purchases were $6 million for the year ended December 31, 2018. We had accounts payable to these joint ventures of less than $1 million at December 31, 2018.

We had a loan receivable of $7 million from our unconsolidated forest products joint venture in Russia as of December 31, 2018.

**Director Independence**

We and Hexion Holdings have no securities listed for trading on a national securities exchange or in an automated inter-dealer quotation system of a national securities association which has requirements that a majority of our Board of Directors or Board of Managers be independent. However, for purposes of complying with the disclosure requirements of the Securities and Exchange Commission, we and Hexion Holdings have adopted the definition of independence used by the New York Stock Exchange. Under the New York Stock Exchange's definition of independence, Messrs. Joyce, Manna, and Stewart are independent.

## ITEM 14 - PRINCIPAL ACCOUNTING FEES AND SERVICES

PricewaterhouseCoopers LLP ("PwC") is the Company's principal accounting firm. The following table sets forth the fees billed by PwC to the Company in 2018 and 2017 (in millions):

| | PwC | |
|---|---|---|
| | **2018** | **2017** |
| Audit fees [1] | $ 4.5 | $ 4.3 |
| Audit-related fees [2] | 2.0 | 2.4 |
| Tax fees [3] | 0.5 | 0.7 |
| Other fees [4] | 1.7 | 1.1 |
| **Total** | $ 8.7 | $ 8.5 |

(1) **Audit Fees:** This category includes fees and expenses billed by PwC for the audits of the Company's financial statements and for the reviews of the financial statements included in the Company's Quarterly Reports on Form 10-Q. This category includes audit fees and expenses for engagements performed at U.S. and international locations, including stand-alone audits of Hexion International Cooperatief U.A. for the fiscal years ended December 31, 2018 and 2017.

(2) **Audit-Related Fees:** This category includes fees and expenses billed by PwC for assurance and related services that are reasonably related to the performance of the audit or review of the Company's financial statements. This category includes fees for the reviews of SEC registration statements and other SEC reporting services as well as audit fees for other stand-alone financial statements of certain entities of the registrant.

(3) **Tax Fees:** This category includes fees and expenses billed by PwC for domestic and international tax compliance and planning services and tax advice.

(4) **Other Fees:** This category includes other fees billed for non-recurring work, related to transactions, due diligence or other one-time services.

***Pre-Approval Policy and Procedures***

Under a policy adopted by the Audit Committee, all audit and non-audit services provided by our principal accounting firms must be pre-approved by the Audit Committee or a member designated by the Audit Committee. All services pre-approved by the designated member are reported to the full Audit Committee at its next regularly scheduled meeting. The pre-approval of audit and non-audit services may be made at any time up to a year before the commencement of the specified service. Under the policy, the Company is prohibited from using its principal accounting firms for certain non-audit services, the list of which is based upon the list of prohibited activities in the SEC's rules and regulations. Pursuant to the pre-approval provisions set forth above, the Audit Committee approved all services related to the Audit Fees described in (1) above.

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**PART IV**

**ITEM 15 - EXHIBITS AND FINANCIAL STATEMENT SCHEDULES**

(1) Consolidated Financial Statements – The financial statements and related notes of Hexion Inc., and the reports of independent registered public accounting firms are included at Item 8 of this report.

(2) Financial Statement Schedules – Schedule II – Valuation and Qualifying Accounts and Reserves. Also included are the financial statements and related notes of Hexion International Cooperatief U.A., as its securities collateralize the Company's securities that have been registered, as defined by Rule 3-16 of Regulation S-X under the Securities Act of 1933, and the reports of independent registered public accounting firms. All other schedules are omitted because they are not applicable or not required, or because that required information is shown in either the Consolidated Financial Statements or in the notes thereto.

(3) Exhibits Required by SEC Regulation S-K – The following Exhibits are filed herewith or incorporated herein by reference:

| | | Incorporated by Reference | | | | |
|---|---|---|---|---|---|---|
| Exhibit Number | Exhibit Description | Form | File Number | Exhibit | Filing Date | Filed Herewith |
| 2.1† | Transaction Agreement dated as of April 22, 2005 among RPP Holdings, Resolution Specialty Materials Holdings LLC, BHI Acquisition Corp., BHI Merger Sub One, BHI Merger Sub Two Inc. and Borden Chemical Inc. | S-1/A | 333-124287 | 2.1 | 7/15/2005 | |
| 2.2† | SOC Resins Master Sale Agreement dated July 10, 2000 among Shell Oil Company, Resin Acquisition, LLC and Shell Epoxy Resins Inc. | S-4 | 333-57170 | 2.1 | 3/16/2001 | |
| 2.3† | SPNV Resins Sale Agreement dated as of September 11, 2000 between Shell Petroleum N.V. and Shell Epoxy Resins Inc. | S-4 | 333-57170 | 2.2 | 3/16/2001 | |
| 2.4 | Assignment and Assumption Agreement dated November 13, 2000 between Shell Epoxy Resins Inc. and Shell Epoxy Resins LLC | S-4 | 333-57170 | 2.3 | 3/16/2001 | |
| 2.5 | Assignment and Assumption Agreement dated November 14, 2000 between Resin Acquisition, LLC and RPP Holdings LLC | S-4 | 333-57170 | 2.4 | 3/16/2001 | |
| 3.1 | Restated Certificate of Incorporation of Hexion Inc. dated as of January 15, 2015 | 10-K | 001-00071 | 3.1 | 3/10/2015 | |
| 3.2 | Amended and Restated Bylaws of Hexion Inc. | 10-K | 001-00071 | 3.2 | 3/10/2015 | |
| 4.1 | Form of Indenture between Borden, Inc. and The Bank of New York, as Trustee, dated as of December 15, 1987, as supplemented by the First Supplemental Indenture dated as of December 15, 1987, the Second Supplemental Indenture dated as of February 1, 1993 and the Third Supplemental Indenture dated as of June 26, 1996, related to the $200,000,000 9.20% Debentures due 2021 and $750,000,000 7.875% Debentures due 2023 | S-3 | 33-45770 | 4(a) thru 4(d) | | |
| 4.2 | Indenture, dated as of January 29, 2010, by and among Hexion Finance Escrow LLC, Hexion Escrow Corporation and Wilmington Trust FSB, as trustee, related to the $1,000,000,000 8.875% Senior Secured Notes due 2018 | 8-K | 001-00071 | 4.1 | 2/4/2010 | |
| 4.3 | Supplemental Indenture, dated as of January 29, 2010, by and among Hexion U.S. Finance Corp., Hexion Nova Scotia Finance, ULC, the guarantors party thereto and Wilmington Trust FSB, as trustee, related to the 8.875% Senior Secured Notes due 2018 | 8-K | 001-00071 | 4.2 | 2/4/2010 | |
| 4.4 | Supplemental Indenture, dated as of June 4, 2010, by and among NL COOP Holdings LLC, Hexion U.S. Finance Corp., Hexion Nova Scotia Finance, ULC, the guarantors party thereto and Wilmington Trust Company, as trustee, related to the 8.875 Senior Secured Notes due 2018 | 8-K | 001-00071 | 4.1 | 6/9/2010 | |
| 4.5 | Indenture, dated as of November 5, 2010, among Hexion U.S. Finance Corp., Hexion Nova Scotia Finance, ULC, the Company, the guarantors named therein and Wilmington Trust Company, as trustee, related to the $574,016,000 9.0% Second-Priority Senior Secured Notes due 2020 | 8-K | 001-00071 | 4.1 | 11/12/2010 | |
| 4.6 | Indenture, dated as of March 14, 2012, among Hexion U.S. Finance Corp., Momentive Specialty Chemicals Inc., the guarantors named therein and Wilmington Trust, National Association, as trustee, related to the $450,000,000 First-Priority Senior Secured Notes due 2020 | 8-K | 001-00071 | 4.1 | 3/20/2012 | |
| 4.7 | Second Supplemental Indenture, dated as of January 14, 2013, among Hexion U.S. Finance Corp., Hexion Nova Scotia Finance, ULC, Momentive Specialty Chemicals Inc., the subsidiary guarantors party thereto and Wilmington Trust, National Association, as trustee, related to the additional $200,000,000 8.875% Senior Secured Notes due 2018 | 8-K | 001-00071 | 4.1 | 1/18/2013 | |
| 4.8 | First Supplemental Indenture, dated as of January 31, 2013, among Hexion U.S. Finance Corp., Momentive Specialty Chemicals Inc., the subsidiary guarantors party thereto and Wilmington Trust, National Association, as trustee, related to the additional $1,100,000,000 First-Priority Senior Secured Notes due 2020 | 8-K | 001-00071 | 4.1 | 2/6/2013 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | | Filed Herewith |
|---|---|---|---|---|---|---|
| | | Form | File Number | Exhibit | Filing Date | |
| 4.9 | Second Supplemental Indenture, dated as of March 28, 2013, by and among Hexion U.S. Finance Corp., the guarantors party thereto and Wilmington Trust, National Association, as trustee, related to the 6.625% First-Priority Senior Secured Notes due 2020 | 8-K | 001-00071 | 4.1 | 4/3/2013 | |
| 4.10 | Third Supplemental Indenture, dated as of December 2, 2014, by and among Momentive Specialty Chemicals Inc., the guarantors party thereto and Wilmington Trust, National Association, as trustee, related to the 6.625% First-Priority Senior Secured Notes due 2020 | 8-K | 001-00071 | 4.1 | 12/2/2014 | |
| 4.11 | Third Supplemental Indenture, dated as of December 2, 2014, by and among Momentive Specialty Chemicals Inc., Hexion Nova Scotia Finance ULC, the guarantors party thereto and Wilmington Trust, National Association, as trustee, related to the 8.875% Senior Secured Notes due 2018 | 8-K | 001-00071 | 4.2 | 12/2/2014 | |
| 4.12 | First Supplemental Indenture, dated as of December 2, 2014, by and among Momentive Specialty Chemicals Inc., Hexion Nova Scotia Finance ULC, the guarantors party thereto and Wilmington Trust Company, as trustee, related to the 9.00% Second-Priority Senior Secured Notes due 2020 | 8-K | 001-00071 | 4.3 | 12/2/2014 | |
| 4.13 | Indenture, dated as of April 15, 2015, by and among Hexion Inc., the Guarantors named therein and Wilmington Trust, National Association, as trustee, related to the $315,000,000 10.00% First-Priority Senior Secured Notes due 2020 | 8-K | 001-00071 | 4.1 | 4/15/2015 | |
| 4.14 | Indenture, dated as of February 8, 2017, between Hexion 2 U.S. Finance Corp. and Wilmington Trust, National Association, as trustee, related to the $485,000,000 10.375% First-Priority Senior Secured Notes due 2022. | 8-K | 001-00071 | 4.1 | 2/10/2017 | |
| 4.15 | Supplemental Indenture, dated as of February 8, 2017, among Hexion Inc., the guarantors party thereto and Wilmington Trust, National Association, as trustee, related to the $485,000,000 10.375% First-Priority Senior Secured Notes due 2022. | 8-K | 001-00071 | 4.2 | 2/10/2017 | |
| 4.16 | Indenture, dated as of February 8, 2017, among Hexion Inc., the guarantors named therein and Wilmington Trust, National Association, as trustee, related to the $225,000,000 13.75% Senior Secured Notes due 2022. | 8-K | 001-00071 | 4.3 | 2/10/2017 | |
| 4.17 | Second Supplemental Indenture, dated as of May 12, 2017, by and among Hexion Inc., the guarantors party thereto and Wilmington Trust, National Association, as trustee, related to the $75,000,000 additional 10.375% First-Priority Senior Secured Notes due 2022. | 8-K | 001-00071 | 4.1 | 5/12/2017 | |
| 4.18 | Fourth Supplemental Indenture, dated as of June 19, 2018, among Hexion Deer Park LLC, Hexion Inc. and Wilmington Trust, National Association, as trustee. | 10-Q | 001-00071 | 4.1 | 11/13/2018 | |
| 4.19 | First Supplemental Indenture, dated as of June 19, 2018, among Hexion Inc., Hexion Deer Park LLC and Wilmington Trust, National Association, as trustee. | 10-Q | 001-00071 | 4.2 | 11/13/2018 | |
| 4.20 | Third Supplemental Indenture, dated as of June 19, 2018, among Hexion Inc., Hexion Deer Park LLC and Wilmington Trust, National Association, as trustee. | 10-Q | 001-00071 | 4.3 | 11/13/2018 | |
| 4.21 | First Supplemental Indenture, dated as of June 19, 2018, among Hexion Inc., Hexion Deer Park LLC and Wilmington Trust, National Association, as trustee. | 10-Q | 001-00071 | 4.4 | 11/13/2018 | |
| 4.22 | Second Supplemental Indenture, dated as of June 19, 2018 among Hexion Deer Park LLC, Hexion Inc, Hexion Nova Scotia Finance, ULC and Wilmington Trust Company, as trustee. | 10-Q | 001-00071 | 4.5 | 11/13/2018 | |
| 4.23 | Agreement of Resignation, Appointment and Acceptance, dated as of March 29, 2019, among Hexion Inc., Wilmington Trust, National Association and Wilmington Savings Fund Society, FSB, related to the 13.75% Senior Secured Notes due 2022. | 8-K | 001-00071 | 4.1 | 4/1/2019 | |
| 4.24 | Agreement of Resignation, Appointment and Acceptance, dated as of April 9, 2019, among Hexion Inc., Wilmington Trust, National Association and U.S. Bank National Association, related to the 6.625% First-Priority Senior Secured Notes due 2020, the 10.00% First-Priority Senior Secured Notes due 2020 and the 10.375% First-Priority Senior Secured Notes due 2022. | | | | | X |
| 10.1‡ | BHI Acquisition Corp. 2004 Deferred Compensation Plan | 10-Q | 001-00071 | 10(iv) | 11/15/2004 | |
| 10.2‡ | BHI Acquisition Corp. 2004 Stock Incentive Plan | 10-Q | 001-00071 | 10(v) | 11/15/2004 | |
| 10.3‡ | Resolution Performance Products Inc. 2000 Stock Option Plan | S-4 | 333-57170 | 10.26 | 3/16/2001 | |
| 10.4‡ | Resolution Performance Products Inc. 2000 Non - Employee Directors Stock Option Plan | S-4 | 333-57170 | 10.27 | 3/16/2001 | |
| 10.5‡ | Amended and Restated Resolution Performance Products, Inc. Restricted Unit Plan, as amended and restated May 31, 2005 | S-1/A | 333-124287 | 10.34 | 9/19/2005 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | | Filed Herewith |
|---|---|---|---|---|---|---|
| | | Form | File Number | Exhibit | Filing Date | |
| 10.6‡ | Form of Non-Qualified Stock Option Agreement between BHI Acquisition Corp. and certain optionees | S-4 | 333-122826 | 10.12 | 2/14/2005 | |
| 10.7‡ | Resolution Specialty Materials Inc. 2004 Stock Option Plan | S-1/A | 333-124287 | 10.52 | 7/15/2005 | |
| 10.8‡ | Form of Nonqualified Stock Option Agreement for Resolution Specialty Materials Inc. 2004 Stock Option Plan | S-1/A | 333-124287 | 10.53 | 7/15/2005 | |
| 10.9‡ | Form of Nonqualified Stock Option Agreement for Resolution Performance Products Inc. 2000 Stock Option Plan | S-1/A | 333-124287 | 10.54 | 7/15/2005 | |
| 10.10‡ | Form of Nonqualified Stock Option Agreement for Resolution Performance Products Inc. 2000 Non-Employee Director Stock Option Plan | S-1/A | 333-124287 | 10.55 | 7/15/2005 | |
| 10.11‡ | Hexion LLC 2007 Long-Term Incentive Plan dated April 30, 2007 | 10-Q | 001-00071 | 10.1 | 8/14/2007 | |
| 10.12 | Amended and Restated Investor Rights Agreement dated as of May 31, 2005 between Hexion LLC, Hexion Specialty Chemicals, Inc. and the holders that are party thereto | S-1/A | 333-124287 | 10.63 | 7/15/2005 | |
| 10.13 | Registration Rights Agreement dated as of May 31, 2005 between Hexion Specialty Chemicals, Inc. and Hexion LLC | S-1/A | 333-124287 | 10.64 | 7/15/2005 | |
| 10.14‡ | Amended and Restated Executives' Supplemental Pension Plan for Hexion Specialty Chemicals, Inc., dated as of September 7, 2005 | 8-K | 001-00071 | 10 | 9/12/2005 | |
| 10.15‡ | Amended and Restated Employment Agreement dated as of August 12, 2004 between Hexion Specialty Chemicals, Inc. and Joseph P. Bevilaqua | 10-Q | 001-00071 | 10(ii) | 11/15/2004 | |
| 10.16‡ | Summary of Terms of Employment between Hexion Specialty Chemicals, Inc. and Joseph P. Bevilaqua dated August 10, 2008 | 10-K | 001-00071 | 10.23 | 3/9/2010 | |
| 10.17‡ | Momentive Specialty Chemicals Inc. Supplemental Executive Retirement Plan, dated as of December 31, 2011 | 8-K | 001-00071 | 99.1 | 1/6/2012 | |
| 10.18 | Master Asset Conveyance and Facility Support Agreement, dated as of December 20, 2002, between Borden Chemical and Borden Chemicals and Plastics Operating Limited Partnership | 10-K | 001-00071 | (10)(xxvi) | 3/28/2003 | |
| 10.19 | Environmental Servitude Agreement, dated as of December 20, 2002, between Borden Chemical and Borden Chemicals and Plastics Operating Limited Partnership | 10-K | 001-00071 | (10)(xxvii) | 3/28/2003 | |
| 10.20 | Intellectual Property Transfer and License Agreement and Contribution Agreement dated as of November 14, 2000 between Shell Oil Company and Shell Epoxy Resins LLC | S-4 | 333-57170 | 10.13 | 3/16/2001 | |
| 10.21 | Intellectual Property Transfer and License Agreement and Contribution Agreement dated as of November 14, 2000 between Shell Internationale Research Maatschappij B.V. and Shell Epoxy Resins Research B.V | S-4 | 333-57170 | 10.14 | 3/16/2001 | |
| 10.22 | First Amended and Restated Deer Park Site Services, Utilities, Materials and Facilities Agreement dated November 1, 2000 between Shell Chemical Company, for itself and as agent for Shell Oil Company, and Shell Epoxy Resins LLC | S-4 | 333-57170 | 10.19 | 3/16/2001 | |
| 10.23 | First Amended and Restated Pernis Site Services, Utilities, Materials and Facilities Agreement dated November 1, 2000 between Resolution Europe B.V. (f/k/a Resolution Nederland B.V., f/k/a Shell Epoxy Resins Nederland B.V.) and Shell Nederland Raffinaderij B.V. | S-4 | 333-57170 | 10.21 | 3/16/2001 | |
| 10.24 | First Amended and Restated Pernis Site Services, Utilities, Materials and Facilities Agreement dated November 1, 2000 between Resolution Europe B.V. (f/k/a Resolution Nederland B.V., f/k/a Shell Epoxy Resins Nederland B.V.) and Shell Nederland Chemie B.V. | S-4 | 333-57170 | 10.22 | 3/16/2001 | |
| 10.25† | Second Amended and Restated Norco Site Services, Utilities, Materials and Facilities Agreement dated November 1, 2004 between Shell Chemical L.P. and Resolution Performance Products LLC. | 10-K | 001-00071 | 10.45 | 3/22/2007 | |
| 10.26 | Deer Park Ground Lease and Grant of Easements dated as of November 1, 2000 between Shell Oil Company and Shell Epoxy Resins LLC | S-4 | 333-57170 | 10.23 | 3/16/2001 | |
| 10.27 | Norco Ground Lease and Grant of Servitudes dated as of November 1, 2000 between Shell Oil Company and Shell Epoxy Resins LLC | S-4 | 333-57170 | 10.24 | 3/16/2001 | |
| 10.28 | Amended and Restated Agreement of Sub-Lease (Pernis) dated as of November 1, 2000 between Resolution Europe B.V. (f/k/a Resolution Nederland B.V., f/k/a Shell Epoxy Resins Nederland B.V.) and Shell Nederland Raffinaderij B.V. | S-4 | 333-57170 | 10.25 | 3/16/2001 | |
| 10.29 | Amended and Restated Management Consulting Agreement dated as of May 31, 2005 between Borden Chemical, Inc. and Apollo Management V, L.P. | S-1/A | 333-124287 | 10.66 | 7/15/2005 | |
| 10.30 | Collateral Agreement dated as of November 3, 2006 among Hexion Specialty Chemicals, Inc. and subsidiary parties thereto, and Wilmington Trust Company, as Collateral Agent | 10-K | 001-00071 | 10.57 | 3/11/2009 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | | Filed Herewith |
|---|---|---|---|---|---|---|
| | | Form | File Number | Exhibit | Filing Date | |
| 10.31 | Credit Agreement with exhibits and schedules dated as of March 3, 2009 among Hexion Specialty Chemicals, Inc., Borden Luxembourg S.a.r.l., Euro V (BC) S.a.r.l., Euro VI (BC) S.a.r.l. and AAA Co-Invest VI (EHS-BC) S.a.r.l. | 10-Q | 001-00071 | 10.4 | 8/13/2009 | |
| 10.32 | SUPPLEMENT dated as of June 4, 2010, to the Collateral Agreement dated as of November 3, 2006, among HEXION SPECIALTY CHEMICALS, INC., a New Jersey corporation, each Subsidiary Party party thereto and WILMINGTON TRUST COMPANY, as Collateral Agent (in such capacity, the “Collateral Agent”) for the Secured Parties (as defined therein) | 8-K | 001-00071 | 10.5 | 6/9/2010 | |
| 10.33 | Joinder and Supplement to Collateral Agreement dated November 5, 2010 among the Company and subsidiary parties thereto, and Wilmington Trust Company, as trustee and collateral agent | 8-K | 001-00071 | 10.2 | 11/12/2010 | |
| 10.34‡ | Form of Restricted Deferred Unit Award Agreement of Momentive Performance Materials Holdings LLC | S-4 | 333-172943 | 10.70 | 3/18/2011 | |
| 10.35‡ | Form of Unit Option Agreement of Momentive Performance Materials Holdings LLC | S-4 | 333-172943 | 10.71 | 3/18/2011 | |
| 10.36‡ | Form of Director Unit Option Agreement of Momentive Performance Materials Holdings LLC | S-4 | 333-172943 | 10.72 | 3/18/2011 | |
| 10.37‡ | Management Investor Rights Agreement, dated as of February 23, 2011 by and among Momentive Performance Materials Holdings LLC and the Holders | S-4 | 333-172943 | 10.73 | 3/18/2011 | |
| 10.38 | Master Confidentiality and Joint Development Agreement entered into on March 17, 2011 by and between Momentive Performance Materials Inc. and Momentive Specialty Chemicals Inc. | 8-K | 001-00071 | 10.2 | 3/17/2011 | |
| 10.39 | Fourth Joinder and Supplement to Intercreditor Agreement, dated as of March 14, 2013, by and among Wilmington Trust, National Association, as trustee, JPMorgan Chase Bank N.A., as intercreditor agent, Wilmington Trust Company, as trustee and collateral agent and as second-priority agent, Momentive Specialty Chemicals Holdings LLC, Momentive Specialty Chemicals Inc. and each subsidiary of Momentive Specialty Chemicals Inc. party thereto. | 8-K | 001-00071 | 10.5 | 3/20/2012 | |
| 10.40‡ | First Amended Resolution Specialty Materials Inc 2004 Stock Option Plan | 10-Q | 001-00071 | 10.1 | 11/13/2012 | |
| 10.41‡ | First Amended Hexion LLC 2007 Long-Term Incentive Plan | 10-Q | 001-00071 | 10.2 | 11/13/2012 | |
| 10.42 | Fifth Joinder and Supplement to Intercreditor Agreement, dated January 14, 2013, by and among Wilmington Trust, National Association, as trustee, JPMorgan Chase Bank N.A., as intercreditor agent, Wilmington Trust, National Association, as trustee and collateral agent and as second-priority agent, Momentive Specialty Chemicals Holdings LLC, Momentive Specialty Chemicals Inc. and each subsidiary of Momentive Specialty Chemicals Inc. party thereto. | 8-K | 001-00071 | 10.2 | 1/18/2013 | |
| 10.43 | Amended and Restated Intercreditor Agreement, dated as of January 31, 2013, among JPMorgan Chase Bank, N.A., as intercreditor agent, Wilmington Trust Company, as trustee and as collateral agent, Wilmington Trust, National Association (as successor by merger to Wilmington Trust FSB), as senior-priority agent for the holders of the notes issued under the 1.5 Lien Indenture (as defined therein), Wilmington Trust, National Association, as senior-priority agent for the holders of the notes issued under the First Lien Indenture (as defined therein), Momentive Specialty Chemicals Holdings LLC, Momentive Specialty Chemicals Inc. and subsidiaries of Momentive Specialty Chemicals Inc. party thereto. | 8-K | 001-00071 | 10.1 | 2/6/2013 | |
| 10.44 | Additional Secured Party Consent, dated January 31, 2013, among Wilmington Trust Bank, National Association, as trustee and as authorized representative, JPMorgan Chase Bank, N.A., as applicable first lien representative and collateral agent, Momentive Specialty Chemicals Holdings LLC, Momentive Specialty Chemicals Inc. and subsidiaries of Momentive Specialty Chemicals Inc. party thereto. | 8-K | 001-00071 | 10.2 | 2/6/2013 | |
| 10.45 | Amendment No. 1 to the Momentive Performance Materials Holdings LLC 2011 Equity Incentive Plan | 8-K | 001-00071 | 10.1 | 3/6/2013 | |
| 10.46 | Form of Restricted Deferred Unit Agreement of Momentive Performance Materials Holdings LLC | 8-K | 001-00071 | 10.2 | 3/6/2013 | |
| 10.47 | Form of Unit Option Agreement of Momentive Performance Materials Holdings LLC | 8-K | 001-00071 | 10.3 | 3/6/2013 | |
| 10.48‡ | Momentive Performance Materials Holdings LLC 2012 Long-Term Cash Incentive Plan | 10-K | 001-00071 | 10.92 | 4/1/2013 | |
| 10.49‡ | Amended and Restated Momentive Performance Materials Holdings LLC 2011 Equity Incentive Plan | 10-K | 001-00071 | 10.93 | 4/1/2013 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | | |
|---|---|---|---|---|---|---|
| | | Form | File Number | Exhibit | Filing Date | Filed Herewith |
| 10.50 | ABL Intercreditor Agreement, dated as of March 28, 2013, by and among JPMorgan Chase Bank, N.A., as the ABL facility collateral agent, Wilmington Trust, National Association, as applicable first-lien agent and first-lien collateral agent, Momentive Specialty Chemicals Inc. and subsidiaries of Momentive Specialty Chemicals Inc. party thereto. | 8-K | 001-00071 | 10.2 | 4/3/2013 | |
| 10.51 | Collateral Agreement, dated as of March 28, 2013, by and among Momentive Specialty Chemicals Inc., subsidiaries of Momentive Specialty Chemicals Inc. party thereto and JPMorgan Chase Bank, N.A. as collateral agent. | 8-K | 001-00071 | 10.3 | 4/3/2013 | |
| 10.52 | Collateral Agreement, dated as of March 28, 2013, by and among Momentive Specialty Chemicals Inc., subsidiaries of Momentive Specialty Chemicals Inc. party thereto and Wilmington Trust, National Association, as collateral agent. | 8-K | 001-00071 | 10.4 | 4/3/2013 | |
| 10.53 | Joinder and Supplement to Second Lien Intercreditor Agreement, dated as of March 28, 2013, among JPMorgan Chase Bank, N.A., as ABL credit agreement agent, former intercreditor agent and new intercreditor agent, Wilmington Trust Company, as second-lien trustee, Wilmington Trust, National Association, as 1.5 lien trustee, Wilmington Trust, National Association, as first lien trustee, Momentive Specialty Chemicals Holdings LLC, Momentive Specialty Chemicals Inc. and subsidiaries of Momentive Specialty Chemicals Inc. party thereto. | 8-K | 001-00071 | 10.6 | 4/3/2013 | |
| 10.54‡ | Momentive Performance Materials Holdings LLC 2014 Incentive Compensation Plan | 10-K | 001-00071 | 10.87 | 3/31/2014 | |
| 10.55‡ | Second Amended and Restated Shared Services Agreement, dated as of October 24, 2014, by and among Momentive Specialty Chemicals Inc., Momentive Performance Materials Inc., and the subsidiaries of the Momentive Performance Materials Inc., party thereto | 8-K | 001-00071 | 10.1 | 10/30/2014 | |
| 10.56‡ | Momentive Performance Materials Holdings LLC Long-Term Cash Incentive Plan | 10-Q | 001-00071 | 10.1 | 11/10/2014 | |
| 10.57‡ | Form of 2014 Cash-based Long-Term Incentive Award Agreement | 10-Q | 001-00071 | 10.2 | 11/10/2014 | |
| 10.58‡ | Summary of Terms of Employment between Momentive Performance Materials Inc. and Douglas Johns dated October 3, 2010 | 10-K | 001-00071 | 10.82 | 3/10/2015 | |
| 10.59 | First Lien Intercreditor Agreement, dated as of April 15, 2015, among Wilmington Trust, National Association, as collateral agent, Wilmington | 8-K | 001-00071 | 10.1 | 4/15/2015 | |
| 10.60 | Additional Secured Party Consent, dated April 15, 2015, among Wilmington Trust, National Association, as authorized representative for the new secured parties, Wilmington Trust, National Association, as collateral agent, and Hexion Inc. | 8-K | 001-00071 | 10.2 | 4/15/2015 | |
| 10.61 | Fourth Joinder and Supplement to Intercreditor Agreement, dated as of April 15, 2015, by and among JPMorgan Chase Bank, N.A., as intercreditor agent, JPMorgan Chase Bank, N.A., as senior-priority agent for the ABL secured parties, Wilmington Trust, National Association, as senior-priority agent for the existing first lien notes, Wilmington Trust, National Association, as trustee and senior-priority agent for the new first lien notes, Wilmington Trust, National Association, as trustee and second-priority agent for the existing 1.5 lien notes, Hexion LLC, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.3 | 4/15/2015 | |
| 10.62 | Second Joinder and Supplement to Intercreditor Agreement, dated as of April 15, 2015, by and among JPMorgan Chase Bank, N.A., as intercreditor agent, JPMorgan Chase Bank, N.A., as senior-priority agent for the ABL secured parties, Wilmington Trust, National Association, as trustee and senior-priority agent for the existing first lien notes, Wilmington Trust, National Association, as senior-priority agent for the new first lien notes, Wilmington Trust, National Association, as senior-priority agent for the 1.5 lien notes, Wilmington Trust Company, as trustee and second-priority agent for the existing second lien notes, Hexion LLC, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.4 | 4/15/2015 | |
| 10.63 | Joinder Agreement to ABL Intercreditor Agreement, dated as of April 15, 2015, by and among JPMorgan Chase Bank, N.A., as ABL facility collateral agent, Wilmington Trust, National Association, as new representative, applicable first-lien agent and first-lien collateral agent, and Hexion Inc. | 8-K | 001-00071 | 10.5 | 4/15/2015 | |
| 10.64‡ | Hexion Holdings LLC 2015 Incentive Compensation Plan | 10-Q | 001-00071 | 10.1 | 5/13/2015 | |
| 10.65‡ | Summary of Terms of Employment between Hexion Inc. and Douglas A. Johns dated May 6, 2015 | 10-Q | 001-00071 | 10.1 | 8/12/2015 | |
| 10.66 | Amendment Agreement, dated as of July 27, 2015, among Hexion LLC, Hexion Inc., as U.S. borrower, Hexion Canada Inc., as Canadian borrower, Hexion B.V., as Dutch borrower, Hexion UK Limited and Borden Chemical UK Limited, as U.K. borrowers, Hexion GmbH, as German borrower, the other subsidiaries of Hexion LLC party thereto, as loan parties, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent and collateral agent. | 10-Q | 001-00071 | 10.2 | 8/12/2015 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | | Filed Herewith |
|---|---|---|---|---|---|---|
| | | Form | File Number | Exhibit | Filing Date | |
| 10.67‡ | Summary of Terms of Employment between Hexion Inc. and George F. Knight dated October 22, 2015 | 10-K | 001-00071 | 10.79 | 3/14/2016 | |
| 10.68 | 2015 Audited Financial Statements of Unconsolidated Affiliate of Hexion Inc. | 10-K | 001-00071 | 10.80 | 3/14/2016 | |
| 10.69‡ | Hexion Holdings LLC 2016 Incentive Compensation Plan | 8-K | 001-00071 | 10.2 | 5/6/2016 | |
| 10.70‡ | Form of 2016 Cash-Based Long-Term Incentive Award Agreement | 10-Q | 001-00071 | 10.1 | 11/14/2016 | |
| 10.71 | Amendment Agreement, dated as of December 21, 2016, among Hexion LLC, certain subsidiaries of Hexion LLC party thereto, the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent and collateral agent. | 8-K | 001-00071 | 10.1 | 12/23/2016 | |
| 10.72‡ | 2016 Cash-Based Long-Term Incentive Award Agreement for Nathan E. Fisher dated January 3, 2017 | 10-K | 001-00071 | 10.76 | 3/8/2017 | |
| 10.73 | 2016 Audited Financial Statements of Unconsolidated Affiliate of Hexion Inc. | 10-K | 001-00071 | 10.77 | 3/8/2017 | |
| 10.74 | Additional Secured Party Consent, dated as of February 8, 2017, among Wilmington Trust, National Association, as authorized representative for the new secured parties, Wilmington Trust, National Association, as collateral agent, Wilmington Trust, National Association, as authorized representative of the new secured parties, Wilmington Trust, National Association, as authorized representative for the notes obligations, Wilmington Trust, National Association, as authorized representative for the initial other first priority obligations, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.1 | 2/10/2017 | |
| 10.75 | Third Joinder and Supplement to Intercreditor Agreement, dated as of February 8, 2017, by and among JPMorgan Chase Bank, N.A., as intercreditor agent, JPMorgan Chase Bank, N.A., as senior-priority agent for the ABL secured parties, Wilmington Trust, National Association, as trustee and senior-priority agent for the existing first lien notes, Wilmington Trust, National Association, as senior-priority agent for the new first lien notes, Wilmington Trust, National Association, as senior-priority agent for the new 1.5 lien notes, Wilmington Trust Company, as trustee and second-priority agent for the existing second lien notes, Hexion LLC, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.2 | 2/10/2017 | |
| 10.76 | Second Joinder Agreement to ABL Intercreditor Agreement, dated as of February 8, 2017, among JPMorgan Chase Bank, N.A., as ABL facility collateral agent, Wilmington Trust, National Association, as new representative, applicable first-lien agent and first-lien collateral agent, and Hexion Inc. | 8-K | 001-00071 | 10.3 | 2/10/2017 | |
| 10.77 | Collateral Agreement, dated as of February 8, 2017, among Wilmington Trust, National Association, as collateral agent, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.4 | 2/10/2017 | |
| 10.78 | Amended and Restated Intercreditor Agreement, dated as of February 8, 2017, among JPMorgan Chase Bank, N.A., as intercreditor agent, JPMorgan Chase Bank, N.A., as senior-priority agent for the ABL secured parties, Wilmington Trust, National Association, as senior-priority agent for the existing first lien notes, Wilmington Trust, National Association, as trustee and senior-priority agent for the new first lien notes, Wilmington Trust, National Association, as trustee and second-priority agent for the new 1.5 lien notes, Hexion LLC, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.5 | 2/10/2017 | |
| 10.79 | Fourth Joinder and Supplement to Intercreditor Agreement, dated as of February 8, 2017, among JPMorgan Chase Bank, N.A., as intercreditor agent, JPMorgan Chase Bank, N.A., as senior-priority agent for the ABL secured parties, Wilmington Trust, National Association, as trustee and senior-priority agent for the existing first lien notes, Wilmington Trust, National Association, as senior-priority agent for the new first lien notes, Wilmington Trust, National Association, as senior-priority agent for the new 1.5 lien notes, Wilmington Trust Company, as trustee and second-priority agent for the existing second lien notes, Hexion LLC, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.6 | 2/10/2017 | |
| 10.80 | Additional Extending Lender Joinder Agreement and Amendment, dated as of January 18, 2017, related to the Amended and Restated Asset-Based Revolving Credit Agreement, dated as of December 21, 2016, among Hexion LLC, Hexion Inc., as U.S. Borrower, Hexion Canada Inc., as Canadian Borrower, Hexion B.V., as Dutch Borrower, Hexion UK Limited and Borden Chemical UK Limited, as UK Borrowers, Hexion GmbH, as German Borrower, each subsidiary loan party party thereto, the lenders party thereto from time to time and JPMorgan Chase Bank, N.A., as administrative agent, collateral agent, swingline lender and initial issuing bank. | 10-K | 001-00071 | 10.84 | 3/8/2017 | |
| 10.81‡ | Hexion Holdings LLC 2017 Incentive Compensation Plan | 10-Q | 001-00071 | 10.3 | 5/5/2017 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | | Filed Herewith |
|---|---|---|---|---|---|---|
| | | Form | File Number | Exhibit | Filing Date | |
| 10.82 | Additional Secured Party Consent, dated as of May 12, 2017, among Wilmington Trust, National Association, as authorized representative for the new secured parties, Wilmington Trust, National Association, as collateral agent, Wilmington Trust, National Association, as authorized representative for the notes obligations, Wilmington Trust, National Association, as authorized representative for the initial other first priority obligations, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.1 | 5/12/2017 | |
| 10.83 | Fifth Joinder and Supplement to Intercreditor Agreement, dated as of May 12, 2017, by and among JPMorgan Chase Bank, N.A., as intercreditor agent, JPMorgan Chase Bank, N.A., as senior-priority agent for the ABL secured parties, Wilmington Trust, National Association, as trustee and senior-priority agent for the existing first lien notes, Wilmington Trust, National Association, as senior-priority agent for the new notes, Wilmington Trust, National Association, as senior-priority agent for the 1.5 lien notes, Wilmington Trust Company, as trustee and second-priority agent for the existing second lien notes, Hexion LLC, Hexion Inc. and subsidiaries of Hexion Inc. party thereto. | 8-K | 001-00071 | 10.2 | 5/12/2017 | |
| 10.84‡ | Employment Agreement, by and between Hexion Inc. and Craig A. Rogerson | 10-Q | 001-00071 | 10.2 | 8/11/2017 | |
| 10.85‡ | Long Term Incentive Compensation Award Agreement, by and between Hexion Inc. and Craig A. Rogerson | 10-Q | 001-00071 | 10.3 | 8/11/2017 | |
| 10.86 | 2017 Audited Financial Statements of Unconsolidated Affiliate of Hexion Inc. | 10-K | 001-00071 | 10.90 | 3/2/2018 | |
| 10.87‡ | Hexion Holding LLC 2018 Incentive Compensation Plan | 10-Q | 001-00071 | 10.1 | 5/14/2018 | |
| 10.88 | The Deer Park Site Services, Utilities, Materials & Facilities Agreement, dated as of April 1, 2018, by and between Shell Chemical LP, on its own behalf and as authorized agent of Shell Oil Company pursuant to the Shell Chemical Authorization Agreement dated March 1, 1995 and Hexion Deer Park LLC as successor in interest to Shell Epoxy Resins LLC and Hexion Inc. | 10-Q | 001-00071 | 10.2 | 5/14/2018 | |
| 10.89 | Moerdijk Vad Site Services, Utilities, Materials and Facilties Agreement, dated as of April 1, 2018, between Hexion Vad B.V. and Shell Nederland Chemie B.V. | 10-Q | 001-00071 | 10.3 | 5/14/2018 | |
| 10.90 | Pernis Vad Site Services, Utilities, Materials and Facilities Agreement, dated as of April 1, 2018, between Hexion Vad B.V. and Shell Nederland Raffin Aderij B.V. | 10-Q | 001-00071 | 10.4 | 5/14/2018 | |
| 10.91 | Pernis Beri Site Services, Utilities, Materials and Facilities Agreement, dated as of April 1, 2018 between Hexion B.V. and Shell Nederland Raffin Aderij B.V. | 10-Q | 001-00071 | 10.5 | 5/14/2018 | |
| 10.92 | Assignment & Assumption of Deep Park Ground Lease and Grant of Easements and Extension of Term, dated as of April 1, 2018, by and between Shell Chemical LP, on its own behalf and as authorized agent of Shell Oil Company pursuant to the Chemical Authorization dated March 1, 1995, Hexion Inc., as successor in interest to Shell Epoxy Resins LLC and Hexion Deer Park LLC. | 10-Q | 001-00071 | 10.6 | 5/14/2018 | |
| 10.93 | Partial Assignment & Extension of the Amended and Restated Agreement of Sub-lease (Pernis), dated as of April 1, 2018, between Hexion Pernis Lease B.V., Hexion Vad B.V., and Shell Nederland Raffin Aderij B.V. | 10-Q | 001-00071 | 10.7 | 5/14/2018 | |
| 10.94 | First Amended and Restated Moerdijk Agreement of Lease, between Shell Nederland Chemie B.V. and Shell Epoxy Resins Nederland B.V. | 10-Q | 001-00071 | 10.8 | 5/14/2018 | |
| 10.95 | Extension of the Amended and Restated Agreement of Lease (Moerdijk), dated as of April 1, 2018, between Hexion Moerdijk Lease B.V. and Shell Nederland Chemie B.V. | 10-Q | 001-00071 | 10.9 | 5/14/2018 | |
| 10.96 | Restructuring Support Agreement, dated as of April 1, 2018, among Hexion Holdings LLC, Hexion LLC, Hexion Inc., certain subsidiaries of Hexion Inc. and certain equityholders and creditors of Hexion Inc. | 8-K | 001-00071 | 10.1 | 4/1/2019 | |
| 10.97 | Amended and Restated Senior Secured Debtor-in-Possession Asset-Based Revolving Credit Agreement, dated as of April 3, 2019, among Hexion LLC, Hexion Inc., Hexion Canada Inc., Hexion B.V., Hexion UK Limited, Borden Chemical UK Limited, Hexion GMBH, the lenders party thereto, JPMorgan Chase Bank, N.A., as administrative agent and collateral agent. | 8-K | 001-00071 | 10.1 | 4/8/2019 | |
| 10.98 | Reaffirmation Agreement, dated as of April 3, 2019, among Hexion LLC, Hexion Inc., Hexion Canada Inc., Hexion B.V., Hexion UK Limited, Borden Chemical UK Limited, Hexion GMBH, each Subsidiary of Hexion Inc. party thereto and JPMorgan Chase Bank, N.A., as administrative agent and collateral agent. | 8-K | 001-00071 | 10.2 | 4/8/2019 | |
| 10.99 | Senior Secured Term Loan Agreement, dated as of April 3, 2019, among Hexion LLC, Hexion Inc., Hexion International Holdings B.V., the lenders party thereto and JPMorgan Chase Bank, N.A., as administrative agent and collateral agent. | 8-K | 001-00071 | 10.3 | 4/8/2019 | |

