



TRINSEO™

FOCUS
FORWARD

2018 ANNUAL REPORT

A MIND ON WHAT REALLY MATTERS

Trinseo (NYSE:TSE) is a global materials solutions provider and manufacturer of plastics, latex binders, and synthetic rubber.

We are focused on delivering innovative and sustainable solutions to help our customers create products that touch lives every day — products that are intrinsic to how we live our lives — across a wide range of end-markets, including automotive, consumer electronics, appliances, medical devices, lighting, electrical, carpet, paper and board, building and construction, footwear, and tires.

We collaborate with our customers to meet their most complex materials challenges. We believe that innovation through our **technology** and the creativity of our **people** power our success and the success of our **customers**.

○ PEOPLE

We are outstanding and diverse individuals, passionate about developing solutions to create shared value for our customers and Trinseo. We think deep and act fast.

○ TECHNOLOGY

Trinseo was born out of one of the most storied technology companies in the world, with a six decade rich and proud history. We're proud of where we're from, but it's where we're going that excites us the most.

○ CUSTOMERS

The products, processes, and solutions we develop enable our customers' innovations that benefit consumers all over the world. Our customers come to us when they need a challenge solved, and that's exactly what we do.



Fast Facts About Trinseo

- \$4.6 Billion (USD) in revenue (2018)
- Approximately 2,500 employees in 25 countries

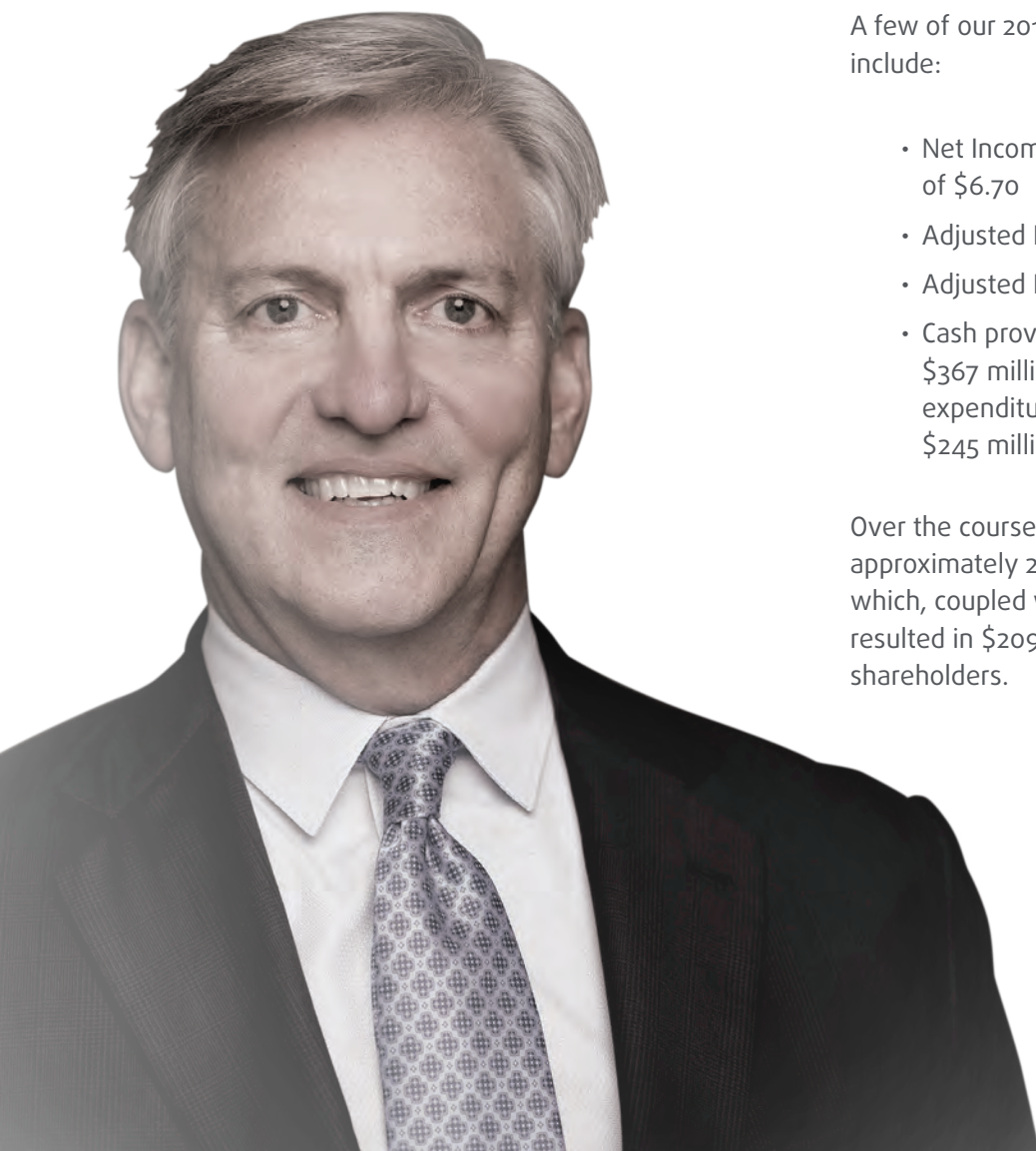


Global Footprint

- 16 Manufacturing sites
- 10 Research and development facilities

FRANK BOZICH

P R E S I D E N T
& C E O



In 2018, Trinseo achieved eight months of strong market fundamentals and business performance followed by a few months, particularly in November and December, of challenging market dynamics and economic conditions that led to lower than expected full year financial results. Across the global chemical and materials industry, many companies saw a dramatic slowdown in the fourth quarter of 2018. Trinseo was also impacted by rapidly declining feedstock prices and the economic slowdown in China.

A few of our 2018 full-year financial highlights include:

- Net Income of \$292 million and diluted EPS of \$6.70
- Adjusted EPS¹ of \$7.25
- Adjusted EBITDA¹ of \$573 million
- Cash provided by operating activities of \$367 million and \$121 million of capital expenditures, resulting in Free Cash Flow¹ of \$245 million

Over the course of 2018, Trinseo repurchased approximately 2.2 million shares for \$143 million which, coupled with dividends of \$66 million, resulted in \$209 million of cash returned to shareholders.

2018 marked another exceptional year in safety performance by Trinseo employees across the globe. Environmental, Health and Safety (EH&S) and Responsible Care® are the foundation of our culture at Trinseo. We continue to be a top-decile performer in safety among our peer companies.

We strive for all of Trinseo’s facilities around the globe to have zero on-the-job injuries, zero spills or losses of containment, and zero process safety incidents. In 2018, 25 of our 30 eligible global sites achieved the “Triple Zero Award” with zero injuries, spills, or safety incidents. This represents 1,783 employees. I am very proud of the work by all of the Trinseo employees who made this result possible and make safety an intrinsic part of our culture.

The product stories enclosed in this annual report build on the concept of “Focus Forward.” They demonstrate how Trinseo is closely collaborating with customers to deliver complex material solutions that are helping to improve market trending products and their environmental footprint - such as lightweight autonomous and electric vehicles, renewable packaging, low rolling resistance tires, self-administered drug delivery devices, heat-reflecting roof coatings, and smart home applications.

Looking to 2019, we see steady business fundamentals across all segments and expect continued strong cash generation. Although there is still macroeconomic and market uncertainty, we are seeing some signs of improvement and remain cautiously optimistic about the overall market recovery.

We remain committed to optimizing business performance, balancing future growth initiatives in our high-value growth segments of Latex Binders, Synthetic Rubber, and Performance Plastics, and generating strong cash flow while returning capital to shareholders.

Since I joined the Company on March 4, 2019, I have truly seen how Trinseo’s accomplishments are the result of the caliber of our employees and their dedication, innovation, agility, and focus on shareholder value. The Company’s foundation is strong and well-positioned for its next phase of growth.

I am grateful to Chris Pappas and the executive management team for building Trinseo around a strong strategic roadmap. I am proud to be leading this well-run company with talented people, strong customer relationships, innovative products, and a culture that aligns with my own personal values.

In closing, I would like to thank our shareholders, customers, suppliers, and employees for their ongoing support of Trinseo. For 2019, I believe we will achieve a successful year and accomplish new milestones for the Company’s long-term strategic growth.

Frank Bozich
CEO and President
May 2019

¹ See page 8 for a reconciliation of US GAAP to non-GAAP measures. For a definition of Adjusted EPS, a description of reconciling items, and discussion of usefulness and purpose of this measure, refer to Exhibit 99.1 of the Company’s Form 8-K filed on February 13, 2019. For a definition of Adjusted EBITDA and Free Cash Flow, a description of reconciling items to comparable US GAAP measure, and a discussion of the usefulness and purposes of these measures, please see pages 48-49 and 51 of this Annual Report.

Cautionary Note on Forward-Looking Statements. This report and shareholder letter contains forward-looking statements including, without limitation, statements concerning plans, objectives, goals, projections, strategies, future events or performance, and underlying assumptions and other statements, which are not statements of historical facts or guarantees or assurances of future performance. Forward-looking statements are based on current expectations and assumptions that are subject to risks and uncertainties which may cause actual results to differ materially from the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in this Annual Report under Part I, Item 1A – “Risk Factors” and elsewhere in this report. We caution you against relying on any of these forward-looking statements. The forward-looking statements included in this report and shareholder letter are made only as of the date hereof. We undertake no obligation to update or revise any forward-looking statement as a result of new information, future events or otherwise, except as otherwise required by law.

FINANCIAL STATEMENT HIGHLIGHTS¹

\$(USD) MILLIONS UNLESS NOTED	2018	2017	2016
Sales Volume (kt)	2,382	2,408	2,402
Net Sales	4,623	4,448	3,717
Net Income	292	328	318
Wtd Avg Shares - diluted (MM)	44	45	47
EPS - diluted (\$)	6.70	7.30	6.70
Adj EBITDA ²	573	642	611
Adj Net Income ³	317	366	346
Adj EPS (\$) ³	7.25	8.13	7.28
Cash provided by operating activities	367	391	404
Free Cash Flow ⁴	245	244	280

¹ See page 8 for reconciliation of US GAAP to non-GAAP measures.

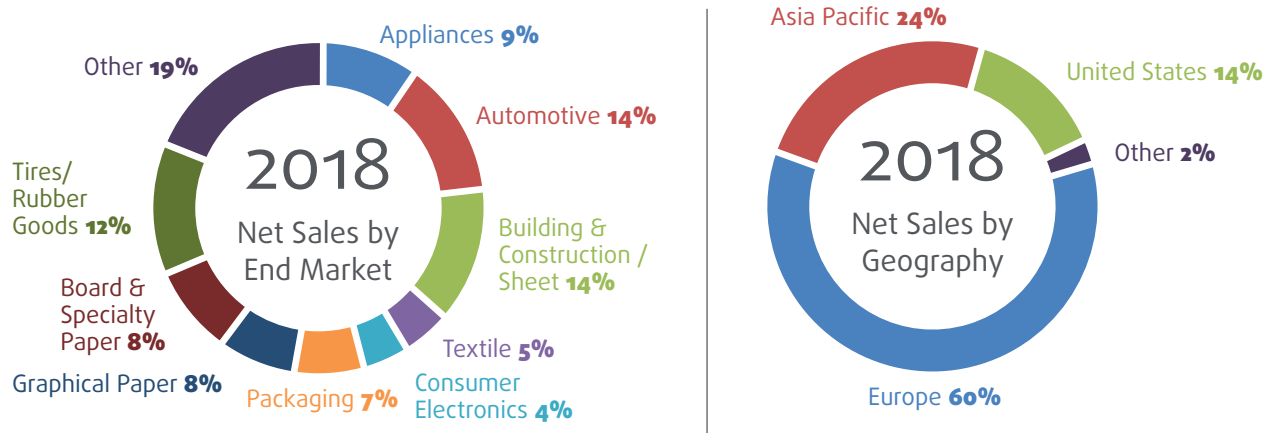
² For a definition of Adjusted EBITDA, as well as description of the reconciling terms and the usefulness and purpose of this measure, please see pages 48-49 of this Annual Report.