| Exhibit Number | Exhibit Description | Incorporated by Reference | | | | |
|---|---|---|---|---|---|---|
| | | Form | File Number | Exhibit | Filing Date | Filed Herewith |
| 10.100 | Guarantee Agreement, dated as of April 3, 2019, among Hexion LLC, Hexion Inc., Hexion International Holdings B.V., each Subsidiary Loan Party identified therein and JPMorgan Chase Bank, N.A., as administrative agent. | 8-K | 001-00071 | 10.4 | 4/8/2019 | |
| 10.101 | 2018 Audited Financial Statements of Unconsolidated Affiliate of Hexion Inc. | | | | | X |
| 10.102‡ | Hexion Holding LLC 2019 Incentive Compensation Plan | | | | | X |
| 10.103‡ | Separation Agreement by and between Hexion Inc. and Joseph Bevilaqua | | | | | X |
| 18.1 | Letter from PricewaterhouseCoopers, dated May 13, 2015 regarding preferability of a change in accounting principle | 10-Q | 001-00071 | 18.1 | 5/13/2015 | |
| 21.1 | List of Subsidiaries of Hexion Inc. | | | | | X |
| 31.1 | Rule 13a-14 Certifications: | | | | | |
| | (a) Certificate of the Chief Executive Officer | | | | | X |
| | (b) Certificate of the Chief Financial Officer | | | | | X |
| 32.1 | Section 1350 Certifications | | | | | X |
| 101.INS* | XBRL Instance Document | | | | | X |
| 101.SCH* | XBRL Schema Document | | | | | X |
| 101.CAL* | XBRL Calculation Linkbase Document | | | | | X |
| 101.LAB* | XBRL Label Linkbase Document | | | | | X |
| 101.PRE* | XBRL Presentation Linkbase Document | | | | | X |
| 101.DEF* | XBRL Definition Linkbase Document | | | | | X |

† The schedules and exhibits to these agreements are omitted pursuant to Item 601(b)(2) of Regulation S-K. The Company agrees to furnish supplementally to the SEC, upon request, a copy of any omitted schedule or exhibit.

‡ Represents a management contract or compensatory plan or arrangement.

* Attached as Exhibit 101 to this report are documents formatted in XBRL (Extensible Business Reporting Language). The financial information in the XBRL-related documents is "unaudited" or "unreviewed."

**ITEM 16 - FORM 10-K SUMMARY**

None.

## SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

HEXION INC.

By: /s/ George F. Knight
George F. Knight
Executive Vice President and Chief Financial Officer

Date: April 11, 2019

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

| Name | Title | Signature | Date |
| --- | --- | --- | --- |
| Craig A. Rogerson | Director, President and Chief Executive Officer (Principal Executive Officer) and Manager, Hexion Holdings LLC | /s/ Craig A. Rogerson | April 11, 2019 |
| George F. Knight | Director, Executive Vice President and Chief Financial Officer (Principal Financial Officer) and Manager, Hexion Holdings LLC | /s/ George F. Knight | April 11, 2019 |
| Colette B. Barricks | Senior Vice President and General Controller (Principal Accounting Officer) | /s/ Colette B. Barricks | April 11, 2019 |
| Samuel Feinstein | Manager, Hexion Holdings LLC | /s/ Samuel Feinstein | April 11, 2019 |
| William H. Joyce | Manager, Hexion Holdings LLC | /s/ William H. Joyce | April 11, 2019 |
| Robert Kalsow-Ramos | Manager, Hexion Holdings LLC | /s/ Robert Kalsow-Ramos | April 11, 2019 |
| Lee C. Stewart | Manager, Hexion Holdings LLC | /s/ Lee C. Stewart | April 11, 2019 |
| Geoffrey A. Manna | Manager, Hexion Holdings LLC | /s/ Geoffrey A. Manna | April 11, 2019 |
| Marvin O. Schlanger | Manager, Hexion Holdings LLC | /s/ Marvin O. Schlanger | April 11, 2019 |

**HEXION INTERNATIONAL COOPERATIEF U.A.**
**CONSOLIDATED BALANCE SHEETS**

| (In millions) | December 31, 2018 | December 31, 2017 |
|---|---|---|
| **Assets** | | |
| Current assets: | | |
| Cash and cash equivalents (including restricted cash of $15 and $18, respectively) (see Note 2) | $ 107 | $ 56 |
| Accounts receivable (net of allowance for doubtful accounts of $6 and $8, respectively) | 310 | 246 |
| Accounts receivable from affiliates (see Note 4) | 66 | 90 |
| Loans receivable from affiliates (see Note 9) | 100 | 4 |
| Inventories: | | |
| Finished and in-process goods | 138 | 113 |
| Raw materials and supplies | 56 | 54 |
| Current assets held for sale (see Note 12) | — | 5 |
| Other current assets | 30 | 24 |
| Total current assets | 807 | 592 |
| Long-term loans receivable from affiliates (see Note 9) | 8 | 208 |
| Investments in unconsolidated entities | 19 | 11 |
| Long-term assets held for sale (see Note 12) | — | 2 |
| Other long-term assets | 21 | 34 |
| Property and equipment | | |
| Land | 44 | 38 |
| Buildings | 142 | 145 |
| Machinery and equipment | 1,189 | 1,238 |
| | 1,375 | 1,421 |
| Less accumulated depreciation | (901) | (912) |
| | 474 | 509 |
| Goodwill (see Note 5) | 103 | 108 |
| Other intangible assets, net (see Note 5) | 19 | 25 |
| Total assets | $ 1,451 | $ 1,489 |
| **Liabilities and Deficit** | | |
| Current liabilities: | | |
| Accounts payable | $ 252 | $ 226 |
| Accounts payable to affiliates (see Note 4) | 38 | 104 |
| Debt payable within one year (see Note 8) | 151 | 86 |
| Affiliated debt payable within one year (see Note 9) | 92 | 31 |
| Income taxes payable | 3 | 5 |
| Accrued payroll and incentive compensation | 29 | 24 |
| Other current liabilities | 46 | 62 |
| Current liabilities associated with assets held for sale (see Note 12) | — | 2 |
| Total current liabilities | 611 | 540 |
| Long-term liabilities: | | |
| Long-term debt (see Note 8) | 46 | 76 |
| Affiliated long-term debt (see Note 9) | 1,101 | 1,096 |
| Deferred income taxes (see Note 15) | 13 | 7 |
| Long-term pension and postretirement benefit obligations (see Note 11) | 187 | 230 |
| Other long-term liabilities | 92 | 79 |
| Total liabilities | 2,050 | 2,028 |
| Commitments and contingencies (see Notes 8 and 10) | | |
| **Deficit** | | |
| Paid-in capital | (79) | 25 |
| Accumulated other comprehensive loss | (57) | (59) |
| Accumulated deficit | (461) | (504) |
| Total Hexion International Cooperatief U.A. shareholders' deficit | (597) | (538) |
| Noncontrolling interest | (2) | (1) |
| Total deficit | (599) | (539) |
| Total liabilities and deficit | $ 1,451 | $ 1,489 |

See Notes to Consolidated Financial Statements

**HEXION INTERNATIONAL COOPERATIEF U.A.**
**CONSOLIDATED STATEMENTS OF OPERATIONS**

| | Year ended December 31, | | |
|---|---|---|---|
| **(In millions)** | **2018** | **2017** | **2016** |
| Net sales | $ 2,219 | $ 2,011 | $ 1,948 |
| Cost of sales | 1,916 | 1,734 | 1,632 |
| Gross profit | 303 | 277 | 316 |
| Selling, general and administrative expense | 172 | 175 | 172 |
| Business realignment costs (see Note 2) | 13 | 28 | 15 |
| Gain on dispositions (see Note 12) | (21) | — | (28) |
| Other operating expense (income), net | 25 | 15 | (3) |
| Operating income | 114 | 59 | 160 |
| Interest expense, net | 16 | 13 | 10 |
| Affiliated interest expense, net (see Note 9) | 82 | 75 | 72 |
| Other non-operating (income) expense, net (see Note 4) | (59) | 99 | 5 |
| Income (loss) before income taxes and earnings from unconsolidated entities | 75 | (128) | 73 |
| Income tax expense (see Note 15) | 38 | 16 | 31 |
| Income (loss) before earnings from unconsolidated entities | 37 | (144) | 42 |
| Earnings from unconsolidated entities, net of taxes | 4 | 1 | 1 |
| Net income (loss) | 41 | (143) | 43 |
| Net loss attributable to noncontrolling interest | 1 | — | — |
| Net income (loss) attributable to Hexion International Cooperatief U.A. | $ 42 | $ (143) | $ 43 |

See Notes to Consolidated Financial Statements

**HEXION INTERNATIONAL COOPERATIEF U.A.**
**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)**

| | Year Ended December 31, | | |
|---|---|---|---|
| **(In millions)** | **2018** | **2017** | **2016** |
| Net income (loss) | $ 41 | $ (143) | $ 43 |
| Other comprehensive income (loss), net of tax: | | | |
| Foreign currency translation adjustments | 3 | 29 | (24) |
| Loss recognized from pension and postretirement benefits | (1) | (2) | (1) |
| Other comprehensive income (loss) | 2 | 27 | (25) |
| Comprehensive income (loss) | 43 | (116) | 18 |
| Comprehensive loss attributable to noncontrolling interest | 1 | — | — |
| Comprehensive income (loss) attributable to Hexion International Cooperatief U.A. | $ 44 | $ (116) | $ 18 |

See Notes to Consolidated Financial Statements

**HEXION INTERNATIONAL COOPERATIEF U.A.**
**CONSOLIDATED STATEMENTS OF CASH FLOWS**

| (In millions) | Year Ended December 31, 2018 | 2017 | 2016 |
|---|---|---|---|
| **Cash flows provided by operating activities** | | | |
| Net income (loss) | $ 41 | $ (143) | $ 43 |
| Adjustments to reconcile net income (loss) to net cash provided by operating activities: | | | |
| Depreciation and amortization | 55 | 52 | 62 |
| Accelerated depreciation | 3 | — | — |
| Deferred tax expense | 11 | 1 | 2 |
| Gain on disposition (see Note 12) | (21) | — | (28) |
| Loss on sale of assets | 3 | 1 | — |
| Amortization of deferred financing fees | 4 | 2 | — |
| Unrealized foreign currency loss (gain) | (6) | 38 | (54) |
| Unrealized losses (gains) on pension and postretirement benefit plan liabilities | (24) | 3 | 33 |
| Allocations of corporate overhead, net (see Note 4) | 5 | 4 | 5 |
| Loss (gain) on foreign exchange guarantee agreement with parent (see Note 4) | (36) | 86 | (18) |
| Loss on cash pooling guarantee agreement with parent (see Note 4) | 1 | — | 2 |
| Other non-cash adjustments | (1) | (1) | 1 |
| Net change in assets and liabilities: | | | |
| Accounts receivable | 10 | (13) | 29 |
| Inventories | (11) | 1 | (24) |
| Accounts payable | (13) | (48) | 12 |
| Income taxes payable | 9 | 4 | 18 |
| Other assets, current and non-current | — | (14) | (21) |
| Other liabilities, current and non-current | 21 | 32 | 100 |
| Net cash provided by operating activities | 51 | 5 | 162 |
| **Cash flows (used in) provided by investing activities** | | | |
| Capital expenditures | (63) | (77) | (72) |
| Capitalized interest | (1) | (1) | — |
| Proceeds from disposition, net | 26 | — | 107 |
| Proceeds from the sale of assets | 1 | 3 | 4 |
| Net cash (used in) provided by investing activities | (37) | (75) | 39 |
| **Cash flows provided by (used in) financing activities** | | | |
| Net short-term debt borrowings (repayments) | 22 | 11 | (36) |
| Borrowings of long-term debt | 234 | 373 | 283 |
| Repayments of long-term debt | (223) | (328) | (254) |
| Affiliated loan repayments, net | (23) | (47) | (215) |
| Capital contribution from parent | — | — | 13 |
| Contribution of affiliate (see Note 1) | 34 | — | — |
| Deferred financing fees paid | (1) | (2) | — |
| Net cash provided by (used in) financing activities | 43 | 7 | (209) |
| Effect of exchange rates on cash and cash equivalents | (6) | 6 | (2) |
| Increase (decrease) in cash and cash equivalents | 51 | (57) | (10) |
| Cash, cash equivalents and restricted cash at beginning of year | 56 | 113 | 123 |
| Cash, cash equivalents and restricted cash at end of year | $ 107 | $ 56 | $ 113 |
| **Supplemental disclosures of cash flow information** | | | |
| Cash paid for: | | | |
| Interest, net | $ 95 | $ 89 | $ 83 |
| Income taxes, net of cash refunds | 15 | 9 | 15 |
| Non-cash financing activity: | | | |
| Contribution of affiliate (see Note 1) | $ 51 | $ — | $ — |

See Notes to Consolidated Financial Statements

**HEXION INTERNATIONAL COOPERATIEF U.A.**
**CONSOLIDATED STATEMENTS OF DEFICIT**

| (In millions) | Paid-in Capital | Loans Receivable from Parent | Accumulated Other Comprehensive Loss | Accumulated Deficit | Total Hexion International Cooperatief U.A. Shareholders' Deficit | Noncontrolling Interest | Total |
|---|---|---|---|---|---|---|---|
| Balance at December 31, 2015 | $ 164 | $ (86) | $ (61) | $ (406) | $ (389) | $ (1) | $ (390) |
| Net income | — | — | — | 43 | 43 | — | 43 |
| Other comprehensive loss | — | — | (25) | — | (25) | — | (25) |
| Non-cash changes in principal and translation adjustment | — | (93) | — | — | (93) | — | (93) |
| Capital contribution from parent | 13 | — | — | — | 13 | — | 13 |
| Deconsolidation of subsidiary | (3) | — | — | 2 | (1) | — | (1) |
| Allocations of corporate overhead (see Note 4) | 5 | — | — | — | 5 | — | 5 |
| Balance at December 31, 2016 | 179 | (179) | (86) | (361) | (447) | (1) | (448) |
| Net loss | — | — | — | (143) | (143) | — | (143) |
| Other comprehensive income | — | — | 27 | — | 27 | — | 27 |
| Non-cash changes in principal and translation adjustment | — | 6 | — | — | 6 | — | 6 |
| Reclassification of affiliated loan receivable | — | 173 | — | — | 173 | — | 173 |
| Non-cash return of capital to parent | (158) | — | — | — | (158) | — | (158) |
| Allocations of corporate overhead (see Note 4) | 4 | — | — | — | 4 | — | 4 |
| Balance at December 31, 2017 | 25 | — | (59) | (504) | (538) | (1) | (539) |
| Net income (loss) | — | — | — | 42 | 42 | (1) | 41 |
| Other comprehensive income | — | — | 2 | — | 2 | — | 2 |
| Non-cash capital contribution from affiliate | 1 | — | — | — | 1 | — | 1 |
| Non-cash return of capital to parent | (195) | — | — | — | (195) | — | (195) |
| Contribution of affiliate (see Note 1) | 85 | — | — | — | 85 | — | 85 |
| Impact of change in accounting policy | — | — | — | 1 | 1 | — | 1 |
| Allocations of corporate overhead (see Note 4) | 5 | — | — | — | 5 | — | 5 |
| Balance at December 31, 2018 | $ (79) | $ — | $ (57) | $ (461) | $ (597) | $ (2) | $ (599) |

See Notes to Consolidated Financial Statements

**HEXION INTERNATIONAL COOPERATIEF U.A.**

**Notes to Consolidated Financial Statements**
**(In millions)**

**1. Background and Basis of Presentation**

Hexion International Cooperatief U.A. (“CO-OP”) is a holding company whose primary assets are its investments in Hexion Holding B.V. and Hexion Canada, Inc. (“Hexion Canada”), and their respective subsidiaries. Due to an internal reorganization within the Hexion group in 2017, the membership interests in Hexion International Holdings Coöperatief U.A. (“Old CO-OP”) were contributed to CO-OP. In connection with these transactions, the pledge of Old CO-OP’s membership interest was released under the existing collateral documents and the membership interests of CO-OP have been pledged as collateral under the applicable collateral documents.

Together, CO-OP, through its investments in Hexion Canada and Hexion Holding B.V. and their respective subsidiaries (collectively referred to as the “Company”), is engaged in the manufacture and marketing of urea, phenolic, epoxy and epoxy specialty resins and coatings applications primarily used in forest and industrial and construction products and other specialty and industrial chemicals worldwide. At December 31, 2018, the Company’s operations included 26 manufacturing facilities in Europe, North America, South America, Australia, New Zealand, China and Korea.

The Company is a wholly owned subsidiary of Hexion Inc. (“Hexion” or the “Parent”), which, through a series of intermediate holding companies, is controlled by investment funds managed by affiliates of Apollo Management Holdings, L.P. (together with Apollo Global Management, LLC and its subsidiaries, “Apollo”). The Company has significant related party transactions with Hexion, as discussed in Note 4. CO-OP operates as a business under the direction and with support of its parent, Hexion. All entities are under the common control of Hexion.

Hexion serves global industrial markets through a broad range of thermoset technologies, specialty products and technical support for customers in a diverse range of applications and industries.

***Hexion Group Realignment***

In the second quarter of 2018, there was a change in the ownership structure of several foreign subsidiaries within the Hexion group and as a result, these foreign subsidiaries are now included within the scope of the CO-OP. As a result, the Consolidated Statements of Operations and the Consolidated Statements of Cash Flow for the year ended December 31, 2018 contain nine months of activity from these foreign subsidiaries and the Consolidated Balance Sheet at December 31, 2018 contains the balance sheet activity of these subsidiaries. At April 1, 2018, the new CO-OP subsidiaries had $85 of net assets and $151 of assets included within the “Total assets” line of the Consolidated Balance Sheet for the CO-OP. For the year ended December 31, 2018, $184 of revenue was included in “Net sales” with less than $1 of loss included in “Income (loss) before income taxes and earnings from unconsolidated entities” on the Consolidated Statements of Operations and $34 of inflows included in financing activities on the Consolidated Statements of Cash Flow. The Consolidated Statements of Deficit at December 31, 2018 included the activity at December 31, 2018 for the Hexion Group Realignment subsidiaries (see Note 13).