³ For a definition of Adjusted Net Income and Adjusted EPS, as well as a description of the reconciling items and the usefulness and purpose of these measures, please see Exhibit 99.1 of the Company's Form 8-K filed on February 13, 2019.

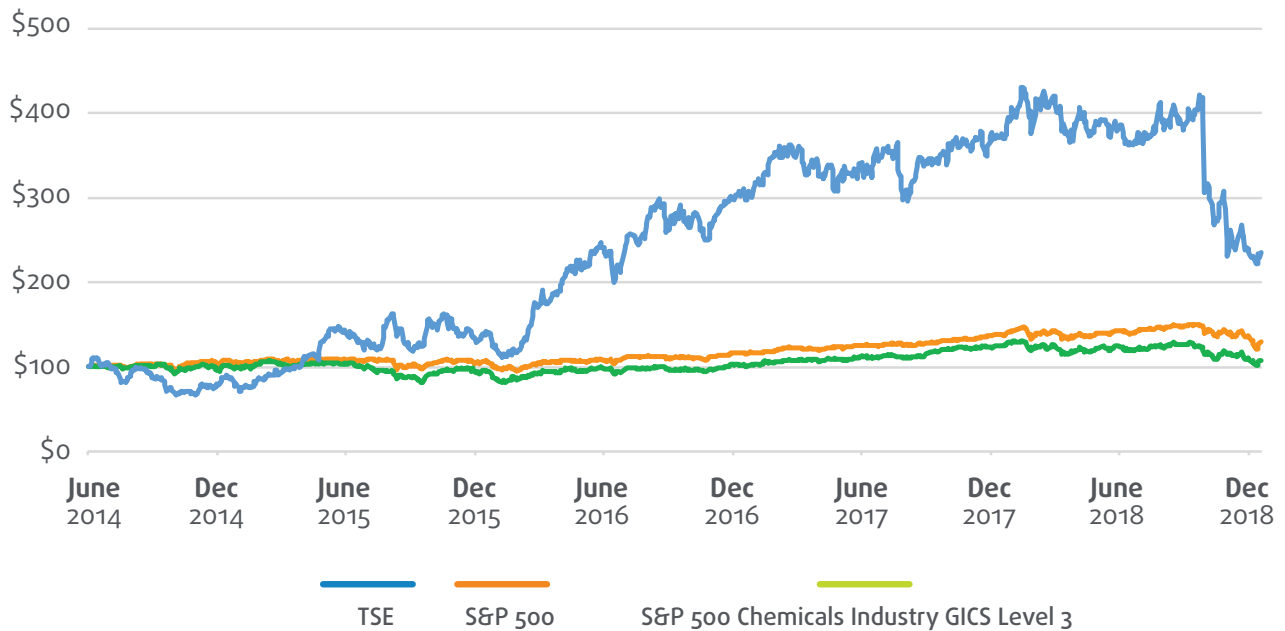
⁴ For a definition of Free Cash Flow, as well as description of the usefulness and purpose of these measures, please see page 51 of this Annual Report.



DIVERSIFIED REGIONS & END MARKETS



Trinseo Stock Performance Vs. Market Indexes



The above performance graph reflects the comparative changes in the value from June 12, 2014, the first trading day of our ordinary shares on the NYSE, through December 31, 2018, assuming an initial investment of \$100 and the reinvestment of dividends or other cash distributions, if any, in (1) our ordinary shares, (2) the S&P 500 Index, and (3) the S&P 500 Chemicals Industry GICS Level 3 Index. The share price performance shown in the graph is not necessarily indicative of future price performance.

US GAAP to non-GAAP Reconciliation

\$ (USD) MILLIONS, UNLESS NOTED	2018	2017	2016
Net Income	292.5	328.3	318.3
Interest expense, net	46.4	70.1	75.0
Provision for income taxes	71.8	82.8	87.0
Depreciation and amortization	130.2	110.6	96.4
EBITDA	540.9	591.8	576.7
Loss on extinguishment of long-term debt	0.2	65.3	-
Other items	22.8	(19.9)	(4.4)
Restructuring and other charges	8.2	6.0	23.5
Net (gains) / losses on dispositions of business assets	(1.0)	(9.7)	15.1
Acquisition transaction and integration costs	(0.6)	4.7	-
Asset impairment charges or write-offs	1.5	4.3	-
Adjusted EBITDA	573.2	642.5	610.9
<i>Adjusted EBITDA to Adjusted Net Income</i>			
Adjusted EBITDA	573.2	642.5	610.9
Interest expense, net	46.4	70.1	75.0
Provision for income taxes - Adjusted	81.0	98.2	94.6
Depreciation and amortization - Adjusted	129.1	108.6	95.4
Adjusted Net Income	316.7	365.6	345.9
<i>Wtd Avg Shares - Diluted (000)</i>	<i>43,666</i>	<i>44,973</i>	<i>47,478</i>
<i>Adjusted EPS - Diluted (\$)</i>	<i>7.25</i>	<i>8.13</i>	<i>7.28</i>
<i>Adjustments by Statement of Operations Caption</i>			
<i>Loss on extinguishment of long-term debt</i>	<i>0.2</i>	<i>65.3</i>	<i>-</i>
<i>Cost of sales</i>	<i>1.8</i>	<i>(16.0)</i>	<i>-</i>
<i>Selling, general and administrative expenses</i>	<i>30.8</i>	<i>9.9</i>	<i>25.9</i>
<i>Other expense (income), net</i>	<i>(0.5)</i>	<i>(8.5)</i>	<i>8.3</i>
<i>Total EBITDA Adjustments</i>	<i>32.3</i>	<i>50.7</i>	<i>34.2</i>
<i>Free Cash Flow Reconciliation</i>			
Cash provided by operating activities	366.5	391.3	403.7
Capital expenditures	(121.4)	(147.4)	(123.9)
Free Cash Flow	245.1	243.9	279.8

OUR 2018 MILESTONES



January

Chris Pappas Named a CEO Who “Gets It” by the National Safety Council and Safety+Health Magazine



February

Trinseo Celebrates State-of-the-Art S-SBR Pilot Plant and Capacity Expansion of 50 KT in Schkopau, Germany



March

Trinseo Plastics Chosen for New Audi A6 and A7 Luxury Interiors



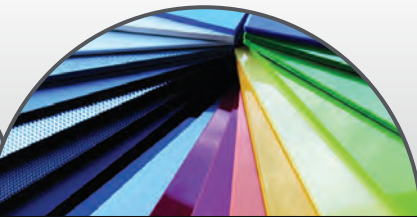
July/August

Company Celebrates Four Anniversaries: • Midland, Michigan Pilot Coating Facility Celebrates 30 Years of Excellence • Company Publishes 8th Annual Sustainability and Corporate Social Responsibility Report with GRI References • Dalton, Georgia Plant Celebrates 10th Anniversary of LOMAX Technology • Hamina, Finland Plant Celebrates 30th Anniversary



September

Trinseo Delivers: MITRAS Lauds ABS Resins from New Plant in China with Exact Consistency as Our Plastics Manufactured in The Netherlands





April

Chemical Week Feature Story
Highlights Trinseo's Success and
Growth



May

Chris Pappas Discusses Trinseo
on CNBC's Mad Money



June

Employees at 20 Sites Participate
in 5th Annual Month-Long
Volunteer Days Program



October

Trinseo Supplies Medical Sector
with Biocompatible Glass-Filled
Polycarbonate



November

Trinseo Powers Fiat Chrysler and
Ford to 2018 SPE Automotive
Innovation Awards



December

Company Promotes Employee
Excellence with Trinseo + ME
Campaign

C O M P A N Y H I G H L I G H T S

OUR GROWTH FOCUS

2018 was a year for us to focus on enhancing some of our most useful and innovative products that contribute to the comfort, aesthetics, and safety of everyday life.

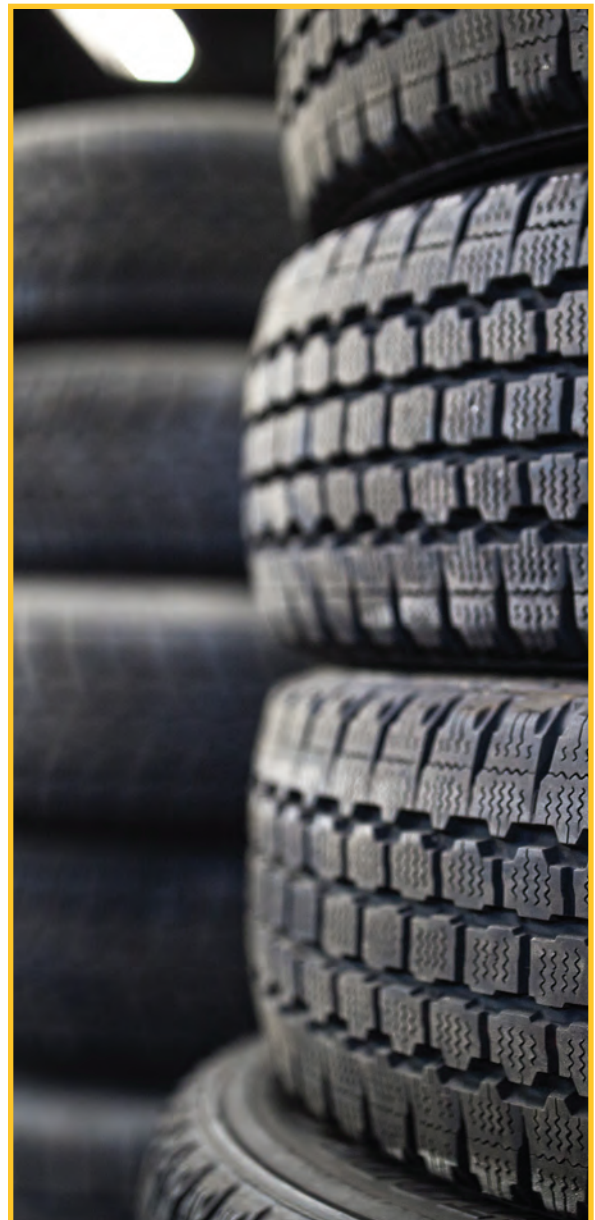


Trinseo Inaugurates State-of-the-Art Synthetic Rubber Pilot Plant and Adds 33% Capacity Expansion

Trinseo opened a new Solution-Styrene Butadiene Rubber (S-SBR) pilot plant at its Schkopau, Germany site.

The new facility was built to meet the growth in global demand for S-SBR and the need for faster innovation cycles in the performance tire market. Trinseo's pilot plant designs next-generation materials and delivers sufficient quantities of new S-SBR formulations as required for real-life tire testing. The pilot plant's ability to evaluate both process and product parameters meets the tire manufacturers' need for reducing product validation time.

The Schkopau site production expansion added an additional 50 KT of S-SBR capacity and increased the Company's global S-SBR production by 33%. Most of Trinseo's Synthetic Rubber is sold into the tire industry, specifically for high performance tires. Trinseo's functionalized S-SBR makes it possible to optimize a tire's rolling resistance without having a negative effect on wet traction or abrasion resistance, therefore improving the life of the tires.



Coloring Group Gains Certification from Renault's Industrial Design Department

Trinseo believes that an intelligent color concept is a key element for successful automotive design. Trinseo automotive business experts develop and implement solutions for precise coloring in their color labs.