***Bankruptcy Petitions and Going Concern***

On April 1, 2019, the CO-OP’s Parent, Hexion Holdings LLC, Hexion LLC and certain of the Parent’s subsidiaries (collectively, the “Debtors”) filed voluntary petitions (the “Bankruptcy Petitions”) for reorganization under Chapter 11 of the United States Code (the“Bankruptcy Code” or “Chapter 11”) in the United States Bankruptcy Court for the District of Delaware, (the "Court"). None of the Debtors that filed for Bankruptcy Petitions included the CO-OP or any of its subsidiaries. As a result, the CO-OP has concluded that its Parent’s financial condition and its projected operating results, the defaults under its Parent’s debt agreements, and the risks and uncertainties surrounding its Parent’s Chapter 11 proceedings raise substantial doubt about the CO-OP’s ability to continue as a going concern.

To address the risk of not being able to continue as a going concern, the Parent has undertaken steps to restructure its balance sheet through Chapter 11 proceedings. In connection with the Bankruptcy Petitions, the Debtors received commitments from lenders for a senior secured debtor-in-possession asset-based revolving credit agreement and a term loan facility (collectively, the “Credit Facilities”), and the Debtors have entered into a Restructuring Support Agreement (the “Support Agreement”). Refer to the Parent’s Current Reports on Form 8-K filed on April 1, 2019 and April 8, 2019 for more information.

The accompanying Consolidated Financial Statements included in this Annual Report on Form 10-K have been prepared assuming that the Company will continue as a going concern basis of accounting, which contemplates continuity of operations, realization of assets and satisfaction of liabilities and commitments in the normal course of business. The Company has made certain adjustments to the Consolidated Financial Statements in order to be consistent with adjustments made in the Consolidated Financial Statements of the Parent, including the reclassification of certain outstanding debt to current liabilities and the write-off of unamortized deferred financing costs related to such debt (see Notes 3 and 8).

**2. Summary of Significant Accounting Policies**

**Principles of Consolidation—**The Consolidated Financial Statements include the accounts of the Company and its majority-owned subsidiaries in which minority shareholders hold no substantive participating rights. Intercompany transactions and balances have been eliminated. The Company's share of the net earnings of 20% to 50% owned companies, for which it has the ability to exercise significance influence over operating and financial policies (but not control), are included in "Earnings from unconsolidated entities, net of taxes" in the Consolidated Statements of Operations.

**Foreign Currency Translations and Transactions—**Assets and liabilities of foreign affiliates are translated at the exchange rates in effect at the balance sheet date. Income, expenses and cash flows are translated at average exchange rates during the year. The Company recognized transaction losses of $21, losses of $21 and gains of $19 for the years ended December 31, 2018, 2017 and 2016, respectively, which are included as a component of "Net income (loss)." In addition, gains or losses related to the Company's intercompany loans payable and receivable denominated in a foreign currency other than the subsidiary's functional currency that are deemed to be permanently invested are remeasured to cumulative translation and recorded in "Accumulated other comprehensive loss" in the Consolidated Balance Sheets. The effect of translation is included in "Accumulated other comprehensive loss."

**Use of Estimates—**The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and also the disclosure of contingent assets and liabilities at the date of the financial statements. In addition, it requires management to make estimates and assumptions that affect the reported amounts of revenues and expenses during the reporting period. The most significant estimates that are included in the financial statements are environmental remediation liabilities, legal liabilities, deferred tax assets and liabilities and related valuation allowances, income tax accruals, pension and postretirement assets and liabilities, valuation allowances for accounts receivable and inventories, general insurance liabilities, asset impairments and fair values of assets acquired and liabilities assumed in business acquisitions. Actual results could differ from these estimates.

**Cash and Cash Equivalents**—At December 31, 2018 and 2017, the Company had interest-bearing time deposits and other cash equivalent investments of $16 and $9, respectively. The Company's restricted cash balances of $15 and $18 as of December 31, 2018 and 2017, respectively represent deposits to secure certain bank guarantees issued to third parties to guarantee potential obligations of the Company primarily related to the completion of tax audits and environmental liabilities. These balances will remain restricted as long as the underlying exposures exist and are included in the Consolidated Balance Sheets as a component of "Cash and cash equivalents." Following the adoption of ASU 2016-18: *Statement of Cash Flows (Topic 230) Restricted Cash*, the Company includes restricted cash in the cash and cash equivalents balance of the Consolidated Statements of Cash Flows.

The following table includes the restricted cash changes as a result of the adoption of ASU 2016-18 in the Consolidated Statements of Cash Flows for the year ended December 2017 and 2016:

**Consolidated Statements of Cash Flows**

| | For the year ended December 31, 2017 | | |
|---|---|---|---|
| | **Previous Accounting Method** | **Effect of Accounting Change** | **As Reported** |
| **Cash flows used in investing activities** | | | |
| Change in restricted cash | $ 1 | $ (1) | $ — |
| Net cash used in investing activities | (74) | (1) | (75) |
| | | | |
| Effect of exchange rates on cash and cash equivalents | 4 | 2 | 6 |
| Change in cash and cash equivalents | (58) | 1 | (57) |
| Cash, cash equivalents and restricted cash at beginning of period | 96 | 17 | 113 |
| Cash, cash equivalents and restricted cash at end of period | $ 38 | $ 18 | $ 56 |

**Consolidated Statements of Cash Flows**

| | For the year ended December 31, 2016 | | |
|---|---|---|---|
| | Previous Accounting Method | Effect of Accounting Change | As Reported |
| **Cash flows used in investing activities** | | | |
| Change in restricted cash | $ (9) | $ 9 | $ — |
| Net cash used in investing activities | 30 | 9 | 39 |
| | | | |
| Effect of exchange rates on cash and cash equivalents | (2) | — | (2) |
| Change in cash and cash equivalents | (19) | 9 | (10) |
| Cash, cash equivalents and restricted cash at beginning of period | 115 | 8 | 123 |
| Cash, cash equivalents and restricted cash at end of period | $ 96 | $ 17 | $ 113 |

**Allowance for Doubtful Accounts—**The allowance for doubtful accounts is estimated using factors such as customer credit ratings and past collection history. Receivables are charged against the allowance for doubtful accounts when it is probable that the receivable will not be collected.

**Inventories—**Inventories are stated at lower of cost or net realizable value using the first-in, first-out method. Costs include direct material, direct labor and applicable manufacturing overheads, which are based on normal production capacity. Abnormal manufacturing costs are recognized as period costs and fixed manufacturing overheads are allocated based on normal production capacity. An allowance is provided for excess and obsolete inventories based on management's review of inventories on-hand compared to estimated future usage and sales. Inventories in the Consolidated Balance Sheets are presented net of an allowance for excess and obsolete inventory of $5 and $4 at December 31, 2018 and 2017, respectively.

**Deferred Expenses**—Deferred debt financing costs are included in "Long-term debt" in the Consolidated Balance Sheets, with the exception of deferred financing costs related to revolving line of credit arrangements, which are included in "Other long-term assets" in the Consolidated Balance Sheets. These costs are amortized over the life of the related debt or credit facility using the effective interest method. Upon extinguishment of any debt, the related debt issuance costs are written off. At December 31, 2017, the Company's unamortized deferred financing costs included in "Other long-term assets" were $4.

During the year ended December 31, 2018, the Company wrote off unamortized deferred debt financing costs of $2 included in "Other long-term assets" as a result of the Company's substantial doubt about its ability to continue as a going concern for the next twelve months (see Note 1) and the resulting reclassification of all outstanding debt related to the ABL Facility "Debt payable within one year' in the Consolidated Balance Sheets (see Note 8). These write-offs are included in "Interest expense, net" in the Consolidated Statements of Operations.

**Property and Equipment—**Land, buildings and machinery and equipment are stated at cost less accumulated depreciation. Depreciation is recorded on a straight-line basis over the estimated useful lives of properties (the average estimated useful lives for buildings and machinery and equipment are 20 years and 15 years, respectively). Assets under capital leases are amortized over the lesser of their useful life or the lease term. Major renewals and betterments are capitalized. Maintenance, repairs, minor renewals and turnarounds (periodic maintenance and repairs to major units of manufacturing facilities) are expensed as incurred. When property and equipment is retired or disposed of, the asset and related depreciation are removed from the accounts and any gain or loss is reflected in operating income. The Company capitalizes interest costs that are incurred during the construction of property and equipment. Depreciation expense was $51, $46 and $54 for the years ended December 31, 2018, 2017 and 2016, respectively.

**Capitalized Software**—The Company capitalizes certain costs, such as software coding, installation and testing, that are incurred to purchase or create and implement computer software for internal use. Amortization is recorded on the straight-line basis over the estimated useful lives, which range from 1 to 5 years.

**Goodwill and Intangibles—**The excess of purchase price over net tangible and identifiable intangible assets of businesses acquired is carried as "Goodwill" in the Consolidated Balance Sheets. Separately identifiable intangible assets that are used in the operations of the business (e.g., patents and technology, tradenames, customer lists and contracts) are recorded at cost (fair value at the time of acquisition) and reported as "Other intangible assets, net" in the Consolidated Balance Sheets. Costs to renew or extend the term of identifiable intangible assets are expensed as incurred. The Company does not amortize goodwill. Intangible assets with determinable lives are amortized on a straight-line basis over the shorter of the legal or useful life of the assets, which range from 1 to 30 years (see Note 5).

**Impairment—**The Company reviews property and equipment and all amortizable intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Recoverability is based on estimated undiscounted cash flows or other relevant observable measures. The Company tests goodwill for impairment annually, or when events or changes in circumstances indicate impairment may exist, by comparing the estimated fair value of each reporting unit to its carrying value to determine if there is an indication that a potential impairment may exist.

***Long-Lived Assets and Amortizable Intangible Assets***

There were no long-lived asset impairments recorded during the years ended December 31, 2018, 2017 and 2016.

***Goodwill***

The Company performs an annual assessment of qualitative factors to determine whether the existence of any events or circumstances leads to a determination that it is more likely than not that the fair value of a reporting unit is less than the carrying amount of the reporting unit's net assets. If, after assessing all events and circumstances, the Company determines it is more likely than not that the fair value of a reporting unit is less than the carrying amount of the reporting unit's net assets, the Company uses a probability weighted market and income approach to estimate the fair value of the reporting unit. The Company's market approach is a comparable analysis technique commonly used in the investment banking and private equity industries based on the EBITDA (earnings before interest, income taxes, depreciation and amortization) multiple technique. Under this technique, estimated fair value is the result of a market-based EBITDA multiple that is applied to an appropriate historical EBITDA amount, adjusted for the additional fair value that would be assigned by a market participant obtaining control over the reporting unit. The Company's income approach is a discounted cash flow model. If the carrying value of the reporting unit exceeds the estimated fair value, an impairment charge is recorded for the difference.

At October 1, 2018 and 2017, the estimated fair value of the Company's reporting unit was deemed to be in excess of the carrying amount of assets (including goodwill) and liabilities assigned to the reporting unit.

**Assets and Liabilities Held for Sale** - The assets and liabilities at December 31, 2017 related to the proposed sale of the Company's Additive Technology Group business ("ATG") are classified as "Current assets held for sale", "Long-term assets held for sale", and "Current liabilities associated with assets held for sale" within the Consolidated Balance Sheets. See Note 12 for more information.

**General Insurance—**The Company is generally insured for losses and liabilities for workers' compensation, physical damage to property, business interruption and comprehensive general, product and vehicle liability under high-deductible insurance policies. The Company records losses when they are probable and reasonably estimable and amortizes insurance premiums over the life of the respective insurance policies (see Note 4).

**Legal Claims and Costs—**The Company accrues for legal claims and costs in the period in which a claim is made or an event becomes known, if the amounts are probable and reasonably estimable. Each claim is assigned a range of potential liability and the most likely amount is accrued. If there is no amount in the range of potential liability that is most likely, the low end of the range is accrued. The amount accrued includes all costs associated with the claim, including settlements, assessments, judgments and fines. Legal fees are expensed as incurred (see Note 10).

**Environmental Matters—** Accruals for environmental matters are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated. Environmental accruals are reviewed on a quarterly basis and as events and developments warrant (see Note 10).

**Asset Retirement Obligations—**Asset retirement obligations are initially recorded at their estimated net present values in the period in which the obligation occurs, with a corresponding increase to the related long-lived asset. Over time, the liability is accreted to its settlement value and the capitalized cost is depreciated over the useful life of the related asset. When the liability is settled, a gain or loss is recognized for any difference between the settlement amount and the liability that was recorded.

**Revenue Recognition**—The Company follows the principles-based five step model to recognize revenue upon the transfer of promised goods or services to customers and in an amount that reflects the consideration for which the entity expects to be entitled in exchange for those goods or services. Revenue, net of estimated allowances and returns, is recognized when the Company has completed its performance obligations under a contract and control of the product is transferred to the customer. Substantially all revenue is recognized at the time shipment is made or upon delivery as risk and title to the product transfer to the customer. Sales, value add, and other taxes that are collected concurrently with revenue-producing activities are excluded from revenue. Contract terms for certain transactions, including sales made on a consignment basis, result in the transfer of control of the finished product to the customer prior to the point at which the Company has the right to invoice for the product. In these cases, timing of revenue recognition will differ from the timing of invoicing to customers and will result in the Company recording a contract asset. At December 31, 2018, a contract asset balance of $5 is recorded within "Other current assets" with a corresponding decrease of $4 recorded within "Finished and in-process goods" in the Consolidated Balance Sheet.

**Shipping and Handling—**Freight costs that are billed to customers are included in "Net sales" in the Consolidated Statements of Operations. Shipping costs are incurred to move the Company's products from production and storage facilities to the customer. Handling costs are incurred from the point the product is removed from inventory until it is provided to the shipper and generally include costs to store, move and prepare the products for shipment. Shipping and handling costs are recorded in "Cost of sales" in the Consolidated Statements of Operations.

**Research and Development Costs—**Funds are committed to research and development activities for technical improvement of products and processes that are expected to contribute to future earnings. All costs associated with research and development are charged to expense as incurred. Research and development and technical service expense was $24, $25 and $29 for the years ended December 31, 2018, 2017 and 2016, respectively, and is included in "Selling, general and administrative expense" in the Consolidated Statements of Operations.

**Business Realignment Costs—**The Company incurred "Business realignment costs" totaling $13, $28 and $15 for the years ended December 31, 2018, 2017 and 2016, respectively. These costs primarily included expenses from the Company's restructuring and cost optimization programs, as well as costs for environmental remediation at certain formerly owned locations.

**Pension and Other Non-Pension Postretirement Benefit Liabilities**—Pension and other non-pension postretirement benefit ("OPEB") assumptions are significant inputs to the actuarial models that measure pension and OPEB benefit obligations and related effects on operations. Two assumptions, discount rate and expected return on assets, are important elements of plan expense and asset/liability measurement. The Company evaluates these critical assumptions at least annually on a plan and country-specific basis. The Company periodically evaluates other assumptions involving demographic factors, such as retirement age, mortality and turnover, and updates them to reflect the Company's experience and expectations for the future. Actual results in any given year will often differ from actuarial assumptions because of economic and other factors.

Accumulated and projected benefit obligations are measured as the present value of future cash payments. The Company discounts these cash payments using a split-rate interest approach. This approach uses multiple interest rates from market-observed forward yield curves which correspond to the estimated timing of the related benefit payments. Lower discount rates increase present values and subsequent-year pension expense; higher discount rates decrease present values and subsequent-year pension and OPEB expense.

To determine the expected long-term rate of return on pension plan assets, the Company considers current and expected asset allocations, as well as historical and expected returns on various categories of plan assets. In developing future return expectations for the principal benefit plans' assets, the Company evaluates general market trends as well as key elements of asset class returns such as expected earnings growth, yields and spreads across a number of potential scenarios.

Upon the Company's annual remeasurement of its pension and OPEB liabilities in the fourth quarter, or on an interim basis as triggering events warrant remeasurement, the Company immediately recognizes gains and losses as a mark-to-market ("MTM") gain or loss through earnings. As such, the Company's net periodic pension and OPEB expense consists of i) service cost, interest cost, expected return on plan assets, amortization of prior service cost/credits recognized on a quarterly basis and ii) MTM adjustments recognized annually in the fourth quarter upon remeasurement of pension and OPEB liabilities or when triggering events warrant remeasurement.

The MTM adjustments were a gain of $24, loss of $3 and a loss of $33 for the years ended December 31, 2018, 2017 and 2016, respectively, and are recognized in "Other non-operating (income) expense, net" in the Consolidated Statements of Operations.

**Income Taxes—**The Company recognizes deferred tax assets and liabilities for the expected future tax consequences of temporary differences between the financial statement carrying amounts and the tax bases of the assets and liabilities.

Deferred tax balances are adjusted to reflect tax rates, based on current tax laws, which will be in effect in the years in which temporary differences are expected to reverse. Deferred tax assets are reduced by a valuation allowance when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will not be realized. For purposes of these financial statements, the international subsidiaries are treated as foreign subsidiaries of a domestic parent, the Company, for all periods presented. Income tax expense for the Company as well as a rate reconciliation is provided in Note 15.

Unrecognized tax benefits are generated when there are differences between tax positions taken in a tax return and amounts recognized in the consolidated financial statements. Tax benefits are recognized in the consolidated financial statements when it is more likely than not that a tax position will be sustained upon examination. Tax benefits are measured as the largest amount of benefit that is greater than 50% likely of being realized upon settlement. The Company classifies interest and penalties as a component of tax expense.

The Company monitors changes in tax laws and reflects the impact of tax law changes in the period of enactment. In response to the United States tax reform legislation enacted on December 22, 2017, the SEC issued guidance that allows companies to record provisional amounts for the impacts of U.S. tax reform if the full accounting cannot be completed before filing its 2017 financial statements. For provisions of the tax law where companies are unable to make a reasonable estimate of the impact, the guidance allows companies to continue to apply the historical tax provisions in computing its income tax liability and deferred tax assets and liabilities as of December 31, 2017. The guidance also allows companies to finalize accounting for the U.S. tax reform changes within one year of the enactment date and we finalized our accounting during 2018.

**Derivative Financial Instruments—**The Company is a party to forward exchange contracts, foreign exchange rate swaps, interest rate swaps, natural gas futures and electricity forward contracts to reduce its cash flow exposure to changes in interest rates and natural gas and electricity prices. The Company does not hold or issue derivative financial instruments for trading purposes. These instruments are not accounted for using hedge accounting, but are measured at fair value and recorded in the balance sheet as an asset or liability, depending upon the Company's underlying rights or obligations. Changes in fair value are recognized in earnings (see Note 7).

**Stock-Based Compensation—**Stock-based compensation cost is measured at the grant date based on the fair value of the award which is amortized as expense over the requisite service period on a graded-vesting basis. The Company does not maintain any stock-based compensation plans; however, certain of the Company's employees have been granted equity awards denominated in units of Hexion Holdings LLC, Hexion's ultimate parent. The Company is allocated a share of the related compensation expense (see Note 4).

**Transfers of Financial Assets—**The Company executes factoring and sales agreements with respect to its trade accounts receivable to support its working capital requirements. The Company accounts for these transactions as either sales-type or financing-type transfers of financial assets based on the terms and conditions of each agreement. For the portion of the sales price that is deferred in a reserve account and subsequently collected, the Company's policy is to classify the cash in-flows as cash flows from operating activities as the predominant source of the cash flows pertains to the Company's trade accounts receivable. When the Company retains the servicing rights on the transfers of accounts receivable, it measures these rights at fair value, if material.

**Concentrations of Credit Risk—**Financial instruments that potentially subject the Company to concentrations of credit risk are primarily temporary investments and accounts receivable. The Company places its temporary investments with high quality institutions and, by policy, limits the amount of credit exposure to any one institution. Concentrations of credit risk for accounts receivable are limited due to the large number of customers in the Company's customer base and their dispersion across many different industries and geographies. The Company generally does not require collateral or other security to support customer receivables.

**Corporate Overhead Allocations—**In order to properly present the financial results of the Company on a stand-alone basis, corporate controlled expenses incurred by Hexion that are not reimbursed by the Company are allocated to the Company. The amounts are allocated on the basis of "Net sales." Management believes that the amounts allocated in such a manner are reasonable and consistent. However, the amounts are not necessarily indicative of the costs that would have been incurred if the Company had operated independently (see Note 4).

**Concentrations of Supplier Risk**—The Company relies on long-term agreements with key suppliers for most of its raw materials. The loss of a key source of supply or a delay in shipments could have an adverse effect on its business. Should any of the suppliers fail to deliver or should any of the key long-term supply contracts be canceled, the Company would be forced to purchase raw materials at current market prices. The Company's largest supplier provides approximately 10% of raw material purchases. In addition, several of the feedstocks at various facilities are transported through a pipeline from one supplier.

**Subsequent Events—**The Company has evaluated events and transactions subsequent to December 31, 2018 through the date of issuance of its Consolidated Financial Statements. Additionally, see Note 16 for further information around subsequent events.

**Reclassifications**—Certain prior period balances have been reclassified to conform with current presentations.

**Standard Guarantees / Indemnifications—**In the ordinary course of business, the Company enters into a number of agreements that contain standard guarantees and indemnities where the Company may indemnify another party for, among other things, breaches of representations and warranties. These guarantees or indemnifications are granted under various agreements, including those governing (i) purchases and sales of assets or businesses, (ii) leases of real property, (iii) licenses of intellectual property, (iv) long-term supply agreements, (v) employee benefits services agreements and (vi) agreements with public authorities on subsidies for designated research and development projects. These guarantees or indemnifications are for the benefit of the (i) buyers in sale agreements and sellers in purchase agreements, (ii) landlords or lessors in lease contracts, (iii) licensors or licensees in license agreements, (iv) vendors or customers in long-term supply agreements, (v) service providers in employee benefits services agreements and (vi) governments or agencies subsidizing research or development. In addition, the Company guarantees some of the payables of its subsidiaries to purchase raw materials in the ordinary course of business.

These parties may also be indemnified against any third party claim resulting from the transaction that is contemplated in the underlying agreement. Additionally, in connection with the sale of assets and the divestiture of businesses, the Company may agree to indemnify the buyer for liabilities related to the pre-closing operations of the assets or businesses sold. Indemnities for pre-closing operations generally include tax liabilities, environmental liabilities and employee benefit liabilities that are not assumed by the buyer in the transaction.

Indemnities related to the pre-closing operations of sold assets normally do not represent additional liabilities to the Company, but simply serve to protect the buyer from potential liability associated with the Company's existing obligations at the time of sale. As with any liability, the Company has accrued for those pre-closing obligations that it considers to be probable and reasonably estimable. The amounts recorded at December 31, 2018 and 2017 are not significant.

While some of these guarantees extend only for the duration of the underlying agreement, many survive the expiration of the term of the agreement or extend into perpetuity (unless they are subject to a legal statute of limitations). There are no specific limitations on the maximum potential amount of future payments that the Company could be required to make under its guarantees, nor is the Company able to estimate the maximum potential amount of future payments to be made under these guarantees because the triggering events are not predictable.

Our corporate charter also requires us to indemnify, to the extent allowed by New Jersey state corporate law, our directors and officers as well as directors and officers of our subsidiaries and other agents against certain liabilities and expenses incurred by them in carrying out their obligations.

**Warranties—**The Company does not make express warranties on its products, other than that they comply with the Company's specifications; therefore, the Company does not record a warranty liability. Adjustments for product quality claims are not material and are charged against net sales.

**Recently Issued Accounting Standards**

***Newly Issued Accounting Standards***

In February 2016, the FASB issued Accounting Standards Board Update No. 2016-02: *Leases (Topic 842)* (“ASU 2016-02”). ASU 2016-02 supersedes the existing lease guidance in Topic 840. According to the new guidance, all leases, with limited scope exceptions, will be recorded on the balance sheet in the form of a liability to make lease payments (lease liability) and a right-of-use asset representing the right to use the underlying asset for the lease term and provide enhanced disclosures. The guidance is effective for annual and interim periods beginning on or after December 15, 2018. The Company adopted ASU 2016-02 effective January 1, 2019 using a modified retrospective method and will not restate comparative periods. As permitted under the transition guidance, we will carry forward the assessment of whether our contracts contain or are leases, classification of our leases and remaining lease terms. The Company is substantially complete with the development of reporting and disclosure processes and controls around leases to meet the new accounting and disclosure requirements upon adoption in January 2019. The Company will record right-of-use assets and offsetting lease liabilities of $45 to $65 on the Company’s Balance Sheet upon adoption of the standard.

In February 2018, the FASB issued Accounting Standards Board Update No. 2018-02: *Income Statement-Reporting Comprehensive Income (Topic 220)* (“ASU 2018-02”). ASU 2018-02 was issued in response to the United States tax reform legislation, the Tax Cuts and Jobs Act (“Tax Reform”), enacted in December 2017. The amendments in ASU 2018-02 allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the new tax legislation. The guidance is effective for annual and interim periods beginning on or after December 15, 2018, and early adoption is permitted. The Company has assessed the potential impact of ASU 2018-02 on its financial statements. No reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects was recorded.

***Newly Adopted Accounting Standards***

In May 2014, the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Board Update No. 2014-09: *Revenue from Contracts with Customers (Topic 606)* (“ASU 2014-09”). ASU 2014-09 supersedes the existing revenue recognition guidance and most industry-specific guidance applicable to revenue recognition. According to the new guidance, an entity will apply a principles-based five step model to recognize revenue upon the transfer of promised goods or services to customers and in an amount that reflects the consideration for which the entity expects to be entitled in exchange for those goods or services. The effective date for ASU 2014-09 is for annual and interim periods beginning on or after December 15, 2017.

The Company adopted ASU 2014-09 as of January 1, 2018 utilizing a modified retrospective approach, which resulted in a cumulative adjustment to “Accumulated deficit” of $1 on the date of adoption. ASU 2014-09 was applied to all open contracts as of the date of the adoption and resulted only in timing differences for recognition of certain revenue items. The cumulative effects of the changes made to the Company’s Consolidated Balance Sheet on January 1, 2018 for the adoption of ASU 2014-09 were as follows:

| | Balance at December 31, 2017 | Adjustments due to ASU 2014-09 | Balance at January 1, 2018 |
|---|---|---|---|
| **Assets** | | | |
| Inventory | $ 113 | $ (4) | $ 109 |
| Other current assets | 24 | 5 | 29 |
| | | | |
| **Deficit** | | | |
| Accumulated deficit | (503) | 1 | (502) |

In accordance with the new revenue standard requirements, the impact of adoption on the Company’s Consolidated Statements of Operations and Consolidated Balance Sheets were as follows:

**Consolidated Statements of Operations**

| | For the year ended December 31, 2018 | | |
|---|---|---|---|
| | As reported | Balances without Adoption of ASC 606 | Effect of change higher/(lower) (1) |
| Net sales | $ 2,219 | $ 2,219 | $ — |
| Cost of sales | 1,916 | 1,916 | — |
| Gross profit | 303 | 303 | — |

(1) The impact of the new revenue standard resulted in an impact of less than $1.

**Consolidated Balance Sheets**

| | Balance at December 31, 2018 | | |
|---|---|---|---|
| **Assets** | **As reported** | **Balances without Adoption of ASC 606** | **Effect of change higher/(lower)** |
| Inventory | $ 138 | $ 142 | $ (4) |
| Other current assets | 30 | 25 | 5 |
| | | | |
| **Deficit** | | | |
| Accumulated deficit | (461) | (462) | 1 |

In August 2016, the FASB issued Accounting Standards Board Update No. 2016-15: *Statement of Cash Flows (Topic 230)* ("ASU 2016-15") as part of the FASB simplification initiative. ASU 2016-15 provides guidance on treatment in the statement of cash flows for eight specific cash flow topics, with the objective of reducing existing diversity in practice. Of the eight cash flow topics addressed in the new guidance, the topics which could have an impact on the Company include debt prepayment or debt extinguishment costs, accounts receivable factoring, proceeds from the settlement of insurance claims and distributions received from equity method investees. The guidance is effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted ASU 2016-15 as of January 1, 2018 and adoption of this standard had an immaterial impact on the Company's financial statements.

In November 2016, the FASB issued Accounting Standards Board Update No. 2016-18: *Statement of Cash Flows (Topic 230) Restricted Cash* ("ASU 2016-18") as part of the FASB simplification initiative. ASU 2016-18 requires that amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of period total amounts shown on the statement of cash flows. ASU 2016-18 also requires supplemental disclosure regarding the nature of restrictions on a company's cash and cash equivalents, such as the purpose and terms of the restriction, expected duration of the restriction and the amount of cash subject to restriction. The guidance was effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted ASU 2016-18 as of January 1, 2018. As a result of adopting ASU 2016-18, the beginning and ending cash balances with the Consolidated Statements of Cash Flows now include restricted cash as of December 31, 2018 and 2017. The impact of the adoption of this standard on the Company's Consolidated Statements of Cash Flows is disclosed above in the cash and cash equivalents section of this footnote.

In January 2017, the FASB issued Accounting Standards Board Update No. 2017-01: *Clarifying the Definition of a Business (Topic 805)* ("ASU 2017-01"). ASU 2017-01 clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The definition of a business affects many areas of accounting including acquisitions, disposals, goodwill, and consolidation. The guidance was effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted ASU 2017-01 as of January 1, 2018 and the adoption of this standard had no impact on the Company's financial statements.

In March 2017, the FASB issued Accounting Standards Board Update No. 2017-07: *Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost* ("ASU 2017-07"). ASU 2017-07 requires that an employer report the service cost component of its net periodic pension and postretirement benefit costs ("net benefit cost") in the same line item or items as other compensation costs arising from services rendered by employees during the period. Additionally, ASU 2017-07 only allows the service cost component of net benefit cost to be eligible for capitalization into inventory. All other components of net benefit cost, which primarily include interest cost, expected return on assets and the annual mark-to-market liability remeasurement, are required to be presented in the income statement separately from the service cost component and outside of income from operations. The guidance was effective for annual periods beginning after December 15, 2017, including interim periods within that reporting period. The Company adopted ASU 2017-07 as of January 1, 2018. The components of the net (benefit) cost are shown in Note 11.

The impact of these pension and OPEB accounting policy changes were applied through retrospective adoption of the new ASU 2017-07 to all periods resented. Accordingly, all relevant information for the year ended December 31, 2018 and all prior periods has been adjusted to reflect the application of the changes.

**Consolidated Statements of Operations for the year ended December 31, 2017:**

| | Previous Accounting Method | Effect of Accounting Change | As Reported |
|---|---|---|---|
| Cost of sales | $ 1,736 | $ (2) | $ 1,734 |
| Gross profit | 275 | 2 | 277 |
| Operating income | 57 | 2 | 59 |
| Other non-operating (income) expense, net | 97 | 2 | 99 |

**Consolidated Statements of Operations for the year ended December 31, 2016:**

| | Previous Accounting Method | Effect of Accounting Change | As Reported |
|---|---|---|---|
| Cost of sales | $ 1,652 | $ (20) | $ 1,632 |
| Gross profit | 296 | 20 | 316 |
| Selling, general and administrative expense | $ 185 | $ (13) | $ 172 |
| Operating income | 127 | 33 | 160 |
| Other non-operating (income) expense, net | (28) | 33 | 5 |

In January 2017, the FASB issued Accounting Standards Board Update No. 2017-04: *Simplifying the Test for Goodwill Impairment (Topic 350)* ("ASU 2017-04") as part of the FASB simplification initiative. To simplify the subsequent measurement of goodwill, ASU 2017-04 eliminated Step 2 from the goodwill impairment test. Instead, under the amendments in ASU 2017-04, an entity should perform its annual, or interim, goodwill impairment test by comparing the fair value of the reporting unit with its carrying amount, which is Step 1 of the goodwill impairment test. An impairment charge should be recognized for the amount by which the carrying amount exceeds the reporting unit's fair value, not to exceed the total amount of goodwill allocated to that reporting unit. The guidance is effective for goodwill impairment tests performed after December 15, 2019 and early adoption is permitted. The Company early adopted ASU 2017-04 during 2017. See Note 5 for more information.

## 3. Restructuring

***2017 Restructuring Activities***

In November 2017, the Company initiated new restructuring actions with the intent to optimize its cost structure. The total one-time cash costs expected to be incurred for these restructuring activities are estimated at $14, consisting primarily of workforce reduction costs.

The following table summarizes restructuring information:

| | |
|---|---|
| Total restructuring costs expected to be incurred | $ 14 |
| Restructuring costs incurred through December 31, 2018 | $ 14 |
| | |
| Accrued liability at December 31, 2017 | $ 11 |
| Restructuring charges | 1 |
| Payments | (8) |
| Accrued liability at December 31, 2018 | $ 4 |

## 4. Related Party Transactions

***Product Sales and Purchases***

The Company sells and purchases finished goods and certain raw materials to Hexion and certain of its subsidiaries that are included in "Net sales and "Cost of sales" in the Consolidated Statements of Operations, accordingly. Refer to the below table for the summary of purchases and sales with Hexion:

| | For the years ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Sales to Hexion | $ 149 | $ 223 | $ 220 |
| Purchases from Hexion | 64 | 66 | 62 |

The Company sells products to and purchases raw materials and services from certain Apollo affiliates and other related parties. Refer to the below table for the summary of purchases and sales with Apollo affiliates and other related parties:

| | For the years ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Sales to Apollo affiliates and other related parties | $ 5 | $ 14 | $ 11 |
| Purchases from Apollo affiliates and other related parties | 35 | 25 | 27 |

Accounts receivable from these affiliates were $1 and $3 at December 31, 2018 and 2017, respectively. During the years ended December 31, 2018, 2017, and 2016, the Company earned $1 as compensation for acting as distributor of products. The Company had accounts payable to these affiliates of $3 and $2 at December 31, 2018 and 2017, respectively.

***Billed Allocated Expenses***

Hexion incurs various administrative and operating costs on behalf of the Company that are reimbursed by the Company. These costs include engineering and technical support, purchasing, quality assurance, sales and customer service, information systems, research and development and certain administrative services. These service costs have been allocated to the Company generally based on sales or sales volumes and when determinable, based on the actual usage of resources. These costs were $49, $43 and $39 for the years ended December 31, 2018, 2017 and 2016, respectively, and are primarily included within “Selling, general and administrative expense” in the Consolidated Statements of Operations.

Hexion provides global services related to procurement to the Company. These types of services are a raw materials based charge as a result of the global services being primarily related to procurement. The Company’s expense relating to these services totaled $17, $15 and $13 for the years ended December 31, 2018, 2017 and 2016, respectively, and is classified in “Selling, general and administrative expense” in the Consolidated Statements of Operations.

The Company also has various technology and royalty agreements with Hexion. Charges under these agreements are based on revenue or profits generated. The Company’s total expense related to these agreements was $7, $10 and $11 for the years ended December 31, 2018, 2017 and 2016, respectively, and is classified in “Selling, general and administrative expense” in the Consolidated Statements of Operations.

In addition, Hexion maintains certain insurance policies that benefit the Company. Expenses related to these policies are allocated to the Company based upon sales, and were $4, $4 and $5 for the years ended December 31, 2018, 2017 and 2016, respectively. These expenses are included in “Selling, general and administrative expense” in the Consolidated Statements of Operations.

***Foreign Exchange Gain/Loss Agreement***

The Company entered into a foreign exchange gain/loss guarantee agreement in 2011 (which was renewed in each year from 2012 through 2019) with Hexion, whereby Hexion agreed to hold the Company neutral for any foreign exchange gains or losses incurred by the Company for statutory purposes associated with certain of its affiliated loans. The Company recorded unrealized gains/(losses) of $36, ($86) and $18 for the years ended December 31, 2018, 2017 and 2016, respectively, which has been recorded within “Other non-operating (income) expense, net” in the Consolidated Statements of Operations.

During the year ended December 31, 2016, $93 of the outstanding receivable related to the hedge agreement results from 2015 was converted into an outstanding affiliated loan from Hexion to the Company. At December 31, 2016, the balance of this affiliated loan was recorded in "Loans receivable from parent" within the equity section of the Consolidated Balance Sheets due to the Company’s determination that this affiliated loan was permanent in nature. In 2017, the balance of this affiliated loan was reduced by $6 related to the hedge agreement results from 2016 and the first half of 2017, combined with the impact of interest and foreign exchange on the existing loan balance. Further, the impact of the internal reorganization within the Hexion group resulted in the Company no longer designating this affiliated loan as permanent. As a result, the outstanding balance of this loan was reclassified from equity to “Long-term loans receivable from affiliates” in the Consolidated Balance Sheets at December 31, 2017.

***Cash Pooling Agreement Guarantee***

In March 2012, the Company entered into a guarantee agreement with Hexion whereby Hexion agreed to hold the Company neutral for any interest income or expense exposure incurred by the Company for statutory purposes associated with certain of its affiliated loans that were entered into under an internal cash management agreement. In connection with this agreement, the Company recorded $1, less than $1 and $2 for the years ended December 31, 2018, 2017 and 2016, respectively, which has been recorded within “Other non-operating expense (income), net” in the Consolidated Statements of Operations.

***Accounts Receivable Factoring Agreement Guarantee***

In December 2013, the Company entered into a guarantee agreement with Hexion whereby Hexion agreed to hold the Company neutral for any foreign exchange or bad debt exposure incurred by the Company for statutory purposes associated with purchases and sales of accounts receivable under an internal accounts receivable purchase and sale agreement. In connection with this agreement, the Company recorded expense of less than $1 and income of less than $1 for the years ended December 31, 2018, 2017 and 2016, respectively, which has been recorded within “Other non-operating expense (income), net” in the Consolidated Statements of Operations.

***Balance Sheet Positions With Affiliates***

At December 31, 2018 and 2017, the Company had affiliated receivables of $66 and $90, respectively, and affiliated payables of $38 and $104, respectively. Included in affiliated receivables at December 31, 2018 and affiliated payables at December 31, 2017 was $36 and ($86) of gains/(losses) related to the foreign exchange gain/loss guarantee agreement mentioned above. The remainder of affiliated receivables and affiliated payables includes sales and purchase activity between the Company and Hexion.

The Parent’s Bankruptcy Petitions authorize the continued performance of intercompany transactions, including the Foreign Exchange Gain/Loss Agreement discussed above. The Support Agreement filed with the Bankruptcy Court states that the intercompany balances will not be impaired. As a result, in accordance with *ASC 310 – Receivables*, it is not probable that the above affiliated receivables from the Parent have been impaired or a loss has been incurred. Therefore, no reserve has been established as of December 31, 2018.

***Unbilled Allocated Corporate Controlled Expenses***

In addition to direct charges, Hexion provides certain administrative services that are not reimbursed by the Company. These costs include corporate controlled expenses such as executive management, legal, health and safety, accounting, tax and credit, and have been allocated herein to the Company on the basis of "Net sales." The charges also include allocated stock-based compensation expense. There were no charges for the year ended December 31, 2018 and charges of less than $1 for the years ended December 31, 2017 and 2016, which is included in the Finance section of the table below. Management believes that the amounts are allocated in a manner that is reasonable and consistent, and that these allocations are necessary in order to properly depict the financial results of the Company on a stand-alone basis. However, the amounts are not necessarily indicative of the costs that would have been incurred if the Company had operated independently. These charges are included in "Selling, general and administrative expense" in the Consolidated Statements of Operations, with the offsetting credit recorded in "Paid-in capital." There is no income tax provided on these amounts because they are not deductible for tax purposes.

The following table summarizes the corporate controlled expense allocations for the years ended December 31, 2018, 2017 and 2016:

| | 2018 | 2017 | 2016 |
|---|---|---|---|
| Executive group | $ 2 | $ — | $ — |
| Environmental, health and safety services | — | — | 1 |
| Finance | 3 | 4 | 4 |
| **Total** | $ 5 | $ 4 | $ 5 |

See Note 9 for a description of the Company's affiliated financing and investing activities.

**5. Goodwill and Other Intangible Assets**

The gross carrying amount and accumulated impairments of goodwill consist of the following as of December 31, 2018 and 2017:

| 2018 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|
| **Gross Carrying Amount** | **Accumulated Impairments** | **Accumulated Foreign Currency Translation** | **Net Book Value** | **Gross Carrying Amount** | **Accumulated Impairments** | **Accumulated Foreign Currency Translation** | **Net Book Value** |
| $ 116 | $ (5) | $ (8) | $ 103 | $ 116 | $ (5) | $ (2) | $ 109 |

The changes in the carrying amount of goodwill for the years ended December 31, 2018 and 2017 are as follows:

| | Total |
|---|---|
| Goodwill balance at December 31, 2016 | $ 98 |
| Foreign currency translation | 11 |
| Goodwill balance at December 31, 2017[(1)] | 109 |
| Divestitures | (1) |
| Foreign currency translation | (5) |
| Goodwill balance at December 31, 2018 | $ 103 |

(1) Includes $1 of goodwill related to the ATG Business, included in "Long-term assets held for sale" in the Consolidated Balance Sheets.

The Company's intangible assets with identifiable useful lives consist of the following as of December 31, 2018 and 2017:

| | 2018 | | | | 2017 | | | |
|---|---|---|---|---|---|---|---|---|
| | **Gross Carrying Amount** | **Accumulated Impairments** | **Accumulated Amortization** | **Net Book Value** | **Gross Carrying Amount** | **Accumulated Impairments** | **Accumulated Amortization** | **Net Book Value** |
| Patents and technology | $ 67 | $ — | $ (60) | $ 7 | $ 67 | $ — | $ (57) | $ 10 |
| Customer lists and contracts | 78 | (17) | (58) | 3 | 78 | (17) | (57) | 4 |
| Other | 19 | — | (10) | 9 | 19 | — | (8) | 11 |
| **Total** | $ 164 | $ (17) | $ (128) | $ 19 | $ 164 | $ (17) | $ (122) | $ 25 |

The impact of foreign currency translation on intangible assets is included in accumulated amortization.

Total intangible amortization expense for the years ended December 31, 2018, 2017 and 2016 was $4, $6 and $8, respectively.

Estimated annual intangible amortization expense for 2018 through 2022 is as follows:

| | | |
|---|---|---|
| 2019 | $ | 4 |
| 2020 | | 4 |
| 2021 | | 2 |
| 2022 | | 1 |
| 2023 | | 1 |

**6. Fair Value**

Fair value is the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Fair value measurement provisions establish a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. This guidance describes three levels of inputs that may be used to measure fair value:

- **Level 1:** Inputs are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- **Level 2:** Pricing inputs are other than quoted prices in active markets included in Level 1, which are either directly or indirectly observable as of the reported date.
- **Level 3:** Unobservable inputs that are supported by little or no market activity and are developed based on the best information available in the circumstances. For example, inputs derived through extrapolation or interpolation that cannot be corroborated by observable market data.

***Recurring Fair Value Measurements***

Following is a summary of assets and liabilities measured at fair value on a recurring basis as of December 31, 2018 and 2017:

| | Fair Value Measurements Using | | | |
|---|---|---|---|---|
| | Quoted Prices in Active Markets (Level 1) | Significant Other Observable Inputs (Level 2) | Unobservable Inputs (Level 3) | Total |
| **December 31, 2018** | | | | |
| Derivative assets | $ — | $ 135 | $ — | $ 135 |
| **December 31, 2017** | | | | |
| Derivative assets | $ — | $ 135 | $ — | $ 135 |

Level 2 derivative liabilities consist of derivative instruments transacted primarily in over-the-counter markets. There were no transfers between Level 1, Level 2 or Level 3 measurements during the years ended December 31, 2018 and 2017.

The Company calculates the fair value of its Level 2 derivative liabilities using standard pricing models with market-based inputs, adjusted for nonperformance risk. When its financial instruments are in a liability position, the Company evaluates its credit risk as a component of fair value. At December 31, 2018 and 2017, no adjustment was made by the Company to reduce its derivative liabilities for nonperformance risk.

When its financial instruments are in an asset position, the Company is exposed to credit loss in the event of nonperformance by other parties to these contracts and evaluates their credit risk as a component of fair value.

***Non-derivative Financial Instruments***

The following table summarizes the carrying amount and fair value of the Company’s non-derivative financial instruments:

| | | Fair Value | | | |
|---|---|---|---|---|---|
| | Carrying Amount | Level 1 | Level 2 | Level 3 | Total |
| **December 31, 2018** | | | | | |
| Non-affiliated debt | $ 197 | $ — | $ 192 | $ 5 | $ 197 |
| **December 31, 2017** | | | | | |
| Non-affiliated debt | $ 162 | $ — | $ 160 | $ 2 | $ 162 |

Fair values of debt classified as Level 2 are determined based on other similar financial instruments, or based upon interest rates that are currently available to the Company for the issuance of debt with similar terms and maturities. Level 3 amounts represent capital leases whose fair value is determined through the use of present value and specific contract terms. The carrying amounts of cash and cash equivalents, short term investments, accounts receivable, accounts payable and other accrued liabilities are considered reasonable estimates of their fair values due to the short-term maturity of these financial instruments.

## 7. Derivative Instruments and Hedging Activities

### Derivative Financial Instruments

The Company is exposed to certain risks related to its ongoing business operations. The primary risks managed by using derivative instruments are foreign currency exchange risk and interest rate risk. The Company does not hold or issue derivative financial instruments for trading purposes.

***Foreign Exchange Rate Swaps***

International operations account for a significant portion of the Company's revenue and operating income. The Company's policy is to reduce foreign currency cash flow exposure from exchange rate fluctuations by hedging anticipated and firmly committed transactions when it is economically feasible. The Company periodically enters into forward contracts to buy and sell foreign currencies to reduce foreign exchange exposure and protect the U.S. dollar value of certain transactions to the extent of the amount under contract. The counter-parties to our forward contracts are financial institutions with investment grade ratings. The Company does not apply hedge accounting to these derivative instruments.

The Company is party to various foreign exchange rate swaps in Brazil in order to reduce the foreign currency risk associated with certain assets and liabilities of its Brazilian subsidiary that are denominated in U.S. dollars. The counter-parties to the foreign exchange rate swap agreements are financial institutions with investment grade ratings. The Company does not apply hedge accounting to these derivative instruments.

***Foreign Exchange Gain/Loss Agreement***

The Company entered into a foreign exchange gain/loss guarantee agreement in 2011 (which was renewed in each of 2012 through 2017) with Hexion whereby Hexion agreed to hold the Company neutral for any foreign exchange gains or losses incurred by the Company for income tax purposes associated with certain of its affiliated loans. This arrangement qualifies as a derivative and is recorded at fair value in the Consolidated Balance Sheets. The Company does not apply hedge accounting to this derivative instrument.

The following table summarizes the Company's derivative financial instrument assets and liabilities as of December 31:

| | 2018 | | | | 2017 | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Derivatives not designated as hedging instruments** | **Average Days to Maturity** | **Average Contract Rate** | **Notional Amount** | **Fair Value Asset** | **Average Days to Maturity** | **Average Contract Rate** | **Notional Amount** | **Fair Value Asset** | **Location of Derivative Asset** |
| **Foreign Exchange Gain/Loss Agreement** | | | | | | | | | |
| Foreign exchange gain/loss agreement with affiliate | 365 | — | $ 723 | $ 135 | 365 | — | $ 665 | $ 135 | Accounts payable/ accounts receivable to/from affiliates and Loans receivable from affiliates (1)(2) |
| ***Foreign Exchange Rate Swaps*** | | | | | | | | | |
| Brazil foreign exchange rate swaps - asset | — | — | 10 | — | — | — | 5 | — | Other current assets |
| Brazil foreign exchange rate swaps - liability | — | — | 16 | — | — | — | 17 | — | Other current liabilities |
| **Total** | | | | $ 135 | | | | $ 135 | |

(1) The fair value asset related to the foreign exchange agreement of $135 at December 31, 2018 represents the life-to-date position of the foreign exchange agreement that has not been settled. The amount related to 2018 activity of $36 is included in "Accounts receivable from affiliates." The remaining amounts are included in "Loans receivable from affiliates."

(2) In 2018, the current portion of the foreign exchange agreement was included in accounts receivable from affiliates due to its gain position. In 2017, the current portion of the foreign exchange agreement was included in accounts payable from affiliates due to its loss position.

The following table summarizes gains and losses recognized on the Company's derivative financial instruments, which are recorded in "Other non-operating expense (income), net" in the Consolidated Statements of Operations:

| | Amount of Gain (Loss) Recognized in Income for the Year Ended December 31: | | |
|---|---|---|---|
| **Derivatives not designated as hedging instruments** | **2018** | **2017** | **2016** |
| **Foreign Exchange Gain/Loss Agreement** | | | |
| Foreign exchange gain/(loss) agreement with affiliate | $ 36 | $ (86) | $ 18 |
| **Total** | $ 36 | $ (86) | $ 18 |

**8. Non-Affiliated Debt and Lease Obligations**

Non-affiliated debt outstanding at December 31, 2018 and 2017 is as follows:

| | 2018 | | 2017 | |
|---|---|---|---|---|
| | Long-Term | Due Within One Year | Long-Term | Due Within One Year |
| ABL Facility | $ — | $ 72 | $ 63 | $ — |
| **Other Borrowings:** | | | | |
| Australia Facility due 2021 at 4.8% and 4.6% at December 31, 2018 and 2017, respectively | 31 | 3 | — | 50 |
| Brazilian bank loans at 10.0% and 9.9% at December 31, 2018 and 2017 | 12 | 41 | 9 | 34 |
| Capital leases and other | 3 | 35 | 4 | 2 |
| **Total** | $ 46 | $ 151 | $ 76 | $ 86 |

As discussed in Note 1, the CO-OP has concluded that its Parent's financial condition, the defaults under its Parent's debt agreements, and the risks and uncertainties surrounding its Parent's Chapter 11 proceedings raise substantial doubt about the CO-OP's ability to continue as a going concern. The audit report issued by the CO-OP's independent registered public accounting firm contains an emphasis of a matter paragraph expressing substantial doubt about the Company's ability to continue as a going concern. As such, all outstanding debt as of December 31, 2018 related to the ABL Facility has been classified as "Debt payable within on year" in the Consolidated Balance Sheets and related footnote disclosures.

***ABL Facility***

In March 2013, Hexion entered into a $400 ABL Facility. The ABL Facility replaced Hexion's senior secured credit facilities, which included a $171 revolving credit facility and the $47 synthetic letter of credit facility at the time of the termination of facilities upon Hexion's entry into the ABL Facility.

In December 2016, Hexion amended and restated the ABL Facility, with modifications to, among other things, permit the refinancing of the Old Senior Secured Notes with new first-priority senior secured notes, new senior secured notes and/or other secured or unsecured indebtedness. In connection with the issuance of the new notes in February 2017, certain lenders under the ABL Facility provided extended revolving facility commitments in an aggregate principal amount of approximately $350 with a maturity date of December 5, 2021 (subject to the early maturity triggers described below), the existing commitments were terminated and the size of the ABL Facility was reduced from $400 to $350.

As amended, the ABL Facility has a maturity date of December 5, 2021 unless, if 91 days prior to the scheduled maturity of the 6.625% First-Priority Senior Notes due 2020 and the 10.00% First-Priority Senior Secured Notes, more than $50 aggregate principal amount of these notes are outstanding, in which case the ABL Facility will mature on such earlier date. Additionally, if 91 days prior to the scheduled maturity of the 9.00% Second-Priority Senior Secured Notes due 2020, more than $50 aggregate principal amount of these notes are outstanding, the ABL Facility will mature on such earlier date.

The ABL Facility bears interest at a floating rate based on, at the Company's option, an adjusted LIBOR rate plus an initial applicable margin of 2.25% or an alternate base rate plus an initial applicable margin of 1.25%. From and after the date of delivery of the Company's financial statements for the first fiscal quarter ended after the effective date of the ABL Facility, the applicable margin for such borrowings will be adjusted depending on the availability under the ABL Facility. As of December 31, 2018, the applicable margin for LIBOR rate loans was 2.25% and for alternate base rate loans was 1.25%. In addition to paying interest on outstanding principal under the ABL Facility, the Company is required to pay a commitment fee to the lenders in respect of the unutilized commitments at an initial rate equal to 0.50% per annum, subject to adjustment depending on the usage. The ABL Facility does not have any financial maintenance covenants, other than a fixed charge coverage ratio of 1.0 to 1.0 that only applies if availability under the ABL Facility is less than the greater of (a) $35 and (b) 12.5% of the lesser of the borrowing base and the total ABL Facility commitments at such time. The fixed charge coverage ratio under the credit agreement governing the ABL Facility is generally defined as the ratio for the most recent four consecutive fiscal quarters of (a) Adjusted EBITDA minus non-financed capital expenditures and cash taxes to (b) debt service plus cash interest expense plus certain restricted payments, each measured for the four most recent quarters in which financial statements have been delivered. The ABL Facility is secured by, among other things, first-priority liens on most of the inventory and accounts receivable and related assets of Hexion, its domestic subsidiaries and certain of its foreign subsidiaries (the "ABL Priority Collateral"), and by second-priority liens on certain collateral that generally includes most of Hexion's, its domestic subsidiaries' and certain of its foreign subsidiaries' assets other than the ABL Priority Collateral, in each case subject to certain exceptions and permitted liens.

Available borrowings to the Company's subsidiaries under the ABL Facility were $128 as of December 31, 2018, and there were $72 outstanding borrowings under the ABL Facility as of December 31, 2018.

***Other Borrowings***

The Company’s Australian Term Loan Facility has a variable interest rate equal to the 90 day Australian or New Zealand Bank Bill Rates plus an applicable margin. The agreement also provides access to a $7 revolving credit facility of which there were no outstanding balances at December 31, 2018 and 2017. In February 2018, the Company extended its Australian Term Loan Facility through January 2021.

The Brazilian bank loans represent various bank loans, primarily for working capital purposes and to finance the construction of manufacturing facilities.

In addition to available borrowings under Hexion’s revolving credit facility, the Company has available borrowings under various international credit facilities. At December 31, 2018, under these international credit facilities the Company had $17 available to fund working capital needs and capital expenditures. While these facilities are primarily unsecured, portions of the lines are collateralized by equipment and cash and short term investments at December 31, 2018.

Hexion Nova Scotia Finance, ULC (a subsidiary of CO-OP, “Hexion NSF”), along with Hexion, are co-issuers and obligors of $574 of 9.00% Second-Priority Senior Secured Notes due 2020, as well as the 8.875% Senior Secured Notes due 2018, which were satisfied and discharged by Hexion on February 8, 2017. These notes are guaranteed by Hexion’s subsidiaries, and are not reflected in the Company's Consolidated Financial Statements.

Aggregate maturities of debt and minimum annual rentals under operating leases at December 31, 2018, for the Company are as follows:

| Year | Debt | Minimum Rentals Under Operating Leases | Minimum Payments Under Capital Leases |
|---|---|---|---|
| 2019 | $ 148 | $ 16 | $ 3 |
| 2020 | 34 | 13 | 2 |
| 2021 | 2 | 11 | — |
| 2022 | 1 | 7 | — |
| 2023 | 1 | 5 | — |
| 2024 and beyond | 6 | 38 | 1 |
| Total minimum payments | $ 192 | $ 90 | 6 |
| Less: Amount representing interest | | | (1) |
| Present value of minimum payments | | | $ 5 |

The Company’s operating leases consist primarily of vehicles, equipment, land and buildings. Rental expense under operating leases amounted to $16, $8 and $6 for the years ended December 31, 2018, 2017 and 2016, respectively.

## 9. Affiliated Financing

The following table summarizes the Company's outstanding loans payable and loans receivable with unconsolidated affiliates as of December 31, 2018 and 2017, as well as the corresponding interest expense (income) for the years ended December 31, 2018 and 2017:

| | 2018 | | | 2017 | | |
|---|---|---|---|---|---|---|
| | Long-Term | Due Within One Year | Interest Expense (Income) | Long-Term | Due Within One Year | Interest Expense (Income) |
| **Affiliated debt payable:** | | | | | | |
| Loan payable to Hexion due 2020 at 9.0% at December 31, 2018 and 2017 (1) | $ 292 | $ — | $ 27 | $ 306 | $ — | $ 26 |
| Loan payable to Hexion due 2020 at 10.0% at December 31, 2018 and 2017 (2) | 150 | — | 15 | 148 | — | 13 |
| Loan payable to Hexion due 2020 at 6.6% at December 31, 2018 and 2017 (3) | 583 | — | 39 | 583 | — | 39 |
| Loan payable to Hexion due 2020 at 6.7% at December 31, 2018 and 2017(4) | 57 | — | 4 | 57 | — | 2 |
| Loan payable to Hexion due 2019 at 1.3% at December 31, 2018 and 2017(5) | — | 64 | — | — | — | — |
| Loan Payable to Hexion due 2020 at 0% at December 31, 2018 and 2017(6) | 19 | — | — | — | — | — |
| Other loans due to Hexion and affiliates at 3.5% and 9.1% at December 31, 2018 and 2017, respectively | — | 28 | 1 | 2 | 31 | 3 |
| **Total affiliated debt payable (7)** | $ 1,101 | $ 92 | $ 86 | $ 1,096 | $ 31 | $ 83 |
| **Affiliated debt receivable:** | | | | | | |
| Loans due from Hexion and affiliates at 3.3% and 3.7% at December 31, 2018 and 2017, respectively (8) | 8 | 100 | (4) | 208 | 4 | (8) |
| **Total affiliated debt receivable (9)** | $ 8 | $ 100 | $ (4) | $ 208 | $ 4 | $ (8) |

(1) Loan issued in 2010 in conjunction with CO-OP's acquisition of a German subsidiary.
(2) Loan issued in 2010 in conjunction with Canadian tax restructuring.
(3) Loan issued in 2012 in conjunction with Hexion's refinancing activities.
(4) Loan issued in 2013 in conjunction with Hexion's refinancing activities.
(5) Short-term funding between Hexion and the CO-OP.
(6) Loan issued in 2018 in conjunction with the recapitalization of the Brazilian entity.
(7) The total outstanding loans payable balances are included in "Affiliated debt payable within one year" and "Affiliated long-term debt" in the Consolidated Balance Sheets.
(8) Included in loans receivable as of December 31, 2018 and 2017 is $99 and $173, respectively, related to the conversion of outstanding receivables related to the foreign exchange agreement results into an affiliated loan from Hexion to the Company.
(9) The total outstanding loans receivable balances are included in "Loans receivable from affiliates" and "Long-term loans receivable from affiliates" in the Consolidated Balance Sheets.

The Parent's Bankruptcy Petitions authorize the continued performance of intercompany transactions, including the Foreign Exchange Gain / Loss Agreement. The Support Agreement filed with the Bankruptcy Court states that the intercompany balances will not be impaired. As a result, in accordance with *ASC 310 – Receivables*, it is not probable that the above affiliated loans receivable from the Parent have been impaired or a loss has been incurred. Therefore, no reserve has been established as of December 31, 2018.

## 10. Commitments and Contingencies

### Environmental Matters

The Company's operations involve the use, handling, processing, storage, transportation and disposal of hazardous materials. The Company is subject to extensive environmental regulation and is therefore exposed to the risk of claims for environmental remediation or restoration. In addition, violations of environmental laws or permits may result in restrictions being imposed on operating activities, substantial fines, penalties, damages or other costs, any of which could have a material adverse effect on the Company's business, financial condition, results of operations or cash flows.

The following table summarizes all probable environmental remediation, indemnification and restoration liabilities, including related legal expenses, at December 31, 2018 and 2017.

| | Liability | | 2018 Range of Reasonably Possible Costs | |
|---|---|---|---|---|
| **Site Description** | **December 31, 2018** | **December 31, 2017** | **Low** | **High** |
| Currently-owned | $ 4 | $ 3 | $ 3 | $ 9 |
| Formerly-owned: | | | | |
| Remediation | — | 1 | — | 2 |
| **Total** | $ 4 | $ 4 | $ 3 | $ 11 |

These amounts include estimates for unasserted claims that the Company believes are probable of loss and reasonably estimable. The estimate of the range of reasonably possible costs is less certain than the estimates upon which the liabilities are based. To establish the upper end of a range, assumptions less favorable to the Company among the range of reasonably possible outcomes were used. As with any estimate, if facts or circumstances change, the final outcome could differ materially from these estimates. At both December 31, 2018 and 2017, $1 has been included in “Other current liabilities” in the Consolidated Balance Sheets with the remaining amount included in “Other long-term liabilities.”

**Non-Environmental Legal Matters**

The Company is involved in various product liability, commercial and employment litigation, personal injury, property damage and other legal proceedings that are considered to be in the ordinary course of business. The Company has reserves of $1 at both December 31, 2018 and 2017 for all non-environmental legal defense costs incurred and settlement costs that it believes are probable and estimable. At December 31, 2018 and 2017, $1 has been included in “Other current liabilities” in the Consolidated Balance Sheets with less than $1 included in “Other long-term liabilities.”

**Other Commitments and Contingencies**

***Purchase Commitments***

The Company has entered into contractual agreements with third parties for the supply of site services, utilities, materials and facilities and for operation and maintenance services necessary to operate certain of the Company’s facilities on a stand-alone basis. The duration of the contracts range from less than one year to 20 years, depending on the nature of services. These contracts may be terminated by either party under certain conditions as provided for in the respective agreements; generally, 90 days notice is required for short-term contracts and three years notice is required for longer-term contracts (generally those contracts in excess of five years). Contractual pricing generally includes a fixed and variable component.