In July, Trinseo's Color Group, located in Terneuzen, The Netherlands, received an accreditation certification from the Groupe Renault's Industrial DESIGN Department. The certification demonstrated Renault's confidence in Trinseo to self-validate and self-accredit new or existing colors with new materials, rather than a third party laboratory, in compliance with Renault's "Rule for assessing supplier competence in metrology, testing or calculations."

As a color supplier, Trinseo maintains a long-term business relationship with strategic partner Renault. The Color Group continuously works with Renault to further improve its high-performance products. In the development of color masterbatches for the automotive industry, Trinseo puts great emphasis on consistent quality, product innovation, and proactive customer support.



New Audi A6 and A7 Luxury Interiors Choose Trinseo Plastics

Trinseo's Automotive team successfully developed a unique, luxury interior plastic for the new Audi A6 and A7. Following two years of collaboration, the new A6 models were launched in March 2018 with interiors of soft-touch, cost-effective Trinseo VELVEX™ Reinforced Elastomer.

Audi's decision was based on a successful previous project testing Trinseo's Reinforced Elastomer using the injection molding tool on Audi's A3 convertible door module.

To meet Audi's rigorous requirements, the plastic parts were tested for 18 months outside of laboratory conditions in the deserts of Africa and Arizona. With its excellent haptics, high-scratch resistance, low gloss levels, and durability, Trinseo's elastomer was well-suited for Audi's rigorous requirements.

The quality of Trinseo's elastomer in Audi's A6 and A7 interiors has attracted praise and interest from other auto manufacturers.



Plastics to Support Growth of Smart Home Applications

Trinseo's EMERGE™ Advanced Resins are used throughout Curreant's Smart Outlet in applications ranging from the outer housing to internal components. With the Smart Outlet and a corresponding mobile application, consumers receive a breakdown of their power usage as well as personalized suggestions powered by artificial intelligence (AI) to help them reduce energy consumption.

Curreant selected Trinseo for several reasons, including the Company's:

- sample stock program;
- ability to provide technical service support from prototype stage to mass production;
- ability to coordinate support seamlessly between North America and Asia Pacific; and
- color matching capability, including its ability to achieve an ultra-bright white.

Trinseo's color lab in Hsinchu, Taiwan, as well as its newest color capabilities in Mussolente, Italy, resulting from its acquisition of Italian Thermoplastic Elastomer (TPE) manufacturer API Applicazioni Plastiche Industriali S.p.A. (API) in 2017, truly distinguish the Company in the marketplace.

EMERGE™ Advanced Resins are specialty compounds that use Trinseo's proprietary CALIBRE™ Polycarbonate Resins in their formulation.



LIGOS™: Turning Down the Heat with White Roofing

A phenomenon known as “urban heat islands” refers to heat-reflecting materials and surfaces in cities that use higher levels of energy in an attempt to cool down their buildings. Trinseo has developed elastomeric roof coatings that reflect light off rooftops. This latex material in “white roofing” is gaining momentum as an effective solution to this challenge.

Trinseo’s LIGOS™ Binders technology uses Styrene Butadiene (SB) as a waterproofing primer and Styrene Acrylic (SA) as a reflective topcoat. LIGOS™ is used in white roofing systems as an effective basecoat and topcoat, allowing for excellent adhesion to various substrates, water ponding and dirt resistance, and superior asphalt bleed-through resistance in comparison to other methods.



Soft-touch and Rigid Plastics for Medical Applications

With the rise of home healthcare, self-administered drug delivery devices, an aging population, among other factors, the medical device industry is trending upward.

Trinseo has been involved with the medical devices market for nearly 30 years providing rigid plastics. Today, the Company provides medical resins in four application areas – single and multiple use devices, equipment housings, drug delivery devices, and its newest area, medical wearables.

API, acquired by Trinseo in 2017, has provided customers TPE soft-touch plastics for 60 years. Medical customers now benefit from overlaying Trinseo’s rigid plastics with API’s soft-touch plastics. As a supplier to the medical devices industry, which has strict standards and regulations, Trinseo is focused on quality and compliance with regulatory requirements. Trinseo has control over the chemistries of both materials allowing us to provide optimal adhesion between the two surfaces adjusting both materials simultaneously if needed.



Strengthening Packaging Based on Renewable Fiber-Based Substrates

Paper and paperboard, used in consumer packaging, are made of renewable and recycled materials. They represent as much as 75% of all packaging recovered for recycling in the U.S.¹

Paperboard coatings utilize Trinseo's Latex Binders as an adhesive to anchor pigment particles to the substrate. These binders can provide cohesive strength, stiffness, and moisture resistance, while enabling packaging based on renewable fibers to meet the demands of the packaging market. Trinseo's Latex Binders technology improves coating performance by increasing the smoothness and ink receptivity of the paperboard surface for printing and offers an appropriate balance of coating porosity for glue performance. These attributes support the Company's customers' product design and the demand for sustainable solutions for consumer goods manufacturers.

¹Paperboard Packaging Alliance Fact Sheet, www.paperboardpackaging.org



Meeting Demands of High Performance Tire Market

The high performance tire market requires innovative synthetic rubber material solutions that balance processability and increased performance. Trinseo's new oil extended grade of multifunctionalized S-SBR, SPRINTAN™ 918S, was developed to meet the challenges of physical stability, safety, and high fuel efficiency at the same time with easy processability for the tread of Ultra High Performance tires.

These types of tires see an increasing demand triggered by the growth of SUVs and light trucks market. SPRINTAN™ 918S also substantially improves fuel efficiency and has excellent mechanical properties while sustaining good wet grip.

With the Company's functionalized S-SBR grades, a passenger car driver can reduce fuel consumption up to 4% and reduce greenhouse gas emissions. Low rolling resistant tires can save one to two miles per gallon compared to traditional tires, according to a study from the University of Michigan.

By closely integrating operations, maintenance, technical service and development, supply chain management, research and development and the tech center, Trinseo offers more flexibility, consistent quality and a quicker response time to meet customer demands.



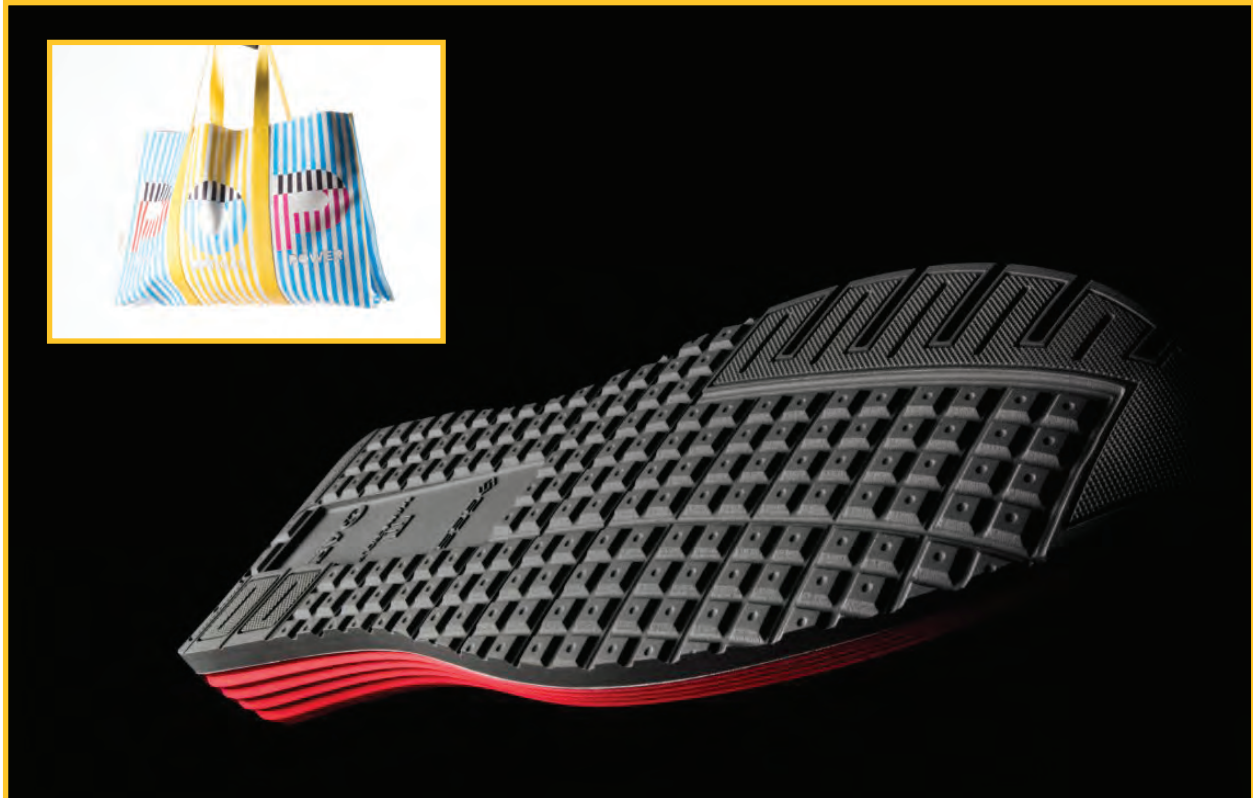
API Presents Lightweight Footwear and Sustainable Textile Solutions

The market demand for flexible and lightweight footwear has been steadily increasing. API, acquired by Trinseo in 2017, is an Italian company specialized in the production of thermoplastic elastomeric compounds and bioplastics. API is focused on the latest product developments in polymer materials and production technologies for the footwear industry.

The Company introduced its newest lightweight footwear solutions in 2018. APILON™ 52 EXP was designed specifically for microcellular midsoles, whereas APILON™ LIGHT offers an outstanding combination of performance, aesthetics, and mostly lightness.

API and ICM (Industria Chimica Mediterranea), a key player in the footwear and leather goods industry, announced a joint development of innovative and sustainable technical fabrics in June. The partnership facilitates the design, manufacture, and marketing of high-performance and environmentally sustainable textile solutions for the fashion and footwear industries. The development's textile products are produced in a solvent-free and plasticizer-free manufacturing process.

API's range of thermoplastic bioplastics grades of APINAT™ BIO and APILON™ 52 BIO, compounds includes soft and rigid grades. APILON™ BIO (TPU) was developed facing the increasing importance of sustainability principles in the world of fashion. It is part of an evolution towards an eco-sustainable economy bringing social, economic, and environmental advantages.





OUR FUTURE FORWARD

Trinseo's materials are evolving to meet the eco-conscious demands of its customers in many markets, without sacrificing product aesthetics and performance.

Plastics with Post-Consumer Recycled Content

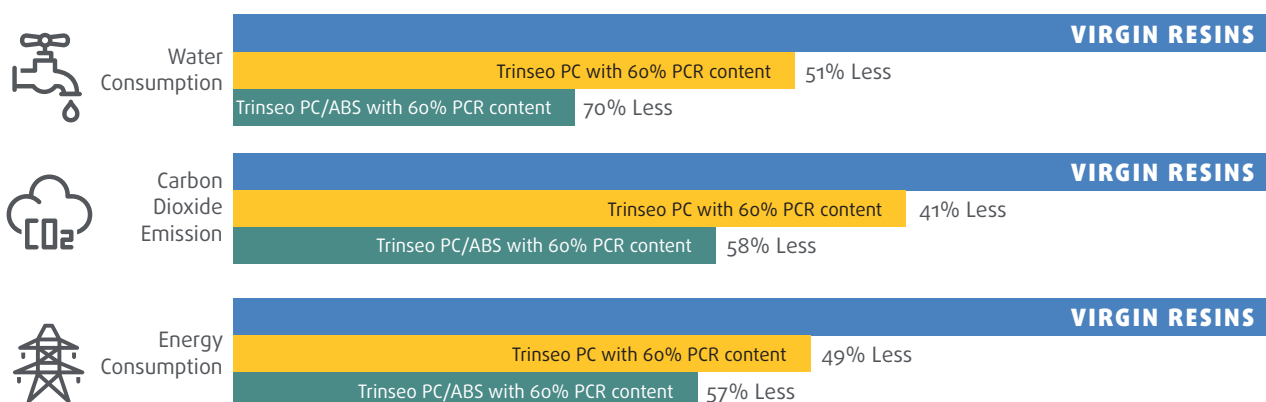
Sustainability is intrinsic to Trinseo and our everyday approach to business. That is one of the reasons we offer a series of post-consumer recycled (PCR) content containing resins that allow product designers to create products that are relatively more environmentally-friendly.