In addition, the Company has entered into contractual agreements with third parties to purchase feedstocks or other services. The terms of these agreements vary from one to ten years and may be extended at the Company’s request and are cancelable by either party as provided for in each agreement. Feedstock prices are based on market prices less negotiated volume discounts or cost input formulas. The Company is required to make minimum annual payments under these contracts as follows:

| Year | Minimum Annual Purchase Commitments |
|---|---|
| 2019 | $ 160 |
| 2020 | 47 |
| 2021 | 44 |
| 2022 | 35 |
| 2023 | 29 |
| 2024 and beyond | 240 |
| Total minimum payments | 555 |
| Less: Amount representing interest | (71) |
| Present value of minimum payments | $ 484 |

**11. Pension and Non-Pension Postretirement Benefit Plans**

Certain of the Company’s subsidiaries sponsor defined benefit pension plans covering certain associates primarily in Canada, Netherlands, Germany, Brazil, Belgium and Malaysia. Depending on the plan, benefits are based on eligible compensation and/or years of credited service. The Company also sponsors defined contribution plans in some locations. Non-pension postretirement benefit plans are also provided to associates in Canada, Brazil and to certain associates in the Netherlands. Effective December 31, 2018 the U.S. benefit that primarily consisted of a life insurance benefit for a grandfathered group of retirees, was transferred to MetLife. This transfer moved the liability from Hexion to MetLife. The Canadian plans provide retirees and their dependents with medical and life insurance benefits, which are supplemental benefits to the respective provincial healthcare plan in Canada. The Brazilian plan became effective in 2012 as a result of a change in certain regulations, and provides retirees that contributed towards coverage while actively employed with access to medical benefits, with the retiree being responsible for 100% of the premiums. In 2014, the plan was amended such that 100% of the premiums of active employees are paid by the Company. The Netherlands’ plan provides a lump sum payment at retirement for grandfathered associates.

The following table presents the change in benefit obligation, change in plan assets and components of funded status for the Company’s defined benefit pension and non-pension postretirement benefit plans for the years ended December 31:

| | Pension Benefits | | Postretirement Benefits | |
|---|---|---|---|---|
| | **2018** | **2017** | **2018** | **2017** |
| **Change in Benefit Obligation** | | | | |
| Benefit obligation at beginning of year | $ 636 | $ 548 | $ 11 | $ 10 |
| Service cost | 17 | 16 | — | — |
| Interest cost | 10 | 9 | 1 | 1 |
| Actuarial (gains) losses | (38) | (6) | 2 | — |
| Foreign currency exchange rate changes | (32) | 77 | (1) | — |
| Benefits paid | (11) | (11) | — | — |
| Plan amendments | — | 2 | — | — |
| Employee contributions | 1 | 1 | — | — |
| Benefit obligation at end of year | 583 | 636 | 13 | 11 |
| **Change in Plan Assets** | | | | |
| Fair value of plan assets at beginning of year | 412 | 349 | — | — |
| Actual return on plan assets | (1) | 4 | — | — |
| Foreign currency exchange rate changes | (20) | 48 | — | — |
| Employer contributions | 23 | 21 | — | — |
| Benefits paid | (11) | (11) | — | — |
| Employee contributions | 1 | 1 | — | — |
| Fair value of plan assets at end of year | 404 | 412 | — | — |
| Funded status of the plan at end of year | $ (179) | $ (224) | $ (13) | $ (11) |

The foreign currency impact reflected in these rollforward tables are primarily for changes in the euro and Canadian dollar versus the U.S. dollar.

| | Pension Benefits | | | | Postretirement Benefits | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 | | 2017 | | 2018 | | 2017 | |
| Amounts recognized in the Consolidated Balance Sheets at December 31 consist of: | | | | | | | | |
| Other current liabilities | $ | (5) | $ | (5) | $ | (1) | $ | (1) |
| Long-term pension obligations | | (174) | | (220) | | (12) | | (10) |
| Accumulated other comprehensive loss | | — | | — | | — | | 1 |
| Net amounts recognized | $ | (179) | $ | (225) | $ | (13) | $ | (10) |
| Amounts recognized in Accumulated other comprehensive loss at December 31 consist of: | | | | | | | | |
| Net prior service (benefit) cost | $ | (1) | $ | (1) | $ | 1 | $ | 2 |
| Deferred income taxes | | 1 | | 1 | | (1) | | (1) |
| Net amounts recognized | $ | — | $ | — | $ | — | $ | 1 |
| Accumulated benefit obligation | $ | 548 | $ | 587 | | | | |
| Accumulated benefit obligation for funded plans | | 380 | | 393 | | | | |
| Pension plans with underfunded or non-funded accumulated benefit obligations at December 31: | | | | | | | | |
| Aggregate projected benefit obligation | $ | 187 | $ | 615 | | | | |
| Aggregate accumulated benefit obligation | | 181 | | 567 | | | | |
| Aggregate fair value of plan assets | | 12 | | 391 | | | | |
| Pension plans with projected benefit obligations in excess of plan assets at December 31: | | | | | | | | |
| Aggregate projected benefit obligation | $ | 584 | $ | 615 | | | | |
| Aggregate fair value of plan assets | | 403 | | 391 | | | | |

Following are the components of net pension and postretirement expense (benefit) recognized for the years ended December 31:

| | Pension Benefits | | | | | | Postretirement benefits | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2018 | | 2017 | | 2016 | | 2018 | | 2017 | | 2016 | |
| Service cost | $ | 17 | $ | 16 | $ | 14 | $ | — | $ | — | $ | — |
| Interest cost on projected benefit obligation | | 10 | | 9 | | 10 | | 1 | | 1 | | 1 |
| Expected return on assets | | (13) | | (11) | | (10) | | — | | — | | — |
| Amortization of prior service benefit | | — | | (1) | | (1) | | — | | — | | — |
| Unrealized actuarial loss (gain) | | (26) | | 1 | | 35 | | 2 | | 1 | | (1) |
| Net expense (benefit) | $ | (12) | $ | 14 | $ | 48 | $ | 3 | $ | 2 | $ | — |

***Determination of actuarial assumptions***

The Company’s actuarial assumptions are determined separately for each plan, taking into account the demographics of the population, the target asset allocations for funded plans, regional economic trends, statutory requirements and other factors that could impact the benefit obligation and plan assets. For the European plans, most assumptions are set by country, as the plans within these countries have similar demographics, and are impacted by the same regional economic trends and statutory requirements.

The discount rates selected reflect the rate at which pension obligations could be effectively settled. The Company selects the discount rates based on cash flow models using the yields of high-grade corporate bonds or the local equivalent with maturities consistent with the Company’s anticipated cash flow projections. The Company’s pension and OPEB liabilities and related service and interest cost are calculated using a split-rate interest discounting methodology, whereby expected future cash flows related to these liabilities are discounted using multiple interest rates on a forward curve that correspond to the timing of the expected cash flows.

The expected rates of future compensation level increases are based on salary and wage trends in the chemical and other similar industries, as well as the Company’s specific compensation targets by country. Input is obtained from the Company’s internal Human Resources group and from outside actuaries. These rates include components for wage rate inflation and merit increases.

The expected long-term rate of return on Canadian plan assets is determined based on the plan’s current and projected asset mix. To determine the expected overall long-term rate of return on assets, the Company takes into account the rates on long-term debt investments held within the portfolio, as well as expected trends in the equity markets. Peer data and historical returns are reviewed and the Company consults with its actuaries, as well as investment professionals, to confirm that the Company’s assumptions are reasonable.

The weighted average rates used to determine the benefit obligations were as follows at December 31:

| | Pension Benefits | | Postretirement Benefits | |
|---|---|---|---|---|
| | 2018 | 2017 | 2018 | 2017 |
| Discount rate | 1.9% | 1.9% | 6.3% | 5.3% |
| Rate of increase in future compensation levels | 2.3% | 2.4% | — | — |
| The weighted average assumed health care cost trend rates are as follows at December 31: | | | | |
| Health care cost trend rate assumed for next year | — | — | 6.2% | 5.8% |
| Rate to which the cost trend rate is assumed to decline (the ultimate trend rate) | — | — | 4.0% | 4.5% |
| Year that the rate reaches the ultimate trend rate | — | — | 2040 | 2023 |

The weighted average rates used to determine net periodic pension and postretirement expense were as follows for the years ended December 31:

| | Pension Benefits | | | Postretirement Benefits | | |
|---|---|---|---|---|---|---|
| | 2018 | 2017 | 2016 | 2018 | 2017 | 2016 |
| Discount rate | 1.9% | 1.9% | 2.3% | 5.3% | 6.0% | 5.5% |
| Rate of increase in future compensation levels | 2.4% | 2.4% | 2.4% | — | — | — |
| Expected long-term rate of return on plan assets | 3.1% | 2.9% | 3.1% | — | — | — |

A one-percentage-point change in the assumed health care cost trend rates would change the projected benefit obligation for non-pension postretirement benefits by $2 and service cost and interest cost by a negligible amount.

***Pension Investment Policies and Strategies***

The Company's investment strategy for the assets of its Canadian defined benefit pension plans is to maximize the long-term return on plan assets using a mix of equities and fixed income investments with a prudent level of risk. Risk tolerance is established through careful consideration of plan liabilities, plan funded status and expected timing of future cash flow requirements. The investment portfolio contains a diversified blend of equity and fixed-income investments. Equity investments are also diversified across Canadian and foreign stocks, as well as growth, value and small and large capitalization investments. Investment risk and performance are measured and monitored on an ongoing basis through periodic investment portfolio reviews, annual liability measurements and periodic asset and liability studies.

The Company periodically reviews its target allocation of Canadian plan assets among various asset classes. The targeted allocations are based on anticipated asset performance, discussions with investment professionals and on the projected timing of future benefit payments.

The Company observes local regulations and customs regarding its European pension plans in determining asset allocations, which generally require a blended weight leaning toward more fixed income securities, including government bonds.

| | Actual | | Target |
|---|---|---|---|
| | 2018 | 2017 | 2018 |
| Weighted average allocations of pension plan assets at December 31: | | | |
| Equity securities | 19% | 22% | 20% |
| Debt securities | 78% | 76% | 80% |
| Cash, short-term investments and other | 3% | 2% | —% |
| **Total** | 100% | 100% | 100% |

***Fair Value of Plan Assets***

Fair value is the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Fair value measurement provisions establish a fair value hierarchy which requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. This guidance describes three levels of inputs that may be used to measure fair value:

- **Level 1:** Inputs are quoted prices (unadjusted) for identical assets or liabilities in active markets.
- **Level 2:** Pricing inputs are other than quoted prices in active markets included in Level 1, which are either directly or indirectly observable as of the reported date.
- **Level 3:** Unobservable inputs that are supported by little or no market activity and are developed based on the best information available in the circumstances. For example, inputs derived through extrapolation or interpolation that cannot be corroborated by observable market data.

Certain investments measured at net asset value (“NAV”), as a practical expedient for fair value, have been excluded from the fair value hierarchy.

The following table presents pension plan investments measured at fair value on a recurring basis as of December 31, 2018 and 2017:

| | Fair Value Measurements Using | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 2018 | | | | 2017 | | | |
| | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Unobserv-able Inputs (Level 3) | Total | Quoted Prices in Active Markets for Identical Assets (Level 1) | Significant Other Observable Inputs (Level 2) | Unobserv-able Inputs (Level 3) | Total |
| Pooled insurance products with fixed income guarantee [1] | $ — | $ 12 | $ — | $ 12 | $ — | $ 11 | $ — | $ 11 |
| **Total** | $ — | $ 12 | $ — | $ 12 | $ — | $ 11 | $ — | $ 11 |
| Investments measured at fair value using net asset value as a practical expedient: | | | | | | | | |
| Other international equity funds [2] | | | | $ 77 | | | | $ 90 |
| Other fixed income securities [2] | | | | 315 | | | | 311 |
| Total | | | | $ 404 | | | | $ 412 |

(1) Level 2 equity and fixed income securities are primarily in pooled asset and mutual funds and are valued based on underlying net asset value multiplied by the number of shares held. The underlying asset values are based on observable inputs and quoted market prices.

(2) Represents investments in commingled funds with exposure to a variety of hedge fund strategies, which are not publicly traded and have ongoing redemption restrictions. The Company’s interest in these investments is measured at net asset value per share as a practical expedient for fair value, which is derived from the underlying asset values in these funds, only some of which represent observable inputs and quoted market prices. In accordance with ASU 2015-07, these investments are excluded from the fair value hierarchy.

***Projections of Plan Contributions and Benefit Payments***

The Company expects to make contributions of $30 to its defined benefit pension plans in 2019.

Estimated future plan benefit payments as of December 31, 2018 are as follows:

| | Pension Benefits | Postretirement Benefits |
|---|---|---|
| 2019 | $ 13 | $ 1 |
| 2020 | 12 | — |
| 2021 | 13 | — |
| 2022 | 14 | — |
| 2023 | 15 | 1 |
| 2024-2028 | 99 | 3 |

***Defined Contribution and Other Plans***

The Company sponsors a number of defined contribution plans for its associates in various countries. For most plans, employee contributions are voluntary, and the Company provides contributions ranging from 2% to 10%. Total charges to operations for matching contributions under these plans were $3, $3 and $2 for the years ended December 31, 2018, 2017 and 2016, respectively.

The Company’s German subsidiaries offer a government subsidized early retirement program to eligible associates called an Altersteilzeit Plan. The German government provides a subsidy in certain cases where the participant is replaced with a qualifying candidate. This subsidy was discontinued for associates electing participation in the program after December 31, 2009. The Company had liabilities for these arrangements of $1 both at December 31, 2018 and 2017, respectively. The Company incurred expense for these plans of less than $1 for each of the years ended December 31, 2018, 2017 and 2016.

Also included in the Consolidated Balance Sheets at both December 31, 2018 and 2017 are other post-employment benefit obligations primarily relating to liabilities for jubilee benefit plans offered to certain European associates of $3 and $2, respectively.

## 12. Dispositions

***ATG***

On January 8, 2018, Hexion completed the sale of its Additives Technology Group business ("ATG") to MÜNZING CHEMIE GmbH. ATG was previously included within Hexion's Forest Products Resins segment and includes manufacturing sites located in Somersby, Australia and Sungai Petani, Malaysia. The ATG business produced a range of specialty chemical materials for the engineered wood, paper impregnation and laminating industries, including catalysts, release agents and wetting agents.

Hexion received gross cash consideration for the ATG business in the amount of $49, which was used for general corporate purposes. The Company received allocated proceeds from the sale of $26, and recognized a gain on this disposition of $21, which is included in "Gain on disposition" in the Consolidated Statements of Operations for the year ended December 31, 2018.

***PAC Business***

On June 30, 2016, Hexion completed the sale of its Performance Adhesives, Powder Coatings, Additives & Acrylic Coatings and Monomers businesses ("Hexion PAC Business") pursuant to the terms of a Purchase Agreement with Synthomer plc (the "Buyer") dated March 18, 2016. Assets included in the transaction are the Company's manufacturing sites in Sokolov, Czech Republic; Sant'Albano, Italy; Leuna, Germany; and Asua, Spain. The Hexion PAC Business produces resins, polymers, monomers and additives that provide enhanced performance for adhesives, sealants, paints, coatings, mortars and cements used primarily in consumer, industrial and building and construction applications. Hexion also agreed to provide certain transitional services to the Buyer for a limited period of time following the closing of the transaction.

Hexion received gross cash consideration for the Hexion PAC business in the amount of $226, less approximately $6 relating to liabilities transferred to the Buyer, net of cash and estimated working capital that transferred to the Buyer as part of the Purchase Agreement. A subsequent post-closing adjustment to the purchase price of less than $1 was made in accordance with the Purchase Agreement. The Company received allocated proceeds from the sale of $107, and recognized a gain on this disposition of $28, which is recorded in "Gain on disposition" in the Consolidated Statements of Operations.

The Hexion PAC Business had pre-tax income of $8 for the year ended December 31, 2016 which is reported as a component of "(Loss) income before income taxes and earnings from unconsolidated entities" in the Consolidated Statements of Operations.

## 13. Deficit

Shareholder's deficit reflects the common equity of the Company with all of the common equity of its subsidiaries eliminated as of December 31, 2018 and 2017.

In 2016, $93 of the outstanding receivable related to the foreign exchange gain/loss guarantee agreement with Hexion was converted into an affiliated loan from Hexion to the Company. In 2017, the balance of this affiliated loan was reduced by $6 related to the results of the foreign exchange gain/loss guarantee agreement from 2016 and the first half of 2017, combined with the impact of interest and foreign exchange on the existing loan balance. Due to the impact of internal reorganization within the Hexion group the Company no longer designated this affiliated loan as permanent. As a result, the outstanding balance of this loan was reclassified from equity to "Long-term loans receivable from affiliates" in the Consolidated Balance Sheets at December 31, 2017 (see Note 4). In 2017, the Company made a non-cash return of capital to Hexion of $158, which is reflected as a reduction to "Paid-in capital" in the Consolidated Statements of Deficit.

In 2018, the Company made a non-cash return of capital to Hexion of $195, received a non-cash contribution from an affiliate of the Company of $1, and an increase of $85 due to the newly added subsidiaries to the CO-OP (see Note 1), which are reflected as a reduction, an increase and an increase to "Paid-in capital", respectively, in the Consolidated Statements of Deficit. Additionally, the Company recognized the impact of the change in accounting policy of $1 to "Accumulated Deficit" in the Consolidated Statements of Deficit.

## 14. Changes in Accumulated Other Comprehensive Loss

Following is a summary of changes in "Accumulated other comprehensive loss" for the years ended December 31, 2018 and 2017:

| | Year Ended December 31, 2018 | | | Year Ended December 31, 2017 | | |
|---|---|---|---|---|---|---|
| | Defined Benefit Pension and Postretirement Plans | Foreign Currency Translation Adjustments | Total | Defined Benefit Pension and Postretirement Plans | Foreign Currency Translation Adjustments | Total |
| Beginning balance | $ (2) | $ (57) | $ (59) | $ — | $ (86) | $ (86) |
| Other comprehensive (loss) income before reclassifications, net of tax | (1) | 3 | 2 | (2) | 29 | 27 |
| Ending balance | $ (3) | $ (54) | $ (57) | $ (2) | $ (57) | $ (59) |

**15. Income Taxes**

Income tax expense for the Company for the years ended December 31, 2018, 2017 and 2016 is as follows:

| | 2018 | 2017 | 2016 |
|---|---|---|---|
| **Current:** | | | |
| Federal | $ 1 | $ — | $ 6 |
| Foreign | 26 | 15 | 23 |
| Total current | 27 | 15 | 29 |
| **Deferred:** | | | |
| Federal | — | (2) | 2 |
| Foreign | 11 | 3 | — |
| Total deferred | 11 | 1 | 2 |
| Income tax expense | $ 38 | $ 16 | $ 31 |

A reconciliation of the Company's combined differences between income taxes computed at the Dutch federal statutory tax rate of 25.0% and provisions for income taxes for the years ended December 31, 2018, 2017 and 2016 is as follows:

| | 2018 | 2017 | 2016 |
|---|---|---|---|
| Income tax expense (benefit) computed at federal statutory tax rate | $ 20 | $ (32) | $ 18 |
| Foreign tax rate expense (benefit) differential | 4 | (1) | (5) |
| Losses (gains) and other expenses (income) not deductible (excluded) for tax | 14 | 18 | (2) |
| (Decrease) increase in the taxes due to changes in valuation allowance | (12) | 27 | (15) |
| Additional tax expense on foreign unrepatriated earnings | 1 | 1 | 1 |
| Additional tax expense for uncertain tax positions | 11 | 4 | 14 |
| Write-off of foreign net operating losses | — | — | 20 |
| Tax recognized in other comprehensive income | — | (1) | — |
| Income tax expense | $ 38 | $ 16 | $ 31 |

The domestic and foreign components of the Company's income (loss) before income taxes for the years ended December 31, 2018, 2017 and 2016 is as follows:

| | 2018 | 2017 | 2016 |
|---|---|---|---|
| Domestic | $ 24 | $ (143) | $ 122 |
| Foreign | 51 | 15 | (49) |
| **Total** | $ 75 | $ (128) | $ 73 |

The tax effects of the Company's significant temporary differences and net operating loss and credit carryforwards which comprise the deferred tax assets and liabilities at December 31, 2018 and 2017, are as follows:

| | 2018 | 2017 |
|---|---|---|
| **Assets:** | | |
| Non-pension post-employment | $ 5 | $ 4 |
| Accrued and other expenses | 13 | 15 |
| Property, plant and equipment | 4 | 1 |
| Intangibles | 5 | 6 |
| Net operating loss and credit carryforwards | 91 | 108 |
| Pension liabilities | 29 | 40 |
| Gross deferred tax assets | 147 | 174 |
| Valuation allowance | (133) | (146) |
| Net deferred tax asset | 14 | 28 |
| **Liabilities:** | | |
| Property, plant and equipment | (13) | (17) |
| Unrepatriated earnings of foreign subsidiaries | (9) | (5) |
| Intangibles | (5) | (5) |
| Gross deferred tax liabilities | (27) | (27) |
| Net deferred tax (liability) asset | $ (13) | $ 1 |

The following table summarizes the presentation of the Company's net deferred tax (liability) asset in the Consolidated Balance Sheets at December 31, 2018 and 2017:

| | 2018 | 2017 |
|---|---|---|
| **Assets:** | | |
| Long-term deferred income taxes (Other long-term assets) | $ — | $ 8 |
| **Liabilities:** | | |
| Long-term deferred income taxes | (13) | (7) |
| Net deferred tax (liability) asset | $ (13) | $ 1 |

As of December 31, 2018, the Company had a $133 valuation allowance for its net deferred tax assets that management believes, more likely than not, will not be realized. The Company's deferred tax assets include domestic and foreign net operating loss carryforwards and disallowed interest carryforwards. The domestic net operating loss carryforwards available are $297, which expire beginning in 2020. A valuation allowance of $74 has been provided against these attributes. The foreign net operating loss carryforwards and disallowed interest carryforwards available are $139. These attributes are related primarily to Germany which have an unlimited carryover and do not expire. A valuation allowance has been provided against these foreign tax attributes.

The Company conducts business globally and, as a result, certain of its subsidiaries file income tax returns in various foreign jurisdictions. In the normal course of business, the Company is subject to examinations by taxing authorities throughout the world, including major jurisdictions such as the Netherlands, Brazil, Canada, China, Germany, Italy, and the United Kingdom.

With minor exceptions, the Company's closed tax years for major jurisdictions are years prior to: 2010 for Netherlands, 2012 for Brazil, 2010 for Canada, 2013 for China, 2014 for Germany, 2007 for Italy, and 2014 for the United Kingdom.

The Company continuously reviews issues that are raised from ongoing examinations and open tax years to evaluate the adequacy of its liabilities. As the various taxing authorities continue with their audit/examination programs, The Company will adjust its reserves accordingly to reflect the current status and settlements.

***Unrecognized Tax Benefits***

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

| | 2018 | 2017 |
|---|---|---|
| Balance at beginning of year | $ 62 | $ 54 |
| Additions based on tax positions related to the current year | 3 | 3 |
| Additions for tax positions of prior years | 10 | — |
| Reductions for tax positions of prior years | (1) | (1) |
| Settlements | — | 1 |
| Foreign currency translation | (5) | 5 |
| Balance at end of year | $ 69 | $ 62 |

During the year ended December 31, 2018, the Company increased the amount of its unrecognized tax benefits, including its accrual for interest and penalties, by $9, primarily as a result of increases in the unrecognized tax benefit for various intercompany transactions, offset by releases of unrecognized tax benefits from negotiations with foreign jurisdictions and lapses of statute of limitations. During the years ended December 31, 2018, 2017 and 2016, the Company recognized approximately $3, $3 and $4, respectively, in interest and penalties. The Company had approximately $17 and $14 accrued for the payment of interest and penalties at December 31, 2018 and 2017, respectively.

$69 of unrecognized tax benefits, if recognized, would affect the effective tax rate; however, a portion of the unrecognized tax benefit would be in the form of a net operating loss carryforward, which would be subject to a full valuation allowance. The Company anticipates recognizing less than $25 of the total amount of the unrecognized tax benefits within the next 12 months as a result of lapses of statute of limitations, negotiations with foreign jurisdictions, settlements, and completion of audit examinations.

**16. Subsequent Events**

In March 2019, the Company experienced a network security incident that prevented access to certain information technology systems and data within its network. The Company took immediate steps to isolate the issue and has implemented its technical recovery plan. Since the time of the incident, the Company's manufacturing sites, which rely on different networks, have continued to operate safely and with limited interruption. The network security incident primarily impacted the Company's corporate functions. The Company is evaluating the impact of this incident, including assessing any available insurance coverage. The Company is currently unable to determine the financial statement impact of this incident, which may be material to the periods impacted.

See Note 1 for a discussion of the Parent's Chapter 11 Cases, the Support Agreement and the Credit Facilities.

**Report of Independent Registered Public Accounting Firm**

To Management of
Hexion International Cooperatief U.A.

We have audited the accompanying consolidated financial statements of Hexion International Cooperatief U.A. and its subsidiaries ("CO-OP"), which comprise the consolidated balance sheets as of December 31, 2018 and 2017, and the related consolidated statements of operations, deficit, comprehensive income (loss) and cash flows for each of the three years in the period ended December 31, 2018.

***Management's Responsibility for the Consolidated Financial Statements***

Management is responsible for the preparation and fair presentation of the consolidated financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

***Auditors' Responsibility***

Our responsibility is to express an opinion on the consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the CO-OP's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the CO-OP's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

***Opinion***

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Hexion International Cooperatief U.A. and its subsidiaries as of December 31, 2018 and 2017, and the results of their operations and their cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

***Emphasis of Matters***

The accompanying consolidated financial statements have been prepared assuming that the CO-OP will continue as a going concern. As discussed in Note 1 to the consolidated financial statements, the CO-OP has stated that its parent's financial condition and its projected operating results, the defaults under its parent's debt agreements, and the risks and uncertainties surrounding its parent's Chapter 11 proceedings raise substantial doubt about the CO-OP's ability to continue as a going concern. Management's evaluation of the events and conditions and management's plans regarding these matters are also described in Note 1. The consolidated financial statements do not include any adjustments that might result from the outcome of this uncertainty. Our opinion is not modified with respect to this matter.

As discussed in Note 2 to the consolidated financial statements, the CO-OP changed the manner in which it accounts for revenues from contracts with customers in 2018. Our opinion is not modified with respect to this matter.

/s/ PricewaterhouseCoopers LLP
Columbus, Ohio
April 11, 2019

**EXHIBIT 4.24**
EXECUTION VERSION

# AGREEMENT OF RESIGNATION, APPOINTMENT AND ACCEPTANCE

## FIRST-PRIORITY NOTES INDENTURES

**relating to**

**HEXION INC.**

**6.625% FIRST-PRIORITY SENIOR SECURED NOTES DUE 2020**
**10.00% FIRST-PRIORITY SENIOR SECURED NOTES DUE 2020**
**10.375% FIRST-PRIORITY SENIOR SECURED NOTES DUE 2022**

AGREEMENT OF RESIGNATION, APPOINTMENT AND ACCEPTANCE (this "Agreement"), dated as of April 9, 2019 by and among Hexion Inc. ("Hexion"), a corporation duly organized and existing under the laws of the State of New Jersey (as issuer and successor issuer for Hexion U.S. Finance Corp. and Hexion 2 U.S. Finance Corp., as applicable, the "Issuer"), and U.S. Bank National Association ("U.S. Bank" or "Successor Trustee"), a national banking association duly organized and existing under the laws of the United States of America, and Wilmington Trust, National Association ("Wilmington Trust" or "Predecessor Trustee"), a national banking association duly organized and existing under the laws of the United States of America.