PCR content containing resins include used and recycled plastic waste created by consumers, such as unwanted electronic device casings, toys, enclosures of home appliances, and water bottles. Before the plastic waste is turned into resins for reuse, it is gathered and sent through a proprietary recycling process by reputable PCR suppliers. Trinseo researches and verifies supplier reliability in order to certify the PCR compounds' quality and regulatory compliance for our customers.

Trinseo's EMERGE™ ECO Series contains up to 75% of PCR resins that suit many applications particularly for the consumer electronics sector. In fact, Trinseo can customize the PCR level to fit a customers' requirements.

Like most industries, consumer electronics is placing a growing emphasis on sustainability. While the traditional perception of consumer electronics includes products such as mobile phones and laptops, there has been a recent convergence with other sectors such automotive applications and medical home care devices. The automotive industry has shown interest, specifically in non-show features where aesthetics are far less critical.

Trinseo has engaged Thinkstep¹ in generating "cradle-to-gate" data for our PCR content containing products, comparing the difference in carbon dioxide (CO₂) emission, water usage, and energy consumption to virgin materials. In all cases Trinseo's PCR containing resins had a reduced environmental impact, as shown in the chart below.



¹Thinkstep is a sustainability software and consulting company based in Germany. It is a working group in the field of Life Cycle Assessment and Life Cycle Engineering. Thinkstep is the leader in sustainability performance management, helping 2,500 companies – including 40% of the Fortune 500 – create business value through sustainability.

Operation Clean Sweep

Trinseo is a member of Operation Clean Sweep® (OCS), an industry effort to reduce plastic pellets in the environment. The program's focus is to help every plastic resin handling operation implement good housekeeping and pellet, flake, and powder containment practices to work towards achieving zero pellet, flake, and powder loss, protecting the environment and saving valuable resources.

When plastic pellets, flakes, and powder are kept out of the natural environment, we enhance our reputation as a good steward of the environment – an increasingly important factor for attracting the investment community and high-quality employees – while also ensuring that more material remains a valuable product rather than becoming waste, improving efficiency.

Trinseo has adopted the goals of OCS and plans to take a more active role in the organization throughout 2019.



Medical Sector Growth with Biocompatible Glass-Filled Polycarbonate

Trinseo is targeting the medical devices market with its biocompatible glass-filled polycarbonate resins. The Company's CALIBRE™ 5000 series is an ideal material for metal substitution not only because of its strength and stiffness, but also its added advantages of aesthetics, ergonomic improvements, and potential cost savings.

What differentiates CALIBRE™ 5000 series is that it has undergone extensive biocompatibility testing according to ISO 10993 standards to provide medical device manufacturers with added assurance of compliance and patient safety.

From an aesthetic perspective, Trinseo's material can be colored for branding and parts-identification purposes. Due to its processability and the allowed design flexibility, parts can be consolidated for cost savings and simplified assembly, reducing the number of seams and crevasses where bacteria can grow.



Styrenics Circular Solutions

Plastics face a challenge in today's world as society struggles with how to manage plastic waste. At the forefront of many debates is polystyrene because it is seen as being non-recyclable. In reality, from a chemical composition perspective, polystyrene is the most recyclable type of plastic.

Styrenics Circular Solutions (SCS) is a joint industry initiative formed by a group of leading styrenics manufacturers and incorporated in December 2018. The SCS members INEOS Styrolution, Total, Trinseo, and Versalis (ENI), are united by the common goal of transforming the styrenics industry by unleashing polystyrene's value as a fully and infinitely recyclable material.

Given the urgency of reducing waste, litter, and the environmental impact of plastic, SCS has set ambitious milestones to meet these goals and propel the circular economy forward. SCS is engaging the entire value chain – from partners in supply chain to converters, recyclers, brand owners, and trade associations as well as universities, research centers, suppliers, and service providers.

In polystyrene, we have the opportunity to truly close the loop – full recycling back to the monomer and virgin polystyrene is possible. Plastics made of styrenic polymers have been contributing to resource efficiency, increased functionalities and superior aesthetics in a multitude of applications.

Today, styrene-based products have become an invaluable part of everyday life. From packaging that keeps food clean and fresh, to energy-efficient building insulation, styrene has a positive role to play in the face of pressing societal challenges – from food waste and climate change, to resource scarcity, the demand for a higher standard of living, and urban population growth.

The styrenics value chain has a particularly big role to play because of polystyrene's unique and infinite capacity for recycling. In short, polystyrene is one of the best mass-produced polymers that can be as fully returned to its original form, and continuously re-used, as can polystyrene. But polystyrene's intrinsic circularity can only be unlocked when used polystyrene-containing products get properly collected, sorted and channeled into the most effective and efficient recycling technologies. This takes teamwork and vision – with Styrenics Circular Solutions leading the way.



Styrenics Circular Solutions (SCS) has identified two optimal technologies for converting used polystyrene-based products back into high-quality material: depolymerization and dissolution. Both technologies operate on the molecular level, enabling the separation of recyclable polystyrene from the stabilizers, fillers, colorants, and other additives. Depolymerization thermally “unzips” polystyrene into its original molecular building blocks for re-use in high-quality food-grade products. Dissolution extracts impurities with a solvent, enabling re-use for many applications such as building and construction materials.