RECITALS

WHEREAS, there are currently $1,550,000,000 aggregate principal amount of Hexion's 6.625% First-Priority Senior Secured Notes due 2020 (the "6.625% Notes") outstanding under an Indenture, dated as of March 14, 2012, as amended by the First Supplemental Indenture, dated as of January 31, 2013, and as further amended by the Second Supplemental Indenture, dated as of March 28, 2013, and as further amended by the Third Supplemental Indenture, dated as of December 2, 2014, and as further amended by the Fourth Supplemental Indenture, dated as of June 19, 2018 (as so amended, the "6.625% Notes Indenture"), by and among Hexion, as successor issuer, each of the guarantors party thereto, and Wilmington Trust, as trustee,

WHEREAS, there are currently $315,000,000 aggregate principal amount of Hexion's 10.00% First-Priority Senior Secured Notes due 2020 (the "10.00% Notes") outstanding under an Indenture, dated as of April 15, 2015, as amended by the First Supplemental Indenture, dated as of June 19, 2018 (as so amended, the "10.00% Notes Indenture"), by and among Hexion, as issuer, each of the guarantors party thereto, and Wilmington Trust, as trustee,

WHEREAS, there are currently $560,000,000 aggregate principal amount of Hexion's 10.375% First-Priority Senior Secured Notes due 2022 (the "10.375% Notes" and, together with the 6.625% Notes and the 10.00% Notes, the "First-Priority Notes") outstanding under an Indenture, dated as of February 8, 2017, as amended by the Issuer's Assumption Supplemental Indenture, dated as of February 8, 2017, and as further amended by the Second Supplemental Indenture, dated as of May 12, 2017 (the "Second Supplemental Indenture"), and as further amended by the Third Supplemental Indenture, dated as of June 19, 2018 (as so amended, the "10.375% Notes Indenture" and, together with the 6.625% Notes Indenture and the 10.00% Notes Indenture, the "Indentures," and each an "Indenture"), by and among Hexion, as issuer, each of the guarantors party thereto, and Wilmington Trust, as trustee,

WHEREAS, the Issuer previously appointed Wilmington Trust as (a) the trustee (the "Trustee"), registrar (the "Registrar"), paying agent (the "Paying Agent") and custodian with respect to the global notes issued under the Indentures (the "Notes Custodian"), under each of the Indentures and (b) collateral agent for the First Priority Notes (the "Collateral Agent") or senior priority agent for the First-Priority Notes ("Senior Priority Agent") under the Collateral Agreement, dated and effective as of March 28, 2013 (as amended or supplemented, the "Collateral Agreement"), the First Lien Intercreditor Agreement, dated as of April 15, 2015 (as amended or supplemented, the "First Lien Intercreditor Agreement"), the ABL Intercreditor Agreement dated as of March 28, 2013, as supplemented by the Joinder Agreement, dated April 15, 2015 and as further supplemented by the Second Joinder Agreement, dated February 8, 2017 (as so supplemented, the "ABL Intercreditor Agreement"), the Amended and Restated Intercreditor Agreement, dated as of January 31, 2013 (as supplemented by the First Joinder, the Second Joinder, the Third Joinder, the Fourth Joinder, and the Fifth Joinder as those term are defined below, and as the same may have been further amended, restated, supplemented or otherwise modified from time to time, the "Second Lien Intercreditor Agreement"), among JPMorgan Chase Bank, N.A., as intercreditor agent, Wilmington Trust Company, as trustee and as collateral agent (the "Second Lien Trustee") and as second-priority agent under the Second Lien Intercreditor Agreement, Wilmington Trust (as successor by merger to Wilmington Trust FSB), as trustee and as senior priority agent under the Second Lien Intercreditor Agreement for the holders of the notes (the "1.5 Lien Notes") issued under an Indenture, dated as of February 8, 2017, Wilmington Trust, as senior priority agent under the Second Lien Intercreditor Agreement for the holders of the 6.625% Notes, Hexion LLC ("Holdings"), the Issuer, and each subsidiary of the Issuer party thereto, as such Second Lien Intercreditor Agreement was supplemented pursuant to (a) that certain Joinder and Supplement to Intercreditor Agreement, dated as of March 28, 2013 (the "First Joinder"), among JPMorgan Chase Bank, N.A. (the "ABL Credit Agreement Agent"), as senior priority agent for the ABL Secured Parties (as defined in the First Joinder), JPMorgan Chase Bank, N.A., as intercreditor agent (the "Intercreditor Agent"), and the other parties thereto, (b) that certain Second Joinder and Supplement to Intercreditor Agreement, dated as of April 15, 2015 (the "Second Joinder"), among Wilmington Trust, as trustee for the holders of the 10.00% Notes, and the other parties thereto, (c) that certain Third Joinder and Supplement to Intercreditor Agreement, dated as of February 8, 2017 (the "Third Joinder"), among Wilmington Trust, as trustee for holders of the 10.375% Notes, and the other parties thereto, (d) that certain Fourth Joinder and Supplement to Intercreditor Agreement, dated as of February 8, 2017 (the "Fourth Joinder"), among Wilmington Trust, as trustee for the holders of the 1.5 Lien Notes, and the other parties thereto, and (e) that certain Fifth Joinder and Supplement to the Second Lien Intercreditor Agreement, dated as of May 12, 2017 (the "Fifth Joinder"), among Wilmington Trust, as Senior Priority Agent under the Second Lien Intercreditor Agreement for the holders of the 10.375% Notes (as originally issued and as issued pursuant to that certain Second Supplemental Indenture), the Intercreditor Agent, the ABL Credit Agreement Agent (as senior priority agent under the Second Lien Intercreditor Agreement for the ABL Secured Parties), Wilmington Trust Company, as second-priority agent under the Second Lien Intercreditor Agreement, Wilmington Trust, as trustee and Senior Priority Agent for the holders of the 6.625% Notes, the 10.00% Notes Trustee, and as trustee and senior priority agent for the 1.5 Lien Notes Trustee, and Holdings, the Issuer, and certain subsidiaries of the Issuer, and the Amended and Restated Intercreditor Agreement, dated as of February 8, 2017 (as amended or supplemented, the "A&R Intercreditor Agreement"), among JPMorgan Chase Bank, N.A., as intercreditor agent, Wilmington Trust Company, as trustee and as collateral agent for the holders of the 1.5 Lien Notes, JPMCB as senior-priority agent for the secured parties under the ABL Facility (as defined therein), Wilmington Trust as senior-priority agent for the holders of the Senior Priority Notes issued under the Indentures, Holdings, the Company and each subsidiary of the Issuer party thereto,

WHEREAS, the First Lien Intercreditor Agreement, the ABL Intercreditor Agreement, the and Second Lien Intercreditor Agreement and the A&R Intercreditor Agreement are referred to as the "Intercreditor Agreements,"

WHEREAS, Section 2.04(c) of each Indenture provides that the Registrar and Paying Agent may resign at any time upon written notice to the Issuer and the Predecessor Trustee,

WHEREAS, Section 7.08(a) of each Indenture provides that Predecessor Trustee may resign at any time upon written notice to the Issuer,

WHEREAS, by written notice dated April 5, 2019 to the Issuer and the Trustee, Wilmington Trust resigned as Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent under each Indenture, the Collateral Agreement, and the Intercreditor Agreements,

WHEREAS, Section 7.08(c) of each Indenture provides that any successor Trustee appointed in accordance with the applicable Indenture shall deliver a written acceptance of such appointment to the Issuer and to its predecessor Trustee, and thereupon the resignation of the predecessor Trustee shall become effective and such successor Trustee shall have all rights, powers, and duties of the predecessor Trustee under the Indenture,

WHEREAS, Section 11.11(g) of the 10.375% Indenture and Section 6.06(d) of the Collateral Agreement provide that in acting as Collateral Agent, the Collateral Agent may rely upon and enforce each and all of the rights, protections, privileges, powers, immunities, indemnities and benefits of the Trustee under Article 7 of the Indenture,

WHEREAS, Hexion desires to appoint Successor Trustee as Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent to succeed Wilmington Trust in such capacities under the Indentures, the Collateral Agreement, and the Intercreditor Agreements, and

WHEREAS, Successor Trustee is willing to accept such appointments as successor Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements.

NOW, THEREFORE, Hexion, Wilmington Trust and U.S. Bank, for and in consideration of the premises and of other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, hereby consent and agree as follows:

1. PREDECESSOR TRUSTEE

1.1 Predecessor Trustee hereby represents and warrants to Successor Trustee that:

(a) Predecessor Trustee duly authorized, executed and delivered the Indentures. Assuming each such document was validly and lawfully executed and delivered by the Issuer and is in full force and effect as to such Issuer, each such document remains in full force and effect as to Predecessor Trustee.

(b) No covenant or condition contained in any of the Indentures, the Collateral Agreement, and the Intercreditor Agreements has been waived by Predecessor Trustee or, to the knowledge of responsible officers of Predecessor Trustee’s corporate trust department, by the registered holders of the percentage in aggregate principal amount of the First-Priority Notes required by the applicable Indenture to effect any such waiver

(c) To the knowledge of responsible officers of Predecessor Trustee’s corporate trust department, there is no action, suit or proceeding pending or threatened against Predecessor Trustee before any court or any governmental authority arising out of any

act or omission of Predecessor Trustee as Trustee under the Indentures, the Collateral Agreement, and the Intercreditor Agreements.

(d) As of the Effective Date (as defined below) of this Agreement, Predecessor Trustee will hold no moneys or property under any Indenture or any other Collateral in its duties as Collateral Agent.

(e) Pursuant to Section 2.03 of the 6.625% Notes Indenture, Predecessor Trustee has duly authenticated and delivered $1,550,000,000 aggregate principal amount of First-Priority Notes, $1,550,000,000 in aggregate principal amount of which are outstanding as of the Effective Date hereof.

(f) The registers in which Predecessor Trustee has registered and transferred registered 6.625% Notes accurately reflect the amount of 6.625% Notes issued and outstanding and the amounts payable thereon.

(g) Pursuant to Section 2.03 of the 10.00% Notes Indenture, Predecessor Trustee has duly authenticated and delivered $315,000,000 aggregate principal amount of First-Priority Notes, $315,000,000 in aggregate principal amount of which are outstanding as of the Effective Date hereof.

(h) The registers in which Predecessor Trustee has registered and transferred registered 10.00% Notes accurately reflect the amount of 10.00% Notes issued and outstanding and the amounts payable thereon.

(i) Pursuant to Section 2.03 of the 10.375% Notes Indenture, Predecessor Trustee has duly authenticated and delivered $560,000,000 aggregate principal amount of First-Priority Notes, $560,000,000 in aggregate principal amount of which are outstanding as of the Effective Date hereof.

(j) The registers in which Predecessor Trustee has registered and transferred registered 10.375% Notes accurately reflect the amount of 10.375% Notes issued and outstanding and the amounts payable thereon.

(k) Each person who so authenticated the First-Priority Notes was duly elected, qualified and acting as an officer or authorized signatory of Predecessor Trustee and empowered to authenticate the First-Priority Notes at the respective times of such authentication and the signature of such person or persons appearing on such First-Priority Notes is each such person’s genuine signature.

(l) All interest due on the 6.625% Notes has been paid to October 15, 2018.

(m) All interest due on the 10.00% Notes has been paid to October 15, 2018.

(n) All interest due on the 10.375% Notes has been paid to February 1, 2019.

(o) This Agreement has been duly authorized, executed and delivered on behalf of Predecessor Trustee and constitutes its legal, valid and binding obligation, enforceable

in accordance with its terms, except as such enforcement may be limited by general principles of equity.

1.2 Predecessor Trustee hereby assigns, transfers, delivers and confirms to Successor Trustee all rights, title and interest of Predecessor Trustee in and to the trust under the Indentures and all the rights, powers, and duties of the Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements, including, without limitation, all of its rights to, and all of its security interests in and liens upon, the collateral, if any, and all other rights of Predecessor Trustee (in the foregoing capacities) with respect to the collateral, if any, pursuant to any and all transaction documents relating to the Indentures, the Collateral Agreement, the Intercreditor Agreements, or the First-Priority Notes. Predecessor Trustee, at the expense of the Issuer, shall execute and deliver all documents and instruments as may be reasonably requested by the Issuer or Successor Trustee so as to fully and certainly vest and confirm in Successor Trustee all the rights, powers, privileges and duties of Predecessor Trustee under the Indentures, the Collateral Agreement, and the Intercreditor Agreements hereby assigned, transferred, delivered and confirmed to Successor Trustee as the Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent and Senior Priority Agent, with respect to the First-Priority Notes.

1.3 Predecessor Trustee shall deliver to Successor Trustee, as of or promptly after the Effective Date hereof, all of the documents listed on Exhibit A to the extent available.

2. ISSUER

2.1 Hexion hereby accepts the resignation of Predecessor Trustee as the Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements.

2.2 Hexion hereby appoints Successor Trustee as the Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements to succeed to, and hereby vests Successor Trustee with, all the rights, powers, and duties of Predecessor Trustee under the Indentures, the Collateral Agreement, and the Intercreditor Agreements.

2.3 Hexion represents and warrants to Predecessor Trustee and Successor Trustee that Hexion is a corporation duly and validly organized and existing pursuant to the laws of the State of New Jersey.

2.4 With respect to the Indentures, the Collateral Agreement, and the Intercreditor Agreements, Hexion hereby represents and warrants to Predecessor Trustee and Successor Trustee that:

a. Each Indenture is listed on Exhibit A hereto. None of the Indentures has been amended or supplemented except as set forth therein.

b. Each Indenture, the Collateral Agreement, and each Intercreditor Agreement was validly and lawfully executed and delivered by it and is in full force and effect and the First-Priority Notes issued under the Indentures were validly issued by the Company.

c. No covenant or condition contained in any Indenture, the Collateral Agreement, or any Intercreditor Agreement has been waived by it or the guarantors party thereto or,

to its knowledge, by the registered holders of the percentage in aggregate principal amount of the applicable First-Priority Notes required by any Indenture to effect any such waiver.

d. There is no action, suit or proceeding pending or, to its knowledge, threatened against it or the guarantors party to any Indenture, the Collateral Agreement, or any Intercreditor Agreement before any court or any governmental authority arising out of its actions or omissions or the actions or omissions of any guarantors under any Indenture, the Collateral Agreement, or any Intercreditor Agreement.

e. This Agreement has been duly authorized, executed and delivered on its behalf and constitutes its legal, valid and binding obligation, enforceable in accordance with its terms, except as such enforcement may be limited by bankruptcy, insolvency, reorganization, moratorium, liquidation, fraudulent transfer, fraudulent conveyance or other similar laws affecting the enforcement of creditors’ rights generally, and by general principles of equity.

2.5 Hexion affirms that all liens on and security interests in the Collateral that it granted to Predecessor Trustee under the Indentures and the Collateral Agreement are in effect and hereby reaffirmed by Hexion.

2.6 In connection with maintaining the validity, perfection and priority of the liens and security interests afforded the Collateral Agent under the Indentures and the Collateral Agreement, Hexion agrees to execute, acknowledge, deliver and cause to be duly filed (i) all Uniform Commercial Code financing statements and U.S. Patent and Trademark Office filings necessary to evidence and assure, preserve, protect and perfect the security interest or lien that it granted in favor of Successor Trustee, in its capacity as successor Collateral Agent, and (ii) such other instruments and documents necessary to evidence and assure, preserve, protect and perfect such security interest or lien in favor of Successor Trustee, in its capacity as successor Collateral Agent, as promptly as practicable as may be reasonably requested by Successor Trustee following the Effective Date. All such filings shall be the responsibility of and made at the sole expense of Hexion.

2.7 Nothing in this Agreement shall operate as or be deemed a waiver by Hexion of any right, power, privilege, claim or argument under or in connection with the Indentures, the Collateral Agreement or applicable law or an admission in connection therewith, and all rights, powers, privileges, claims or arguments of Hexion in connection with the Indentures and the Collateral Agreement are expressly reserved in all respects.

3. SUCCESSOR TRUSTEE

3.1 Successor Trustee hereby represents and warrants to Predecessor Trustee and to the Issuer that:

a. Successor Trustee is not disqualified under the provisions of Section 7.10 of any Indenture and is eligible under the provisions of Section 7.10 of each Indenture to act as Trustee under such Indenture.

b. This Agreement has been duly authorized, executed and delivered on behalf of Successor Trustee and constitutes its legal, valid and binding obligation, enforceable in accordance with its terms.

3.2 Successor Trustee hereby accepts its appointment as successor Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements and accepts the rights, powers, and duties of Predecessor Trustee as the Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements, upon the terms and conditions set forth therein.

3.3 References in the Indenture to "corporate trust office" or other similar terms shall be deemed to refer to the designated corporate trust office of Successor Trustee, which is presently located at 60 Livingston Avenue, St. Paul, Minnesota 55107.

3.4 Promptly after the Effective Date of this Agreement, the Company shall cause a notice, substantially in the form of Exhibit B annexed hereto, to be sent to holders of the First-Priority Notes.

4. MISCELLANEOUS

4.1 Except as otherwise expressly provided herein or unless the context otherwise requires, all terms used herein which are defined in the Indentures shall have the meanings assigned to them in the Indentures.

4.2 This Agreement, the resignation of Wilmington Trust in its capacity as Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements, the Issuer's appointment, and U.S. Bank's acceptance of its appointment as successor Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent, and Senior Priority Agent under the Indentures, the Collateral Agreement, and the Intercreditor Agreements shall be effective as of the opening of business on April 10, 2019 (the "Effective Date"); provided, however, that the resignation of the Predecessor Trustee as Registrar, Paying Agent and Notes Custodian and appointment of Successor Trustee as Registrar, Paying Agent and Notes Custodian shall be effective as of the close of business ten (10) business days after the Effective Date.

4.3 This Agreement does not constitute a waiver by any of the parties hereto of any obligation or liability which Predecessor Trustee may have incurred in connection with its serving as the Trustee, Paying Agent, Registrar, Notes Custodian, Collateral Agent or Senior Priority Agent under any Indenture, the Collateral Agreement, or any Intercreditor Agreement, or an assumption by Successor Trustee of any liability of Predecessor Trustee arising out of a breach by Predecessor Trustee prior to its resignation of its duties under the Indentures, the Collateral Agreement, and the Intercreditor Agreements. The parties hereto agree that the Successor Trustee shall bear no responsibility or liability for (i) any actions taken or omitted to be taken by Predecessor Trustee while it served as the Predecessor Trustee, Paying Agent, Registrar, Notes Custodian, Collateral Agent or Senior Priority Agent under an Indenture or a Collateral Agreement or (ii) any event, circumstance, condition or action existing prior to the Effective Date, with respect to the Collateral, the Indentures (other than actions of Successor Trustee that precede the Effective Date), and the Intercreditor Agreements, or the transactions contemplated thereby. The parties hereto agree that Wilmington Trust, in its individual capacity and in its capacity as Predecessor Trustee, shall bear no responsibility or liability for any actions taken or omitted to be taken by U.S. Bank as Successor Trustee, Paying Agent, Registrar, Notes Custodian, Collateral Agent, or Senior Priority Agent under any of the Indentures, the Collateral Agreement, or any of the Intercreditor Agreements or for any event, circumstance, condition or action existing on or after the Effective Date, with respect to the Collateral, the Indentures, the Collateral Agreement, the Intercreditor Agreements or the transactions contemplated thereby.

4.4 Notwithstanding the resignation of Predecessor Trustee effected hereby, Hexion shall remain obligated under Section 7.07 of the applicable Indenture and Section 6.06 of the Collateral Agreement to compensate, reimburse and indemnify Predecessor Trustee for its prior trusteeships and collateral agencies under the Indentures, the Collateral Agreement, and the Intercreditor Agreements, and to hold Predecessor Trustee (a) in each of its capacities as Trustee, Paying Agent, Notes Custodian and Registrar, harmless against any loss, liability or expense incurred without willful misconduct, negligence or bad faith on the part of Predecessor Trustee, and (b) in each of its capacities as Collateral Agent and Senior Priority Agent, harmless against any loss, liability or expense incurred without gross negligence or willful misconduct on the part of Predecessor Trustee, and arising out of or in connection with the acceptance or administration of the trust evidenced by the Indentures or relating to the collateral, which obligations shall survive the execution hereof.

4.5 Hexion acknowledges that Predecessor Trustee (and its agents and counsel) have accrued but unpaid (i) compensation for services rendered in one or more of its capacities as Predecessor Trustee, Paying Agent, Registrar, Notes Custodian, Collateral Agent, and Senior Priority Agent (or as agent or counsel to the Predecessor Trustee in any such capacities), including but not limited to with respect to the drafting and negotiation of this Agreement, and (ii) disbursements, advances and expenses incurred or made by Predecessor Trustee (and its agents and counsel) for which it remains obligated under Section 7.07 of the applicable Indenture and Section 6.06 of the Collateral Agreement. This Agreement does not waive or assign Predecessor Trustee's right to compensation, reimbursement of expenses, advancement or indemnity to which it is or may be entitled pursuant to any of the Indentures or Intercreditor Agreements.

4.6 Notwithstanding any other provision of this Agreement, the Predecessor Trustee's charging lien and priority of payment rights are reserved to the extent necessary for the Predecessor Trustee to obtain payment of such compensation or reimbursement of such disbursements, advances and expenses described in Section 4.5. In addition, the Successor Trustee shall exercise its priority of payment, charging lien rights, and any adequate protection rights, to obtain payment of the Predecessor Trustee's outstanding fees and expenses described in Section 4.5.

4.7 Hexion acknowledges and agrees that the indemnities provided for under Section 7.07 of the applicable Indenture and Section 6.06 of the Collateral Agreement extend to the Successor Trustee's acceptance of its duties as Trustee, Registrar, Paying Agent, Notes Custodian, Collateral Agent and Senior Priority Agent hereunder, and Hexion shall, to the fullest extent provided in the Indentures and in accordance therewith, indemnify the Successor Trustee and hold the Successor Trustee (a) in each of its capacities as Trustee, Paying Agent, Notes Custodian and Registrar, harmless against any loss, liability or expense incurred without willful misconduct, negligence or bad faith on the part of Successor Trustee, and (b) in each of its capacities as Collateral Agent and Senior Priority Agent, harmless against any loss, liability or expense incurred without gross negligence or willful misconduct on the part of Successor Trustee, in each case, for any event, circumstance, condition or action with respect to the Collateral, the Indentures, the Collateral Agreement, and the Intercreditor Agreements, or the transactions contemplated thereby, as applicable.

4.8 The parties hereto agree, at the Issuer's expense, to take reasonable action to confirm, evidence and perfect Successor Trustee's rights in, or with respect to, the Collateral, pursuant to the Indentures and the Collateral Agreement and all transaction documents relating thereto.

4.9 This Agreement shall be governed by and construed in accordance with the laws of the State of New York, without regard to conflicts of laws principles thereof.

4.10 This Agreement may be executed in any number of counterparts each of which shall be an original, but such counterparts shall together constitute but one and the same instrument. The exchange of copies of this Agreement and of signature pages by facsimile or PDF transmission by the parties hereto shall constitute (i) effective execution and delivery of this Agreement as to the parties hereto and may be used in lieu of the original Agreement for all purposes and (ii) compliance by the respective parties hereto with the notice requirements of Section 13.02 of the 6.625% Notes Indenture and Section 12.02 of the 10.00% Notes

Indenture and 10.375% Notes Indenture and the execution and delivery requirements of Sections 2.04 and 7.08 of the Indentures. Signatures of the parties hereto transmitted by facsimile or PDF shall be deemed to be their original signatures for all purposes.

4.11 The Issuer acknowledges that, in accordance with Section 326 of the USA Patriot Act, Successor Trustee, in order to help fight the funding of terrorism and prevent money laundering, is required to obtain, verify and record information that identifies each person or legal entity that establishes a relationship or opens an account with Successor Trustee. The Issuer agrees that it will provide Successor Trustee with such information as it may reasonably request in order for Successor Trustee to satisfy the requirements of the USA Patriot Act.

4.12 This Agreement sets forth the entire agreement of the parties with respect to its subject matter, and supersedes and replaces any and all prior contemporaneous warranties, representations or agreements, whether oral or written, with respect to the subject matter of this Agreement other than those contained in this Agreement.

4.13 Unless otherwise provided herein, all notices, requests and other communications to any party hereunder shall be in writing (including facsimile and electronic transmission in PDF format) and shall be given to such party, addressed to it, as set forth below:

If to the Issuer:

Hexion Inc.
180 East Broad St.
Columbus, OH 43215
Attention: Douglas A. Johns
Facsimile: (614) 225-3354

If to Predecessor Trustee:

Wilmington Trust, National Association
Institutional Client Services, Corporate Default Team
1100 North Market Street, Wilmington, DE 19890-1605
Attention: Rita Marie Ritrovato, Vice President
Email: rmritrovato@wilmingtontrust.com

With a copy to:

Kurt F. Gwynne, Esquire
Reed Smith LLP
1201 N. Market Street
Suite 1500
Wilmington, DE 19801
Email: kgwynne@reedsmith.com

If to Successor Trustee:

U.S. Bank National Association
Global Corporate Trust
60 Livingston Avenue
St. Paul; Minnesota 55107
Attention: Barry Ihrke, Vice President
Email: barry.irhke@usbank.com

[Signature page to follow]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement of Appointment and Acceptance to be duly executed, all as of the day and year first above written.

HEXION INC.,
as Issuer

By: /s/ Douglas A. Johns
Name:Douglas A. Johns
Title:Executive Vice President, General Counsel & Secretary

[Signature Page to Agreement of Resignation, Appointment and Acceptance]

WILMINGTON TRUST, NATIONAL ASSOCIATION,
as Predecessor Trustee and Resigning Paying Agent, Resigning Registrar, Resigning Notes Custodian, Resigning Collateral Agent, and Resigning Senior Priority Agent

By: /s/ Rita Marie Ritrovato
Name:Rita Marie Ritrovato
Title:Vice President, Corporate Trust

U.S. Bank National Association,
as Successor Trustee and Successor Paying Agent, Successor Registrar, Successor Notes Custodian, Successor Collateral Agent, and Successor Senior Priority Agent

By: /s/ Barry Ihrke
Name:Barry Ihrke
Title:Vice President

[Signature Page to Agreement of Resignation, Appointment and Acceptance]

**EXHIBIT A**

(Documents, to the extent available, to be delivered to Successor Trustee)[1]

1. Executed copy of each Indenture and amendment and supplemental indenture thereto.

2. Executed copies of Indentures, the Collateral Agreement, and the Intercreditor Agreements and any UCC-1 or other financing statements, mortgages and intellectual property security agreements in favor of Predecessor Trustee.[2]

3. Copy of the most recent compliance certificate, if any, delivered pursuant to Section 4.09 of each Indenture.

4. Most recent certified list of Holders, including certificate detail and all "stop transfers" and the reason for such "stop transfers" (or, alternatively, if there are a substantial number of registered Holders, the computer tape reflecting the identity of such Holders), under the Indenture.

5. Copies of any official notices sent by Predecessor Trustee to Holders of any of the First-Priority Notes pursuant to the terms of an Indenture during the past twelve months.

6. Copies of any notices, certificates, or other documents sent by any Holder to Predecessor Trustee pursuant to the terms of the Indentures; *provided*, *however*, that nothing herein shall require Predecessor Trustee to conduct a search for electronic mail communications or correspondence.

7. Any global security in the possession of Wilmington Trust.

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[1] Other than with respect to, if any, global First-Priority Notes and physical collateral in Predecessor Trustee's possession, all documents and other deliverables may be delivered in electronic format.

[2] US Bank needs to receive copies of filed UCC financing statements in favor of Wilmington, together with executed copies of any other security documents. Please also send executed copies of all the Intercreditor Agreements and related joinders/supplements.

## EXHIBIT B

[LETTERHEAD OF SUCCESSOR TRUSTEE]

**NOTICE OF RESIGNATION OF TRUSTEE, AND APPOINTMENT AND ACCEPTANCE OF SUCCESSOR TRUSTEE**

**TO HOLDERS OF**

**HEXION INC.**
**6.625% FIRST-PRIORITY SENIOR SECURED NOTES DUE 2020**

**CUSIP Nos. 428302 AA1; 428302 AD5**[1]

**HEXION INC.**
**10.00% FIRST-PRIORITY SENIOR SECURED NOTES DUE 2020**

**CUSIP No. 42829L AC8**[1]

**HEXION INC.**
**10.375% FIRST-PRIORITY SENIOR SECURED NOTES DUE 2022**

**CUSIP No. 42829L AD6; U4321LAB0**[1]

**NOTICE OF RESIGNATION, APPOINTMENT, AND ACCEPTANCE**

Reference is made to the following indentures (collectively, the "Indentures"):[2]

(i) the Indenture, dated as of March 14, 2012, by and among Hexion U.S. Finance Corp., as issuer ("HFC"),[3] the guarantors party thereto, and Wilmington Trust, National Association, as trustee (as amended or supplemented, pursuant to which HFC issued $1,550,000,000 of 6.625% First-Priority Senior Secured Notes due 2020;

(ii) the Indenture, dated as of April 15, 2015, by and among Hexion Inc., as issuer ("Hexion"), the guarantors party thereto, and Wilmington Trust, National Association, as trustee (as amended or supplemented), pursuant to which Hexion issued $315,000,000 of 10.00% First-Priority Senior Secured Notes due 2020; and

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[1] No representation is made as to the correctness of the CUSIP numbers either as printed on the notes or as contained in this Notice.

[2] Capitalized terms have the meanings ascribed to such terms in the Indentures.

[3] Hexion (defined below) is the successor by merger to HFC.

(iii) the Indenture, dated as of February 8, 2017, by and among Hexion, as issuer, the guarantors party thereto, and Wilmington Trust, National Association, as trustee (as amended or supplemented), pursuant to which Hexion issued $560,000,000 of 10.375% First-Priority Senior Secured Notes due 2022.

You are hereby notified that pursuant to Sections 2.04(c) and 7.08(a) of the Indentures, and related documents, Wilmington Trust, National Association ("Wilmington Trust") has resigned as Trustee, Paying Agent, Registrar, the custodian with respect to the global notes issued under the Indentures (the "Notes Custodian"), Collateral Agent and Senior Priority Agent. The Issuer has accepted Wilmington Trust's resignation and appointed U.S. Bank National Association as the successor Trustee, successor Paying Agent, successor Registrar, successor Notes Custodian, successor Collateral Agent and successor Senior Priority Agent under the Indentures and the related documents. The address of the corporate trust office of U.S. Bank National Association is: 60 Livingston Avenue, St. Paul, Minnesota 55107.

Wilmington Trust's resignation as Trustee, and the appointment and acceptance of U.S. Bank National Association as the successor Trustee, successor Collateral Agent and successor Senior Priority Agent, became effective as of the opening of business on April 10, 2019. The resignation of Wilmington Trust as Registrar, Paying Agent and Notes Custodian and appointment of U.S. Bank National Association as Registrar, Paying Agent, and Notes Custodian shall be effective as of the opening of business on April 24, 2019.

**U.S. Bank National Association,** **[Date]**
As Successor Trustee

**Exhibit 10.101**

**MOMENTIVE UV COATINGS (SHANGHAI) CO., LTD.**

**FINANCIAL STATEMENTS AND**
**REPORT OF THE AUDITORS**
**FOR THE YEAR ENDED 31 DECEMBER 2018**

# Audit Report

SAAF (2018) AR.NO.070

**TO THE BOARD OF DIRECTORS OF**
**MOMENTIVE UV COATINGS (SHANGHAI) CO., LTD.**

We have audited the accompanying financial statements of Momentive UV Coatings (Shanghai) Co., Ltd. (hereinafter referred to as "the Company"),including the balance sheet as of 31 December 2018 and the income statement, cash flow statement for the year then ended as well as notes to the financial statements.

## 1. Responsibility of the Company's management on these financial statements

Management is responsible for the preparation of these financial statements. This responsibility includes: (1) these financial statements are prepared in accordance with Accounting Standards for Business Enterprises and the Accounting System for Business Enterprises, and present fairly. (2) designing, implementing and maintaining internal control relevant to the preparation of the financial statements that are free from material misstatement, whether due to fraud or error.

## 2. Responsibility of certified public accountants

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in United States of America. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, we consider the internal control relevant to the preparation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

## 3. Auditor’s opinion

In our opinion, the financial statements of Momentive UV Coatings (Shanghai) Co., Ltd. have been prepared in accordance with U.S. Generally accepted accounting principles, and present fairly, in all material respects, the financial position of the Company as of 31 December 2018, and the results of its operations and cash flows for the year then ended.

/s/ Shanghai Asahi Accounting Firm Chinese CPA : Li Can

Chinese CPA : Zhu Jun

Shanghai P. R. China 1 March 2019

**BALANCE SHEET ( to be continued)**

**AS AT 31 DECEMBER 2018**

(All amounts in Renminbi ("RMB") Yuan unless otherwise stated)

| ASSETS | Notes | 31 December 2018 | 31 December 2017 |
|---|---|---|---|
| **Current assets** | | | |
| Cash and cash equivalent | 4.1 | 14,526,068.46 | 17,028,827.70 |
| Notes receivable | 4.2 | 55,224,664.21 | 34,706,282.28 |
| Accounts receivable | 2.6, 4.3 | 100,989,258.28 | 82,854,248.92 |
| Other receivables | 2.6 | 2,400.00 | 2,400.00 |
| Inventories | 2.7, 4.4 | 24,056,196.83 | 15,844,695.65 |
| Prepaid expenses | | — | — |
| **Total current assets** | | **194,798,587.78** | **150,436,454.55** |
| **Fixed assets** | | | |
| Fixed assets - cost | 2.8, 4.5 | 6,702,353.18 | 6,652,902.87 |
| Less: Accumulated depreciation | 2.8, 4.5 | 6,289,685.26 | 6,105,199.31 |
| Fixed assets - net | | 412,667.92 | 547,703.56 |
| Less: Provision for impairment of fixed assets | | — | — |
| Fixed assets - net book value | | 412,667.92 | 547,703.56 |
| **Other assets** | | | |
| Long-term prepaid expenses | 2.9 | 333,807.92 | 482,063.89 |
| Deferred tax - debit | | 48,331.19 | 126,654.49 |
| **TOTAL ASSETS** | | **195,593,394.81** | **151,592,876.49** |

The accompanying notes form an integral part of these financial statements.

**BALANCE SHEET (continued)**
**AS AT 31 DECEMBER 2018**
(All amounts in Renminbi ("RMB") Yuan unless otherwise stated)

| LIABILITIES AND OWNERS' EQUITY | Notes | 31 DECEMBER 2018 | 31 DECEMBER 2017 |
|---|---|---|---|
| **Current liabilities** | | | |
| Short-term bank borrowings | | 15,000,000.00 | 15,000,000.00 |
| Accounts payable | 4.6 | 43,452,904.69 | 34,208,095.93 |
| Salary payable | | 1,240,000.00 | 650,000.00 |
| Tax payable | 4.7 | 5,177,523.14 | 3,672,341.93 |
| Dividend payable | | 9,000,000.00 | 9,000,000.00 |
| Other payable | 4.8 | 1,210,510.58 | 1,513,164.86 |
| Accrued expenses | | 23,925.00 | — |
| **Total current liabilities** | | **75,104,863.41** | **64,043,602.72** |
| **Total liabilities** | | **75,104,863.41** | **64,043,602.72** |
| **Owners' equity** | | | |
| Paid-in capital | 4.9 | 4,138,525.00 | 4,138,525.00 |
| Surplus reserve | 4.10 | 2,100,000.00 | 2,100,000.00 |
| Undistributed profits | 4.11 | 114,250,006.40 | 81,310,748.77 |
| **Total owners' equity** | | **120,488,531.40** | **87,549,273.77** |
| **TOTAL LIABILITIES AND OWNERS' EQUITY** | | **195,593,394.81** | **151,592,876.49** |

The accompanying notes form an integral part of these financial statements.

**INCOME STATEMENT**
**FOR THE YEAR ENDED 31 DECEMBER 2018**
(All amounts in Renminbi (“RMB”) Yuan unless otherwise stated)

| | Notes | Year 2018 | Year 2017 | Year 2016 |
|---|---|---|---|---|
| Revenues from main operations | 2.10<br>4.12 | **359,147,478.31** | **344,034,346.69** | **334,219,891.26** |
| Less: Costs main operations | 4.12 | 277,961,210.71 | 246,795,208.60 | 233,818,221.10 |
| Surcharges for main operations | | 538,143.62 | 845,169.28 | 979,176.41 |
| **Profit from main operations** | | **80,648,123.98** | **96,393,968.81** | **99,422,493.75** |
| Less: Selling and distribution expenses | 4.13 | 4,737,243.94 | 3,311,996.76 | 4,128,783.69 |
| Other operation income | | 1,032.27 | 256.41 | 388.89 |
| General and administrative expenses | 4.14 | 13,187,238.71 | 42,741,332.18 | 17,416,177.10 |
| Finance (income) expenses - net | 4.15 | (1,243,283.24) | 2,964,599.83 | (2,695,350.25) |
| **Operating profit** | | **63,967,956.84** | **47,376,296.45** | **80,573,272.10** |
| Non-operating income | 4.16 | 65,243.83 | 273,121.29 | 191,919.03 |
| Non-operating expense | 4.16 | — | — | 2,046.15 |
| **Income before income tax** | | **64,033,200.67** | **47,649,417.74** | **80,763,144.98** |
| Less: Income taxes | 2.11 | 16,093,943.04 | 11,959,285.40 | 20,237,953.84 |
| **Net income** | | **47,939,257.63** | **35,690,132.34** | **60,525,191.14** |

The accompanying notes form an integral part of these financial statements.

**CASHFLOW STATEMENT**
**FOR THE YEAR ENDED 31 DECEMBER 2018**
(All amounts in Renminbi ("RMB") Yuan unless otherwise stated)

| **1. Cash flows from operating activities** | **Year 2018** | **Year 2017** | **Year 2016** |
|---|---|---|---|
| Cash received from sales of goods or rendering of services | 378,277,855.09 | 403,969,468.06 | 406,222,940.09 |
| Cash received relating to other operating activities | 65,243.83 | 273,121.29 | 191,919.03 |
| **Sub-total of cash inflows** | **378,343,098.92** | **404,242,589.35** | **406,414,859.12** |
| Cash paid for goods and services | (324,252,690.58) | (305,120,883.87) | (277,618,516.29) |
| Cash paid to and on behalf of employees | (8,201,814.17) | (8,168,074.26) | (7,989,408.44) |
| Payments of taxes and levies | (27,075,279.16) | (32,730,895.84) | (47,133,802.28) |
| Cash paid relating to other operating activities | (7,322,923.24) | (37,162,567.98) | (5,730,450.09) |
| **Sub-total of cash outflows** | **(366,852,707.15)** | **(383,182,421.95)** | **(338,472,177.10)** |
| **Net cash flows from operating activities** | **11,490,391.77** | **21,060,167.40** | **67,942,682.02** |
| **2. Cash flows from investing activities** | | | |
| Intangible assets and other long-term assets | — | — | 23,398.06 |
| **Sub-total of cash inflows** | **—** | **—** | **23,398.06** |
| Cash paid to acquire fixed assets, intangible assets and other long-term assets | (202,116.81) | (595,246.68) | (212,142.73) |
| **Sub-total of cash outflows** | **(202,116.81)** | **(595,246.68)** | **(212,142.73)** |
| **Net cash flows used in investing activities** | **(202,116.81)** | **(595,246.68)** | **(188,744.67)** |
| **3. Cash flows from financing activities** | | | |
| Cash received from bank loans | — | 15,000,000.00 | — |
| **Sub-total of cash inflows** | **—** | **15,000,000.00** | — |
| Cash payments for distribution of dividends or profits | (13,418,314.64) | (29,346,226.12) | (87,145,723.63) |
| **Sub-total of cash outflows** | **(13,418,314.64)** | **(29,346,226.12)** | **(87,145,723.63)** |
| **Net cash flows used in financing activities** | **(13,418,314.64)** | **(14,346,226.12)** | **(87,145,723.63)** |
| **4. Effect of foreign exchange rate changes on cash and cash equivalents** | **(372,719.56)** | **(767,188.69)** | **(415,321.51)** |
| **5. Cash and cash equivalents** | | | |
| The beginning balance of cash and cash equivalent | 17,028,827.70 | 11,677,321.79 | 31,484,429.58 |
| The ending balance of cash and cash equivalent | 14,526,068.46 | 17,028,827.70 | 11,677,321.79 |
| Net increase (used) in cash and cash equivalents | (2,502,759.24) | 5,351,505.91 | (19,807,107.79) |

**STATEMENT OF CHANGES IN OWNER'S EQUITY**
(All amounts in Renminbi ("RMB") Yuan unless otherwise stated)

For year 2017

| Item | Paid-in capital | Surplus reserve | Undistributed profit | Total owner's equity |
|---|---|---|---|---|
| | | | | |
| **1. Balance at 31 December 2016** | **4,138,525.00** | **2,100,000.00** | **60,620,616.43** | **66,859,141.43** |
| **2. The current decrease amount change ("-" for decrease)** | | | **20,690,132.34** | **20,690,132.34** |
| (A) Total net income | | | 35,690,132.34 | 35,690,132.34 |
| (B) Profit distribution to equity owners or shareholders | | | (15,000,000.00) | (15,000,000) |
| **3. Balance at 31 December 2017** | **4,138,525.00** | **2,100,000.00** | **81,310,748.77** | **87,549,273.77** |

For year 2018

| Item | Paid-in capital | Surplus reserve | Undistributed profit | Total owner's equity |
|---|---|---|---|---|
| | | | | |
| **1. Balance at 31 December 2017** | **4,138,525.00** | **2,100,000.00** | **81,310,748.77** | **87,549,273.77** |
| **2. The current decrease amount change ("-" for decrease)** | | | **32,939,257.63** | **32,939,257.63** |
| (A) Total net income | | | 47,939,257.63 | 47,939,257.63 |
| (B) Profit distribution to equity owners or shareholders | | | (15,000,000.00) | (15,000,000) |
| **3. Balance at 31 December 2018** | **4,138,525.00** | **2,100,000.00** | **114,250,006.40** | **120,488,531.40** |

**NOTES TO THE FINANCIAL STATEMENTS**
**FOR THE YEARS ENDED 31 DECEMBER 2018**

(All amounts in Renminbi (“RMB”) Yuan unless otherwise stated)

## 1. COMPANY BACKGROUND AND PRINCIPAL ACTIVITIES

Momentive UV Coatings (Shanghai) Co., Ltd., formally known as Borden UV (Shanghai) Co., Ltd. ("the Company” or "MUV") is a Sino-foreign equity joint venture enterprise between Borden UV Coatings Holdings (Shanghai) Limited and Prime Union Limited. The Company was established on 18 March 2004 with the approval of the Shanghai Municipal Government in Shangwaihuhuiduzizi[2004]0768 and the business license number is 913101157595925826 with the operation period of 30 years. The Company’s registered capital is USD$500,000.00.

The approved Company’s business operation scope includes manufacture and sale of various kinds of UV coatings and provision of related technical consulting services (Comment: extracted from Articles of Associations of the Company.)

In 2007, the Company’s prior shareholder Borden UV Coating Holding (Shanghai) Limited was renamed Hexion Specialty UV Coating (Shanghai) Limited and transferred 0.01% of its shares to Prime Union Limited, and the Company was renamed Hexion UV Coatings (Shanghai) Co., Ltd.. In 2013, based on the approvals of the Company’s Board of Directors and the Pudong District of Shanghai Municipal government, the Company was renamed Momentive UV Coatings (Shanghai) Co., Ltd., and one of the Company’s investors, Hexion Specialty UV Coatings (Shanghai) Ltd., was renamed Momentive Specialty UV Coatings (Shanghai) Limited. In 2016 Momentive Specialty UV Coatings (Shanghai) Limited was renamed Hexion UV Coatings (Shanghai) Limited.

## 2. PRINCIPAL ACCOUNTING POLICIES

### 2.1 Accounting standards

The Company adopts accounting principles generally accepted in the United States of America.

### 2.2 Accounting period

The Company’s accounting year starts on 1 January and ends on 31 December.

### 2.3 Basis of accounting and measurement bases

The Company follows the accrual method of accounting. Assets are initially recorded at their actual costs and are subsequently adjusted for impairment, if any, as events and circumstances warrant.

### 2.4 Reporting currency

The recording currency of the Company is RMB Yuan.

### 2.5 Foreign currency translation

Except for the accounting treatment for paid-in capital, foreign currency transactions are translated into RMB at the exchange rates stipulated by the People’s Bank of China on the first day of the month in which the transactions took place. Monetary assets and liabilities denominated in foreign currencies at the balance sheet date are translated into RMB at the stipulated exchange rates by the People’s Bank of China at the balance sheet date. Exchange differences arising from these translations are expensed, except for those which occurred in the pre-operation period, which are recorded as long-term deferred expenses, and those attributable to foreign currency borrowings that have been taken out specifically for the construction of fixed assets, which are capitalized as part of the fixed asset costs.

### 2.6 Provision for Bad Debt

Full provisions are applied to receivables where events or changes in circumstances indicate that the balances cannot be collected (the debtor is deregistered, bankrupt and the Company can not take back the accounts receivable according to the bankruptcy procedure in law; the debtor is dead, has no heritage to pay or has no haeres; has solid evidence that the accounts receivable aged over three years and can not be taken back). When the bad debt occurs, it is written off through the bad debt provision with the approvals according to the authorized level.

2.7 Inventories

2.7.1 Inventories include materials in transit, raw materials, work in progress, finished goods, low cost consumables and packaging materials.

2.7.2 Inventories are stated at the lower of cost or market.

2.7.3 The inventory issuance cost was determined using the weighted average method.

2.7.4 Low cost consumables are fully amortized when issued for use.

2.8 Fixed assets and depreciation

2.8.1 Fixed assets include buildings, machinery and equipment used in production or rendering of services, or held for management purposes, which have useful lives of more than one year.

2.8.2 Fixed assets purchased or constructed by the Company are recorded at actual cost.

2.8.3 Fixed assets are depreciated using the straight-line method to write off the cost of the assets to their residual values of 0% which represents their estimated salvage value over their estimated useful lives. Their estimated useful lives are as follows:

| Category: | useful lives (years) : | Annual depreciation rate (%): |
|---|---|---|
| Machinery | 10 | 10 |
| Electronic equipment | 10 | 10 |
| Motor vehicle | 10 | 10 |
| Other equipment | 10 | 10 |

2.9 Long-term prepaid expenses

Long-term prepaid expenses was recorded in actual cost and are amortized on the straight-line basis over the expected beneficial periods and are presented at cost net of accumulated amortization.

2.10 Sales of goods

Revenue from the sale of goods is recognized when significant risks and rewards of ownership of the goods are transferred to the buyer, the Company retains neither continuing managerial involvement to the degree usually associated with ownership nor effective control over the goods sold, and it is probable that the economic benefit associated with the transaction will flow to the Company and the relevant revenue and costs can be measured reliably.

2.11 Enterprise income tax (“EIT”)

EIT is recognized under the liability method (balance sheet approach).

**3. Taxations**

The Company’s applicable major taxations and rate are as follows:

| Category: | Tax base: | Statutory Tax %: |
|---|---|---|
| Value added tax | Valuation amount | 17 |
| EIT | Taxable income | 25 |

The actual EIT rate applicable for 2018 was 25%.

## 4. NOTES TO MAJOR ACCOUNTS IN THE FINANCIAL STATEMENTS

### 4.1 Cash at bank and in hand

| Item: | 31 December 2018 | | | 31 December 2017 | | |
|---|---|---|---|---|---|---|
| | Original currency | Exchange rate | RMB equivalent | Original currency | Exchange rate | RMB equivalent |
| **Cash in hand** | | | **16,667.47** | | | **20,988.16** |
| RMB | | | 16,667.47 | | | 20,988.16 |
| **Cash at bank** | | | **14,509,400.99** | | | **17,007,839.54** |
| RMB | | | 6,136,249.5 | | | 13,452,674.3 |
| USD | 1,220,006.92 | 6.8632 | 8,373,151.49 | 544,085.77 | 6.5342 | 3,555,165.24 |
| **Total** | | | **14,526,068.46** | | | **17,028,827.7** |

### 4.2 Notes Receivable

| Category: | 31 December 2018 | 31 December 2017 |
|---|---|---|
| Bank Note | 55,224,664.21 | 34,706,282.28 |

The top major debtors are as follows:

| No. | Debtor Name: | Note Quantity: | 31 December 2018 |
|---|---|---|---|
| 1 | Changfei Optical Fiber Co., Ltd. | 22 | 24,445,550.95 |
| 2 | Zhong Tian Technology Optical Fiber Co., Ltd. | 8 | 19,500,000.00 |
| 3 | Jiangdong science and Technology Co., Ltd. | 8 | 7,388,605.26 |
| 4 | Chengdu Zhongzhu Optic fiber Co., Ltd | 5 | 2,320,000.00 |
| 5 | Nanjing Fiberhome Fujikura Optical Communication Ltd. | 3 | 1,290,284.00 |
| | Total | | 54,944,440.21 |

| No. | Debtor Name: | Note Quantity: | 31 December 2017 |
|---|---|---|---|
| 1 | Zhong Tian Technology Optical Fiber Co., Ltd. | 12 | 23,495,820.80 |
| 2 | Changfei Optical Fiber Co., Ltd. | 5 | 7,223,975.61 |
| 3 | Jiangdong Science and Technology Co., Ltd. | 3 | 3,500,000.00 |
| 4 | Chengdu Zhongzhu Optic fiver Co., Ltd | 1 | 260,147.10 |
| 5 | Nanjing Wasin Fujikura Optical Communication Ltd. | 1 | 138,338.77 |
| | Total | | 34,618,282.28 |

**4.3 Accounts Receivable**

| 31 December 2018 | 31 December 2017 |
|---|---|
| 100,989,258.28 | 82,854,248.92 |

The top 5 major debtors are as follows:

| Debtor Name: | Nature: | 31 December 2018 | % |
|---|---|---|---|
| Furukawa Japan | Goods sold | 30,629,544.68 | 30.33% |
| Changfei Optical Fiber Co., Ltd. | Goods sold | 14,655,578.09 | 14.51% |
| Zhong Tian Technology Optical Fiber Co., Ltd. | Goods sold | 14,178,197.99 | 14.04% |
| Jiangdong Science and Technology Co., Ltd. | Goods sold | 13,389,533.28 | 13.26% |
| OFSLLC | Goods sold | 10,851,151.58 | 10.74% |
| Total | | 83,704,005.62 | 82.88% |

There was no receivable from related parties as of 31 December 2018.

| Aging: | 31 December 2018 | % | 31 December 2017 | % |
|---|---|---|---|---|
| Within 1 year | 100,989,258.28 | 100 | 82,854,248.92 | 100 |
| 1 to 2 years | — | — | — | — |
| Total | 100,989,258.28 | 100 | 82,854,248.92 | 100 |

**4.4 Inventory**

| Item: | 31 December 2018 | | 31 December 2017 | |
|---|---|---|---|---|
| | Amount | Reserve | Amount | Reserve |
| Raw materials | 14,554,992.07 | — | 8,227,171.32 | — |
| Packing material | 227,275.10 | — | 100,480.10 | — |
| Low valued consumables | 820,299.19 | — | 504,684.53 | — |
| Finished goods | 8,453,630.47 | — | 7,012,359.70 | — |
| Total | 24,056,196.83 | — | 15,844,695.65 | — |

**4.5 Fixed Assets and Accumulated Depreciation**

**Original Cost**

| Category: | 31 December 2018 | Addition | Deductions | 31 December 2017 |
|---|---|---|---|---|
| Machinery | 3,038,046.77 | 43,706.90 | 20,374.04 | 3,014,713.91 |
| Electronic equipment | 977,002.42 | 35,741.38 | 4,965.81 | 946,226.85 |
| Motor Vehicle | 413,071.79 | — | — | 413,071.79 |
| Other equipment | 2,274,232.20 | — | 4,658.12 | 2,278,890.32 |
| Total | 6,702,353.18 | 79,448.28 | 29,997.97 | 6,652,902.87 |

**Accumulated depreciation**

| Category: | 31 December 2018 | Addition | Deductions | 31 December 2017 |
|---|---|---|---|---|
| Machinery | 2,843,242.40 | 28,644.09 | 20,374.04 | 2,834,972.35 |
| Electronic equipment | 910,009.58 | 62,212.36 | 4,965.81 | 852,763.03 |
| Motor Vehicle | 323,771.75 | 90,865.08 | — | 232,906.67 |
| Other equipment | 2,212,661.53 | 32,762.39 | 4,658.12 | 2,184,557.26 |
| Total | 6,289,685.26 | 214,483.92 | 29,997.97 | 6,105,199.31 |

**4.6 Accounts Payable**

| 31 December 2018 | 31 December 2017 |
|---|---|
| 43,452,904.69 | 34,208,095.93 |

The top 5 major Creditors are as follows:

| Creditor Name: | Nature: | 31 December 2018 |
|---|---|---|
| Sartomer Logistics (Shanghai) Co., Ltd. | Goods Purchased | 14,048,438.27 |
| MIWON. | Goods Purchased | 7,953,295.78 |
| Tianjin Jiurui Xianghe Trading Company | Goods Purchased | 7,231,600.00 |
| Zhan Xin Resin | Goods Purchased | 2,351,997.26 |
| Shanghai Xuan Wan | Goods Purchased | 1,572,000.00 |
| Total | | 33,157,331.31 |

| Creditor Name: | Nature: | 31 December 2017 |
|---|---|---|
| Sartomer Logistics (Shanghai) Co., Ltd. | Goods Purchased | 10,409,966.94 |
| MIWON | Goods Purchased | 10,181,015.43 |
| Shuangjian | Goods Purchased | 2,747,500.00 |
| Tianjin Jiuruixianghe | Goods Purchased | 1,781,000.00 |
| Allnex Resins (Shanghai) Co., Ltd. | Goods Purchased | 1,485,212.63 |
| Total | | 26,604,695.00 |

**4.7 Taxes Payable**

| Item: | 31 December 2018 | 31 December 2017 |
|---|---|---|
| VAT payable | 1,041,322.35 | 1,389,892.02 |
| EIT payable | 3,903,317.32 | 1,921,599.59 |
| Individual income tax payable | 232,883.47 | 277,456.80 |
| City construction tax | — | 13,898.92 |
| Extra charges of education funds | — | 69,494.60 |
| Total | 5,177,523.14 | 3,672,341.93 |

**4.8 Other Payables**

| 31 December 2018 | 31 December 2017 |
|---|---|
| 1,210,510.58 | 1,513,164.86 |

The top 3 major Creditors are as follows:

| Creditor Name: | Nature: | 31 December 2018 |
|---|---|---|
| Momentive Chemical | Export commission | 513,497.76 |
| Caribou Specialty Materials | Technology service charge | 411,792.00 |
| Taiwan Ruihua Polychem | Export commission | 56,915.76 |

| Creditor Name: | Nature: | 31 December 2017 |
|---|---|---|
| Fishand Richardson PC | Lawyer fee | 1,164,880.98 |
| Caribou Specialty Materials | Technology service charge | 294,039.00 |
| TaiWan Polychem | Market promotion | 52,681.27 |

**4.9 Paid-in Capital**

| Investor Name: | 31 December 2018, 2017, 2016 | | |
|---|---|---|---|
| | In USD$ | RMB equivalent | (%) |
| Hexion UV coatings (Shanghai) Limited | 249,950.00 | 2,068,848.65 | 49.99% |
| Prime Union Limited | 250,050.00 | 2,069,676.35 | 50.01% |
| Total | 500,000.00 | 4,138,525.00 | 100.00% |

**4.10 Surplus Reserve**

| Item: | 31 December 2018, 2017, 2016 |
|---|---|
| Reserve fund | 2,100,000.00 |
| Total | 2,100,000.00 |

**4.11 Retained Earnings**

| Item: | 2018 | 2017 | 2016 |
|---|---|---|---|
| Retained earnings, beginning | 81,310,748.77 | 60,620,616.43 | 96,557,119.09 |
| Add: current year profit | 129,250,006.40 | 35,690,132.34 | 60,525,191.14 |
| Less: Profit distribution to equity owners | 15,000,000.00 | 15,000,000 | 96,461,693.80 |
| Retained earnings, ending | 195,560,755.17 | 81,310,748.77 | 60,620,616.43 |

**4.12 Operation Income / Operation Cost**

| Operation Income for Year 2018 | | Operation Income for Year 2017 | | Operation Income for Year 2016 | |
|---|---|---|---|---|---|
| Sales | Other Operation Income | Sales | Other Operation Income | Sales | Other Operation Income |
| 359,147,478.31 | 1,032.27 | 344,034,346.69 | 256.41 | 334,219,891.26 | 388.89 |

| Operation Cost for year 2018 | | Operation Cost for year 2017 | | Operation Cost for year 2016 | |
|---|---|---|---|---|---|
| Cost of sales | Other Operation Cost | Cost of sales | Other Operation Cost | Cost of sales | Other Operation Cost |
| 277,961,210.71 | — | 246,795,208.60 | — | 233,818,221.1 | — |

**4.13 Selling and distribution expenses**

| Year 2018 | Year 2017 | Year 2016 |
|---|---|---|
| 4,737,243.94 | 3,311,996.76 | 4,128,783.69 |

The major items include:

| Item: | Year 2018 | Year 2017 | Year 2016 |
|---|---|---|---|
| Transportation | 3,653,589.09 | 3,148,268.11 | 2,709,713.24 |
| Market promotion | 130,017.84 | (143,252.00) | 1,042,392.38 |
| Gas and parking | 128,855.55 | 88,505.85 | 111,927.71 |
| Custom inspection | 69,375.58 | 59,391.23 | 50,334.64 |
| Office expense | 66,222.93 | 46,950.82 | 33,284.66 |

**4.14 G&A Expenses**

| Year 2018 | Year 2017 | Year 2016 |
|---|---|---|
| 13,187,238.71 | 42,741,332.18 | 17,416,177.1 |

The major items include:

| Item | Year 2018 | Year 2017 | Year 2016 |
|---|---|---|---|
| Consultant fees | 1,246,105.60 | 32,420,062.21 | 7,425,998.20 |
| Overseas R & D fee | 5,294,339.45 | 4,067,513.60 | 3,466,126.79 |
| Payroll | 4,237,410.84 | 3,893,449.31 | 4,010,501.34 |
| Statutory social insurance | 542,525.90 | 522,638.10 | 458,919.92 |
| Entertainment expenses | 378,335.98 | 453,526.00 | 453,334.71 |
| Office expense | 303,571.99 | 378,853.77 | 399,906.96 |
| Taxes | 205,321.90 | 204,579.96 | 310,493.10 |

**4.15 Financial Expenses**

| Item: | Year 2018 | Year 2017 | Year 2016 |
|---|---|---|---|
| Interest expense | 657,822.52 | 884,532.32 | 455,052.04 |
| Interest income | (38,411.85) | (41,330.03) | (162,426.65) |
| Foreign exchange loss (gain) | (1,917,266.54) | 2,093,345.22 | (3,049,485.53) |
| Bank charges | 54,572.63 | 28,052.32 | 61,509.89 |
| Total | (1,243,283.24) | 2,964,599.83 | (2,695,350.25) |

**4.16 Non-operation Income / Non-operation (Expense)**

| Item | Year 2018 | Year 2017 | Year 2016 |
|---|---|---|---|
| Net non-operation result | **65,243.83** | **273,121.29** | **189,872.88** |
| Total non-operation income | **65,243.83** | **273,121.29** | **191,919.03** |
| 1. tax return | 54,916.76 | — | 122,322.16 |
| 2. service charge return for tax payment | — | — | 16,423.10 |
| 3. sponsor | 3,000.00 | — | 9,000.00 |
| 4. government subsidies | — | 200,000.00 | — |
| 5. other | 7,327.07 | 73,121.29 | 44,173.77 |
| Total non-operation expense | — | — | (2,046.15) |

**4.17 Cash Flow Information**

| Supplemental Information | Year 2018 | Year 2017 | Year 2016 |
|---|---|---|---|
| **Reconciliation of net profit to cash flows from operating activities** | | | |
| Net profit | 47,939,257.63 | 35,690,132.34 | 60,525,191.14 |
| Depreciation of tangible assets | 214,483.92 | 223,654.10 | 363,104.37 |
| Amortization of long-term prepaid expenses | 270,924.50 | 230,981.93 | 90,000.00 |
| Amortization of prepaid expense | — | 4,512.95 | (320.95) |
| Losses on disposal of fixed assets, intangible assets and other long-term assets | — | — | (23,398.06) |
| Finance expenses | 372,719.56 | 1,651,721.01 | 415,321.51 |
| Decrease in deferred tax debit | 78,323.30 | 114,105.68 | (201,915.74) |
| (Increase) Decrease in inventories | (8,211,501.18) | 2,862,576.02 | 2,158,597.73 |
| (Increase) Decrease in operating receivables | (38,653,391.29) | (1,082,113.95) | 22,091,110.19 |
| Increase in operating payables | 11,061,260.69 | (18,635,402.68) | (17,475,008.17) |
| Others | (1,581,685.36) | — | — |
| **Net cash flows from operating activities** | 11,490,391.77 | 21,060,167.40 | 67,942,682.02 |

**5. Related party relationships and transactions**

**5.1 Related party relationships**

| Name: | Related party relationships |
|---|---|
| Hexion UV Coating (Shanghai ) Limited | Investor |
| Prime Union Limited | Investor |

**5.2 Transactions**

There were no material related party transactions in 2018.

**6. Subsequent event**

On October 31, 2016 DSM filed a petition with the International Trade Commission (ITC) to commence an investigation against MUV and its customer OFS for allegedly importing UV curable coatings that infringe four DSM patents. In response, the ITC commenced an investigation. On February 6, 2017, the Federal District Court in the Southern District of Ohio stayed the infringement case pending the outcome of the ITC investigation. On February 15, 2018, the Administrative Law Judge in the ITC investigation issued an Initial Determination recommending that the ITC find many of the claims invalid but also that MUV infringed certain claims in two of DSM's patents. As of May 8, 2018, the ITC had found all of the asserted claims of the four DSM patents-in-suit either invalid or not infringed. On July 9, 2018, DSM filed a Notice of Appeal at the Court of Appeals for the Federal Circuit ("Federal Circuit") for review of the Commission's May 8, 2018 Opinion. Both MUV and OFS moved to intervene. These motions were granted by the Federal Circuit on July 25, 2018. On September 27, 2018, DSM filed a motion to extend the time to file its opening brief. The motion was granted. On December 21, 2018, DSM filed its Principal Brief. The responsive briefs of the ITC, MUV and OFS are all due on April 1, 2019. No other dates have been set. However, based on the present schedule, DSM's reply brief would be due on April 15, 2019. Oral argument should occur approximately ninety days later, (i.e., July 2019). Unless there is an affirmance without an opinion, a decision should be issued approximately six months later.

**EXHIBIT 10.102**

# Hexion Holdings LLC
# 2019 INCENTIVE COMPENSATION PLAN (the "Plan")

## Purpose of the Plan

The Plan is sponsored by Hexion Holdings LLC ("Hexion Holdings") to reward associates of Hexion Inc. ("Hexion") and its subsidiaries for delivering increased value by profitably growing the business and controlling costs. The Plan is designed to link rewards with critical financial metrics for the purpose of promoting actions which are the most beneficial to Hexion's short-term and long-term value creation.

## Administration

The Plan shall be administered by and awards under the Plan shall be authorized by the Compensation Committee (the "Committee") of Hexion Holdings' Board of Managers (the "Board"). The Committee may delegate some of its authority under the Plan to management or as is otherwise stated in the Plan. The Committee has the right to amend or terminate this Plan at any time.

## Plan Year

January 1, 2019 - December 31, 2019

## Eligibility for Participation

Participation is based on each associate's scope of responsibility and contribution to the organization. Each participant has a plan assignment of Corporate, Business Unit or Shared Services. Participants with a plan assignment of Shared Services provide services to both Hexion and Momentive Performance Materials Holdings Inc. and its subsidiaries ("MPM").

## Plan Performance Measures

The Plan performance measures are based on three performance criteria: EBITDA, EH&S and Cash Flow.

### *EBITDA (sometimes also referred to as Segment EBITDA)*

EBITDA refers to Earnings before Interest, Taxes, Depreciation and Amortization, adjusted to exclude (i) certain non-cash items, (ii) certain other income and expenses and (iii) discontinued operations. EBITDA is a critical measure on which the investment community and future shareholders will evaluate Hexion's performance. As a result, participants should be focused and incented to manage the business to achieve EBITDA targets.

Segment EBITDA will be measured for Global Hexion, and for each specified Hexion Business Unit. Participants with a plan assignment of Corporate or Business Unit have a total of fifty-five (55) percent of their incentive target based on the achievement of EBITDA targets. EBITDA achievement measured for Global Hexion and each specified Business Unit may exclude certain unusual, non-recurring items at the discretion of the Committee.

### *Environmental Health and Safety (EH&S)*

EH&S measures environmental and safety results including (i) SIFs - severe incident factors, (ii) OIIR - occupational illness and injury rate and (iii) total environmental incidents (ERI). EH&S will be measured for Global Hexion.

Participants with a plan assignment of Corporate or Business Unit have a total of ten (10) percent of their incentive target based on the achievement of EH&S goals - five (5) percent for SIF's and two and one-half (2.5) percent each for OIIR and ERI.

***Cash Flow***

Cash Flow represents the amount of cash generated by business operations. Cash flow is defined as Segment EBITDA, net trading capital improvement and/or usage, capital spending and interest paid along with other operating cash flow items such as income taxes paid and pension contributions. The purpose of this component is to focus on cost control and cost reduction actions to preserve an adequate amount of liquidity to fund operations and capital expenditures, service debt, and ultimately sustain the business through difficult economic cycles.

Cash Flow will be measured for Global Hexion and for each specified Business Unit, and may exclude certain unusual, non-recurring items at the discretion of the Committee.

Participants with a plan assignment of Corporate or Business Unit have a total of thirty-five (35) percent of their incentive target based on the achievement of Cash Flow targets.

**Target Incentive**

Each participant will have a target incentive opportunity expressed as a percent of his or her base salary. Plan assignments and targets are determined by the associate's business responsibilities and scope of his or her role and contributions within the organization. Participants with a plan assignment of Shared Services have an incentive opportunity based (i) fifty (50) percent on Corporate achievement and (ii) fifty (50) percent on MPM Corporate achievement as reflected in the Momentive Performance Materials Holdings Inc. 2019 Incentive Compensation Plan.

**Plan Structure**

The following tables depict the structure described above.

| Plan Level | Segment EBITDA | EH&S | Cash Flow |
|---|---|---|---|
| Corporate | 55% Global Hexion | 10% Global Hexion | 35% Global Hexion |
| Business Unit[1] | 27.5% Global Hexion<br>27.5% Business Unit | 10% Global Hexion | 17.5% Global Hexion<br>17.5% Business Unit |
| Shared Services | 50% Hexion Corporate<br>50% MPM Corporate | | |

(1) Business Unit shall refer to the applicable business unit plan assignment as determined by the Committee.

**Calculation of Incentive Payments**

Payment based on the EBITDA measure will range from a minimum of one (1) percent of the EBITDA incentive opportunity to a maximum of 200 percent of the EBITDA incentive opportunity based on applicable EBITDA achievement. Payment based on the Cash Flow measure will range from a minimum of one (1) percent of the Cash Flow incentive opportunity to a maximum of 200 percent of the Cash Flow incentive opportunity based on applicable Cash Flow achievement. Payment based on the EH&S measures will range from 30 percent of the applicable EH&S incentive opportunity to a maximum of 200 percent of the applicable EH&S incentive opportunity based on the applicable EH&S achievement. There will be no payout based on EH&S achievement if, during the plan year, any incident at a Hexion site results in a fatality.

Calculation of EBITDA performance between the minimum and target performance levels and the target and maximum performance levels will be linear, rounded to the nearest $1/10^{th}$ of one percent. There is no additional payment made for performance above the maximum level of performance.

Each of the performance measures is evaluated independently such that a payout for achieving one performance measure is not dependent upon the achievement of any other performance measure.

**Basis for Award Payouts**

***Financial Results***

Any Plan payouts require the prior approval of the Chairs of the Audit and Compensation Committees of the Board if they are to be made before audited financial results have been formally approved and publicly announced.

***Plan Assignments***

Any change in a participant’s plan assignment that is not related to a job transfer must be approved by an appropriate Vice President.

***Shared Services Plan Assignment Calculation***

Following the final determination of payouts, participants with a plan assignment of Shared Services will receive a payout equal to the greater of (i) the payout earned under the Shared Services plan assignment and (ii) the payout earned under the Corporate plan assignment.

***Limitations***

The Committee may elect to modify the calculation of the annual targets based on acquisitions, divestitures or other unusual, non-recurring events or transactions that occur during the plan year.

***Eligibility Requirement***

In order to receive an incentive payment, a plan participant must be actively employed by Hexion on the incentive payment date unless, following the final day of the Plan Year, one of the following situations arises:

i. Participant is involuntarily terminated without cause;
ii. Participant dies or is terminated due to disability; or
iii. Participant retires having reached age 55 with at least ten years of service.

***Payments***

Payouts under the Plan are generally made no later than the last payroll period in the second quarter, following the end of the Plan Year. Incentive payments are subject to applicable taxes, garnishment, and wage orders.

***Proration of Payments***

Proration of payments will be made on a daily basis. A participant's incentive payment will be prorated for any of the following conditions:

a. New Hires: Awards to participants who commenced employment during the Plan Year will be prorated.

b. Salary: Awards will be calculated based on the participant's base salary as of July 1st. Awards to participants whose base salary changes after July 1 will be prorated. Changes to part-time status will be adjusted for accordingly.

c. Job Changes or Transfers: Awards to participants who experience a job change or transfer during the Plan Year-which results in a different ICP target or plan assignment-will be prorated.

d. Leaves of Absence: For approved leaves of absence that exceed 12 cumulative weeks (84 days), the amount of time not worked beyond the 12 weeks will be excluded from the Plan Year and the associate will receive a prorated incentive.

*The Plan remains at the total discretion of the Committee. Hexion Holdings retains the right to amend or adapt the design and rules of the Plan. Local laws will prevail where necessary.*

**EXHIBIT 10.103**

**CONFIDENTIAL SEVERANCE PAY AGREEMENT AND RELEASE OF ALL CLAIMS**

This Confidential Severance Pay Agreement and Release of All Claims ("Agreement") is entered into by and between Joseph Bevilaqua ("Associate" or "You") and Hexion Inc., ("Company"), sometimes referred to in this agreement as "the Parties." This Agreement shall become effective on the "Effective Date" as defined in Paragraph 8 below.

WHEREAS, the Parties have agreed that the Associate shall be separated from his/her employment with the Company; and

WHEREAS, the Company has agreed to provide certain payment and other consideration in return for the obligations contained herein, including for a release of claims;

NOW THEREFORE, in consideration of the foregoing, and of the promises and mutual covenants herein contained, and intending to be legally bound, the Parties agree as follows:

Until March 22, 2019, ("Termination Date"), Associate will be an active employee of the Company and remain on the Company's payroll. Accordingly, Associate agrees to perform all job-related duties and functions that may be assigned from time-to-time by the Company. Further, Associate understands, and acknowledges, that if he/she is terminated by the Company during this period for poor performance, or for violating Company policy prior to the Termination Date, Associate will forfeit any severance benefits contained herein.

1. Considerations:

**Severance Payments**
The Company agrees to pay to the Associate a total amount of ($946,662.21) as severance ("Severance Payments"), with $315,554.07 payable in a lump sum on the Termination Date and the remainder payable in bi-weekly installments over a period of twelve months following the Termination Date, subject to all applicable legal and customary deductions and withholdings from the Associate's pay.

Associate understands and agrees that the Severance Payments and other consideration provided herein confer upon him or her benefits to which he/she otherwise is not entitled. Therefore, Associate acknowledges and agrees that the consideration provided by the Company to him/her pursuant to this Agreement constitutes good and valuable consideration for the general release and the other promises and terms in this Agreement. Associate understands and agrees that he/she is not eligible for or entitled to any other benefit or consideration from the Company, except as provided in this Agreement, or as has already vested.

Associate understands and agrees that except as provided specifically in this Agreement the Company shall have no obligation pursuant to any retention program, bonus plan, short-term or long-term incentive plan, or any other compensation plan to make any payment of any kind to Associate, including by way of example and not by way of limitation in any respect, payments for or in lieu of any future incentive payments, retention payments and bonuses, and Associate expressly waives any claims to such payments. Notwithstanding the foregoing, any amounts earned and vested pursuant to plan rules prior to your Termination Date will be paid in accordance with the terms and conditions of such plans.

Associate acknowledges and agrees that the continued payment of any and all payments and benefits to which you are entitled under this Agreement are conditional upon and subject to compliance with the restrictive covenants set forth in
(i) the Nondisclosure, Fair Competition and Inventions Agreement for 2015 and Beyond dated July 18, 2015 and (ii) Section 6 of the Management Investor Rights Agreement dated as of February 23, 2011 (the "Restrictive Covenants") for a period of eighteen (18) months. For avoidance of any doubt, the type of businesses for which the Restrictive Covenants are applicable shall be limited to businesses engaged in the production, sale or distribution of goods and services of epoxy materials and wood adhesive industries in competition with Hexion Inc. and its parents or subsidiaries. In the event Associate breaches of any of the Restrictive Covenants, in addition to any other remedy which may be available at law or in equity, unless otherwise expressly provided by applicable law, the Company's obligation to make further

payments under this Agreement shall cease upon the date of such breach. This Agreement amends and incorporates by reference in full the Restrictive Covenants and Associate reaffirms his agreements as set forth therein, as modified by this Agreement.

**Health Benefit Continuation**

You will continue to be eligible for medical, dental and vision benefits equal to those received as an active employee (subject to the terms and conditions of those benefit plans) until and including the last day of the month in which your Termination Date occurs.

Effective as of the first of the month following your Termination Date, you may elect to continue health care coverage pursuant to COBRA (up to the maximum period of COBRA coverage), so long as you timely pay the applicable COBRA premium. No later than 14 days after your Termination Date, you will be sent a COBRA election notice that explains COBRA continuation (including how and when to make premium payments) in more detail.

Generally, under COBRA, your continuation coverage will last for up to 18 months. This 18-month period will begin on the first of the month following the month of your Termination Date. This 18-month maximum continuation period may end early, for example, if you fail to timely pay premiums or you become eligible for other group health plan coverage. More information will be provided in the COBRA election notice. Once you elect to continue coverage under COBRA, you will be billed on a monthly basis and you are obligated to pay the required premium for as long as you choose to continue coverage (up to the maximum COBRA continuation period).

The required COBRA premium is 102% of the total cost of coverage (employee and employer portions). Following your Termination Date, you will receive a one-time lump sum payment in the amount of Forty-Three Thousand Dollars ($43,000.00) representing your estimated cost to continue medical and dental COBRA coverage for 18 months based on current COBRA rates.

**Incentive Compensation Plan (ICP)**

The Company agrees that You will be eligible to receive Your 2018 ICP payment (per the terms of the ICP plan). Such payment, if any, will be made at the same time as ICP payments are made to other ICP participants under the terms of that plan. You will not be eligible to participate in the ICP plan for 2019.

**Annual Retirement Contribution (ARC)**

The 2018 ARC You earn under the Hexion Inc. Retirement Savings Plan, based on your service through December 31, 2018, will be posted to your Fidelity account in 2018 at the same time as the 2018 ARC is posted for other eligible associates.

**Vacation**

You will receive payment for all accrued, but unused vacation through your Termination Date. After your Termination Date, you will not accrue or earn any additional paid vacation.

**Outplacement Support**

The Company has arranged, at its own expense, a program of outplacement support for you. Additional information on the outplacement program will be provided to you in a separate attachment.

**Equity**

You shall be entitled to receive distribution of your "Deferred Compensation Account" under the BHI Acquisition Corp. 2004 Deferred Compensation Plan, in accordance with the terms thereof, in a single lump sum payment in the form of 80,403 Common Units in Hexion Holdings LLC (hereinafter "Parent").

You have received equity awards under the Momentive Performance Materials Holdings LLC 2011 Equity Incentive Plan (the "2011 Plan"), which are set forth on Schedule A hereto. With respect to those awards, the Company agrees, subject to your satisfaction of the conditions in Sections 4, 5 and 6 hereof, that:

a) with respect to your option granted pursuant to your February 23, 2011 award agreement under the 2011 Plan, notwithstanding anything in such award agreement to the contrary:

(i) the unvested Tranche B and Tranche C portions of your option with respect to 183,516 Common Units in Parent granted pursuant thereto shall continue to be eligible to vest on the terms and conditions set forth in such award agreement, as if you had remained employed through the earlier of (i) the applicable vesting date and (ii) December 31. 2020; and

(ii) the vested Tranche A portion of your option with respect to 183,517 Common Units in Parent granted pursuant thereto, as well as any unvested Tranche B and Tranche C portions of your option which may become vested, shall remain exercisable and shall expire on December 31, 2020, subject to earlier cancellation under the 2011 Equity Plan;

b) with respect to your option granted pursuant to your March 8, 2013 award agreement under the 2011 Plan, notwithstanding anything in such award agreement to the contrary, the vested portion of your option with respect to 416,189 Common Units in Parent granted pursuant thereto, shall remain exercisable and shall expire on December 31, 2020, subject to earlier cancellation under the 2011 Equity Plan; and

c) your 61,172 unvested restricted deferred units granted pursuant to your February 23, 2011 award agreement under the 2011 Plan, as well as your 328,635 unvested restricted deferred units granted pursuant to your March 8, 2013 award agreement under the 2011 Plan, shall continue to be eligible to vest on the terms and conditions set forth in the respective award agreements, as if you had remained employed, through the earlier of (i) the applicable vesting date and (ii) December 31, 2020.

You currently hold 61,172 Common Units in Parent acquired from previously settled restricted deferred units, which shall remain unaffected by your separation from employment.

For the avoidance of doubt, the parties intend that the extended term of your options as described above shall be compliant with Section 409A of the U.S. Internal Revenue Code, as amended, and in no event shall such term be extended beyond the original expiration date of such option.

**All Other Company Sponsored Benefit Plans**
Unless specified in this Agreement, you will cease participation in and/or accruing benefits under Company sponsored benefit plans as of your Termination Date. Notwithstanding, any amounts earned and vested, pursuant to plan rules, prior to your Termination Date will be paid in accordance with the terms and conditions of such plans.

2. Eligibility for Considerations: You understand that, to be eligible for any of the considerations under this Agreement, you must be actively employed and working through the date on which the Company releases you from work on your Termination Date. To be eligible for the Severance Payments and benefits listed in this Agreement, you may not voluntarily terminate before then or be unavailable for active work due to leave status (disability, workers' compensation, or personal) on your Termination Date. Should you be on such leave at your Termination Date, you will be covered by the terms and conditions of that particular status for its duration. Further, You understand and acknowledge, that if You are terminated by the Company for poor performance, or for violating Company policy prior to the Termination Date, You forfeit any severance benefits contained herein.

3. Release of All Claims: In exchange for the monies and benefits given to you under this Agreement, you hereby release, acquit, and forever discharge the Company and each of its current and former parents, affiliates, subsidiaries, partners, owners, predecessors, successors, and assigns, and their respective current and former officers, directors, managers, members, employees, attorneys, agents and other representatives in their capacities as such (collectively, the "Released Parties"), from

any and all claims, actions, causes of action, counterclaims, suits, debts, interest, attorney's fees, sums of money, accounts, contracts, agreements, promises, contribution, indemnification, damages, judgments, executions, demands, expenses and liabilities whatsoever, at law, in equity or otherwise, which you or your heirs, executors, administrators, successors or assigns now or hereafter can, shall or may have against the Released Parties prior to the Effective Date (as defined in paragraph 8 below), due to any matter whatsoever arising from or relating to your employment with the Company, your termination of employment from the Company, or any claims for payments of any kind which you contend were agreed to, promised

or due to you by agreement, act or promise prior to the Effective Date (collectively, "Released Claims"). The Released Claims include, but are not limited to, any claim that any of the Released Parties violated any federal, state or local laws, rules or regulations, specifically including **the Age Discrimination in Employment Act;** the Americans with Disabilities Act, Title VII of the Civil Rights Act of 1964, the Civil Rights Act of 1866 (Section 1981), state and federal minimum wage acts, and any claim that any of the Released Parties violated any other federal, state or local statute, law, regulation or ordinance; any claim of unlawful discrimination of any kind; any public policy, contract, tort, or common law claim including, but not limited to, intentional and/or negligent infliction of emotional distress, and violation of public policy; any claim that was or could have been asserted in any lawsuit; and any claim for costs, fees, or other expenses including attorneys' fees incurred in these matters. This Agreement shall not be deemed to release any claims to enforce the Parties' obligations hereunder; any benefit that previously has vested; or any claim that by law may not be released.

4. <u>Covenant Not to Sue</u>: You agree not to file or initiate a legal proceeding asserting any of the Released Claims against any of the Released Parties. You further agree that you will not permit yourself to be a named party in any legal proceeding seeking relief against the Released Parties based on claims released by this Agreement, and that even if a court or other legal officer rules that you may not waive such claim, you will not accept or be entitled to any money damages or other relief in connection with any such proceeding asserting any of the Released Claims against any of the Released Parties. The Company may plead this Agreement as a complete bar to any such claim, cause of action or defense brought in derogation of this covenant not to sue.

   Waiver of Damages: Nothing herein is intended to or shall interfere with your right to participate in a proceeding with any appropriate federal, state or local government agency enforcing federal or state laws and/or cooperating with said agency in any investigation. However, you agree that you shall not do so voluntarily; nor shall you be entitled to receive any recovery/monies in connection with any complaint or charge brought against any of the Released Parties, without regard as to who brought any such complaint or charge.

5. <u>Confidentiality of this Agreement:</u> You understand and agree that this is a Confidential Agreement between You and the Company and You agree that the terms and conditions herein will not be revealed by You to anyone other than to your attorney, tax authorities and/or financial advisors and or your spouse (who may not communicate the terms and conditions of the Agreement to any third parties), all except as required by subpoena or other process of law.

6. <u>Confidentiality and Trade Secrets:</u> You further agree not to use or disclose any confidential and/or proprietary information to which you were privy during the course of your employment with the Company.

7. <u>Acknowledgment:</u> You received a copy of this Agreement on March 11, 2019 representing the terms of severance from the Company. No deadline of less than 21 days after March 11, 2019 has been imposed upon you to sign this Agreement. If you are signing this Agreement less than 21 days after March 11, 2019 you understand that you do not have to do so. Changes to this Agreement do not restart the running of the 21-day period. If unsigned by you, this Agreement will expire on April 1, 2019.

   **You further acknowledge that the Company has informed you, by this writing, that you should consult an attorney before signing this Agreement. In addition, it is agreed and understood that the severance arrangements made between you and the Company are unique and apply only to your special circumstance and in no way can be construed or interpreted as precedent setting to others.**

   **You further acknowledge that you entered into this Agreement on a knowing and voluntary basis, you have read this Agreement and understand that by signing this Agreement you release all legal claims against the Company and waive certain rights to bring claims.**

8. <u>Revocation Period:</u> You may revoke this Agreement at any time within seven (7) days after signing it by providing written notice of cancellation by hand delivery or registered mail addressed to: John Auletto, EVP Human Resources at Hexion Inc., 180 E. Broad Street, Columbus, OH 43215 Attn: HRConnect, 29th Floor. For the revocation to be effective, the Company must receive written notice no later than the close of business on the seventh day after you sign this Agreement. If you cancel, the Company owes you nothing under this Agreement but your employment still will effectively end on your Termination Date. This

Agreement will not become effective and enforceable until the seven (7) day cancellation period ends ("Effective Date").

9. Company Property: You agree to return your Company-provided property that may be in your possession or control on or before your Termination Date. You also agree to immediately return all original and duplicate documents, files, computer files and records, policies and procedures and all other tangible things in your possession that were created, collected or received by you while employed by the Company. Failure to return any Company-provided property in a timely manner may (in the Company's sole discretion) result in the forfeiture of any Severance Payments or other consideration provided to you under this Agreement, in addition to any other remedies the Company may have against you to recover Company Property.

10. Violation of Agreement: You understand and acknowledge that if you violate the terms of this Agreement, including, but not limited to, the filing of any claim or cause of action released by Paragraph 3 of this Agreement, or, if you violate any other term of this Agreement, you could be subject to forfeiture (at the Company's sole discretion) of any Severance Payments or other consideration provided to you under this Agreement, in addition to any other remedies the Company may have against you. If you are found, by a court of competent jurisdiction, to have violated the terms of this Agreement, you agree to pay any reasonable attorney's fees, costs and other expenses, including costs of investigation, incurred by the Company to enforce its rights under this Agreement.

11. Severability: Should any term or provision of this Agreement be declared illegal, invalid or unenforceable by any court of competent jurisdiction and if such provision cannot be modified to be enforceable, such provision shall immediately become null and void, leaving the remainder of this Agreement in full force and effect. The language of all parts of this Agreement shall in all cases be construed as a whole, according to its fair meaning, and not strictly for or against any of the Parties.

12. Controlling Law/Jurisdiction This Agreement will be interpreted, enforced and governed by and under the laws of Ohio, without regard to its conflict of laws provision, and except to the extent preempted by federal law.

13. Future Cooperation: You agree to cooperate with the Company in investigating, prosecuting and defending any charges, claims, demands, liabilities, causes of action, lawsuits and other proceedings by, against or involving the Company including its officers, agents, and employees, which relate to matters of which you have knowledge, or should have knowledge, by virtue of your employment by the Company. You agree to immediately notify the Company if subpoenaed or asked to appear as a witness in any matter related to the Company or one of its affiliates. You further agree to cooperate fully and sign any and all additional documents that may be necessary to carry out the terms and intent of this Agreement.

14. Conduct: You agree to refrain from participating in any activity or making any statements that are calculated to damage or have the effect of damaging the business or reputation of the Company and/or any officer, director or employee of the Company. Nothing herein is intended to or shall interfere with your right to participate in a proceeding with any appropriate federal, state or local government agency enforcing federal or state laws and/or cooperating with said agency in any investigation.

15. No Known Claims/ No Future Legal Actions: You represent that you currently are not a party in any pending administrative charge, lawsuit, civil action or claim of any kind against the Company, as defined herein.

16. Notice of Immunity under the U.S. Defend Trade Secrets Act: Employees cannot be held criminally or civilly liable under any federal or state trade secret law for disclosing trade secret information in the following circumstances: disclosure of trade secret information to any federal, state, or local government official, or to an employee's attorney, or in a sealed court document solely for the purpose of reporting or investigating a suspected violation of the law; or disclosure of trade secret information to an employee's attorney or in a sealed court document in connection with a lawsuit for retaliation by an employer for reporting a suspected violation of the law.

17. Entire Agreement: Except as otherwise provided in this Agreement, this is the entire agreement between you and the Company with respect to the subject matter of this Agreement. There are no other written or oral agreements, understandings or arrangements except the ones specifically mentioned and/or contained in this Agreement. The terms of this Agreement may not be changed in any way except in writing, signed by

you and the Company.

18. Code Section 409A: All amounts payable under this Agreement are intended to comply with the "short term deferral" exception from Section 409A of the Internal Revenue Code ("Section 409A") specified in Treas. Reg. § 1.409A-1(b)(4) (or any successor provision) or the "separation pay plan" exception specified in Treas. Reg. § 1.409A-1(b)(9) (or any successor provision), or both of them, and shall be interpreted in a manner consistent with the applicable exceptions. Notwithstanding the foregoing, to the extent that any amounts payable in accordance with this Agreement are subject to Section 409A, this Agreement shall be interpreted and administered in such a way as to comply with Section 409A to the maximum extent possible. Each installment payment of compensation under this Agreement shall be treated as a separate payment of compensation for purposes of applying Section 409A. If payment of any amount subject to Section 409A is triggered by a separation from service that occurs while you are a "specified employee" (as defined by Section 409A) with, and if such amount is scheduled to be paid within six (6) months after such separation from service, the amount shall accrue without interest and shall be paid the first business day after the end of such six-month period, or, if earlier, within 15 days after the appointment of the personal representative or executor of the your estate following the your death. "Termination of employment," "resignation “or words of similar import, as used in this Agreement shall mean, with respect to any payments subject to Section 409A, your "separation from service" as defined by Section 409A. If any payment subject to Section 409A is contingent on the delivery of a release by you and could occur in either of two years, the payment will occur in the later year. Nothing in this Agreement shall be construed as a guarantee of any particular tax treatment to you. You shall be solely responsible for the tax consequences with respect to all amounts payable under this Agreement, and in no event shall the Company have any responsibility or liability if this Agreement does not meet any applicable requirements of Code section 409A.

FULL UNDERSTANDING: By signing this Agreement, you acknowledge that you have carefully read this Agreement; that you have had a reasonable time to consider the language and effect of this Agreement; that the Company has informed you, in writing, to consult with an attorney before signing this Agreement; that you know, understand and agree with the contents of this Agreement; and that you are signing this document voluntarily because you are satisfied with its terms and conditions.

SIGNED:

_________________________________ Dated ________________
Joseph Bevilaqua

Hexion Inc.

_________________________________ Dated ________________
John Auletto

Title: EVP Human Resources

CANCELLATION NOTICE

To cancel this Agreement:

- Sign below.
- The Company must receive this Cancellation Notice within seven (7) days of the date you signed the Agreement.

I hereby cancel this Agreement.

Date Joseph Bevilaqua

**Exhibit 21.1**

Subsidiaries of the Registrant
As of December 31, 2018

| Subsidiary | Jurisdiction | % Owned |
|---|---|---|
| Borden Chemical Holdings (Panama) S.A. | Panama | 100% |
| Borden Chemical UK Limited | UK | 100% |
| Borden International Holdings Limited | UK | 100% |
| Hexion (Caojing) Limited | Hong Kong | 100% |
| Hexion (N.Z.) Limited | New Zealand | 100% |
| Hexion 2 U.S. Finance Corp | Delaware | 100% |
| Hexion Australia Finance Pty Ltd | Australia | 100% |
| Hexion Australia General Partner Pty Ltd | Australia | 99.9% |
| Hexion Australia Limited Partnership | Australia | 100% |
| Hexion B.V. | Netherlands | 100% |
| Hexion Brazil Coöperatief U.A. | Netherlands | 100% |
| Hexion Canada Inc. | Canada | 100% |
| Hexion Chemicals India Private Limited | India | 99.99% |
| Hexion CI Holding Company (China) LLC | Delaware | 100% |
| Hexion Deer Park LLC | Delaware | 100% |
| Hexion Europe B.V. | Netherlands | 100% |
| Hexion Germany GmbH | Germany | 94.79% |
| Hexion GmbH | Germany | 94.79% |
| Hexion Holding B.V. | Netherlands | 100% |
| Hexion Holding Germany GmbH | Germany | 100% |
| Hexion Holdings (China) Limited | Hong Kong | 100% |
| Hexion HSM Holdings LLC | Delaware | 100% |
| Hexion Industria e Comercio de Epoxi Ltda. | Brazil | 99% |
| Hexion International Coöperatief U.A. | Netherlands | 35% |
| Hexion International Holdings B.V. | Netherlands | 100% |
| Hexion International Inc. | Delaware | 100% |
| Hexion Investments Inc. | Delaware | 100% |
| Hexion Italia S.r.l. | Italy | 100% |
| Hexion Korea Company Limited | Korea | 100% |
| Hexion Management (Shanghai) Co., Ltd. | China | 100% |
| Hexion Moerdijk Lease B.V. | Netherlands | 100% |
| Hexion New Materials (Shanghai) Co., Ltd. | China | 100% |
| Hexion Nimbus Asset Holdings LLC | Delaware | 100% |
| Hexion Nimbus Inc. | Delaware | 100% |
| Hexion Nova Scotia Finance, ULC | Nova Scotia, Canada | 100% |
| Hexion Ontario Inc. | Ontario | 100% |
| Hexion Oy | Finland | 100% |

| Subsidiary | Jurisdiction | % Owned |
|---|---|---|
| Hexion Pernis Lease B.V. | Netherlands | 100% |
| Hexion Pty Ltd | Australia | 100% |
| Hexion Quimica do Brasil Ltda. | Brazil | 99.99% |
| Hexion Quimica S. A. | Panama | 100% |
| Hexion Research Belgium SA | Belgium | 99.99% |
| Hexion SarL | France | 100% |
| Hexion Shanxi Holdings Limited | Hong Kong | 100% |
| Hexion Singapore Pte. Ltd. | Singapore | 100% |
| Hexion Specialty Chemicals Barbastro S.A. | Spain | 100% |
| Hexion Specialty Chemicals Iberica S.A. | Spain | 100% |
| Hexion Specialty Chemicals Lda. | Portugal | 69.7% |
| Hexion Stanlow Limited | UK | 100% |
| Hexion Stuttgart GmbH | Germany | 100% |
| Hexion Technology (Shanghai) Co. Ltd. | China | 100% |
| Hexion UK Holding Limited | UK | 100% |
| Hexion UK Limited | UK | 100% |
| Hexion UV Coatings (Shanghai) Limited | Hong Kong | 100% |
| Hexion VAD BV | Netherlands | 100% |
| Hexion VAD LLC | Delaware | 100% |
| InfraTec Duisburg GmbH | Germany | 70% |
| Lawter International Inc. | Delaware | 100% |
| Momentive Union Specialty Chemicals Limited | Hong Kong | 100% |
| Momentive UV Coatings (Shanghai) Co., Ltd. | China | 49.99% |
| NL Coop Holdings LLC | Delaware | 100% |
| North American Sugar Industries Incorporated | New Jersey | 100% |
| PT Hexion Lestari Nusantara | Indonesia | 100% |
| Resolution Research Nederland B.V. | Netherlands | 100% |
| Zhenjiang Momentive Union Specialty Chemicals Ltd. | China | 100% |

**Exhibit 31.1(A)**

**Certification of Financial Statements and Internal Controls**

I, Craig A. Rogerson, certify that:

1. I have reviewed this Annual Report on Form 10-K of Hexion Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 11, 2019

/s/ Craig A. Rogerson

Craig A. Rogerson
Chief Executive Officer

**Exhibit 31.1(B)**

**Certification of Financial Statements and Internal Controls**

I, George F. Knight, certify that:

1. I have reviewed this Annual Report on Form 10-K of Hexion Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: April 11, 2019

/s/ George F. Knight

George F. Knight
Chief Financial Officer

**Exhibit 32.1**

**Certification Pursuant To**
**18 U.S.C. Section 1350,**
**As Adopted Pursuant to**
**Section 906 Of The Sarbanes-Oxley Act of 2002**

In connection with the Annual Report of Hexion Inc. (the “Company”) on Form 10-K for the period ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15 (d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

| /s/ Craig A. Rogerson | /s/ George F. Knight |
|---|---|
| Craig A. Rogerson | George F. Knight |
| Chief Executive Officer | Chief Financial Officer |
| April 11, 2019 | April 11, 2019 |

A signed original of this statement required by Section 906 has been provided to Hexion Inc. and will be retained by Hexion Inc. and furnished to the Securities and Exchange Commission or its staff upon request.