The SCS members have signed a voluntary commitment to:

- Advance the game-changing technologies that recycle polystyrene and expanded polystyrene back to their original forms;
- Improve regional waste collection and sorting systems to drive more used polystyrene products into recycling, creating new recycling business opportunities; and
- Drive the large-scale implementation of the recycling technologies that deliver from an environmental and economic standpoint.

Structure of Monomers and Polymers

MONOMER



A Monomer is a small molecule.

POLYMER



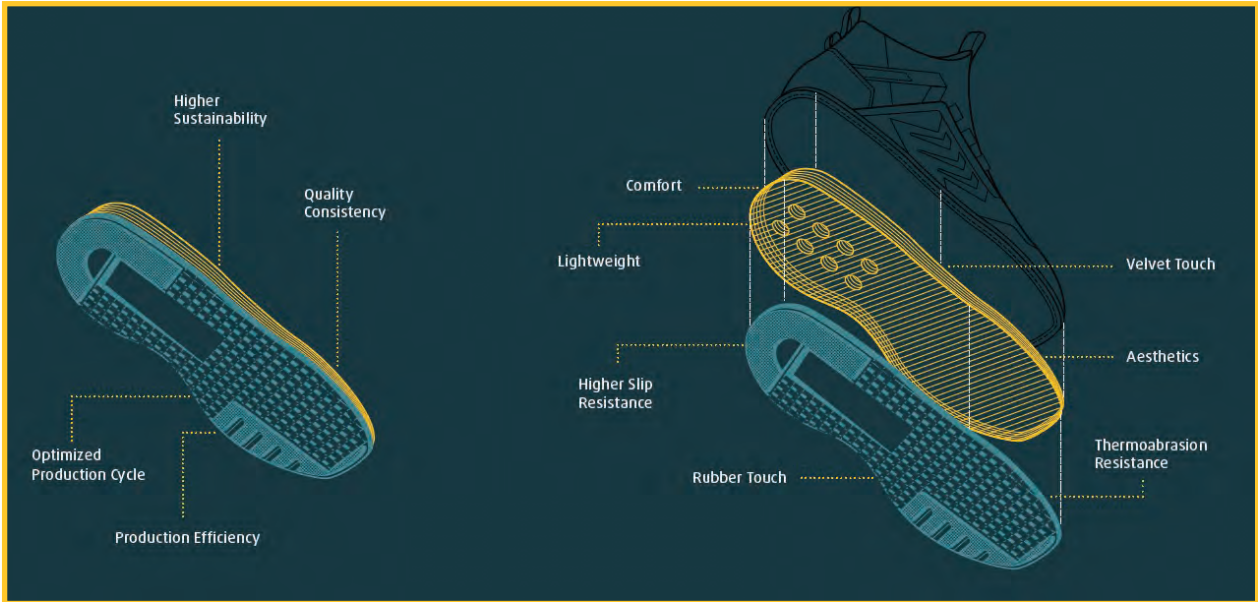
A Polymer is a long-chain molecule made up of a repeated pattern of monomers.

Future of the Footwear Industry

For decades, the footwear industry has relied on rubber and more recently thermoplastic elastomers (TPE). It is clear how the chronology of product development has always gone hand-in-hand with the innovation of these materials. In recent years, with a growing awareness regarding the environmental impact of plastics, footwear brands have been applying new corporate policies for greater consciousness and responsible production chains.

All the major fashion brands are now embracing this view and interest in recyclable and low environmental footprint materials is growing and changing the footwear market. Now more than ever, footwear brands that make quality their priority can rely on API for their sustainable and responsible business.

API was one of the first suppliers to apply reticulated and expandable polymers, allowing the production of extremely lightweight applications with excellent physical-mechanical properties. This technology offers great possibilities in every segment of the footwear industry.





API also closely focuses on thermoplastic polyurethanes (TPU), providing the properties that are most commonly required in lifestyle and luxury, sports, and professional footwear. Our products offer a vast range of hardness and a variety of densities. We provide specific material grades with various effects such as shiny/opaque finish and grades that are suitable as a substitute for vulcanized rubber.

In addition, API develops a wide range of color masterbatches, specifically developed for the TPUs and bio-based TPUs in order to supply customers with a uniform finished product that perfectly meets the requirements for both quality and speed of the highly specialized footwear sector.

The Company's latest bioplastics combine physical-mechanical properties with a clear ecological message. For API, protecting the environment and public health are fundamental values that must be passed on to future generations.

Autonomous and Electric Vehicles Demand More Performance Plastics

As the auto industry continues to be impacted by autonomous and electric vehicles, interior spaces will become more important. Electric vehicles are expected to increase from 2% of global share in 2016 to 22% in 2030¹. That signals a tremendous opportunity for Trinseo's plastics, which outperform in the marketplace on quality, aesthetics, durability, and lightweighting. The Company's polycarbonate blends have been used in electric vehicle charging stations for several years because they are durable enough to withstand temperatures as low as -60°C.

As vehicles evolve, the comfort and amenities offered will become central to the driving experience. Vehicles will feature panorama roofs, more workstations, and collaborative spaces, with aesthetic requirements built using lightweight materials and softer surfaces. Trinseo has been delivering plastics resins with low VOC levels, scratch and heat resistance, durability, and high-end aesthetics to customers for several years. With API's soft-touch polymers, Trinseo is also poised to capture the growth in high-end, customized interior environments.

Weight reduction continues to have high priority in the automotive industry. Lightweight construction plays a very important role in view of the evolving demands on fuel efficiency and targets for reducing CO₂ emissions. The growing share of electric vehicles, for example, can also benefit from lighter materials and construction methods, as weight reduction contributes to greater range and higher energy efficiency.

Replacing semi-structural metal components with plastic parts is an effective way to successfully reduce vehicle weight. However, replacing traditional metal structures with polymer solutions for more complex components is not a simple task if the plastic part is to achieve comparable performance. Replacing magnesium with a newly developed, lighter ABS-LGF material in an instrument panel carrier for the BMW 3 Series is an example of the successful changeover from an existing metal solution to an innovative plastic solution.

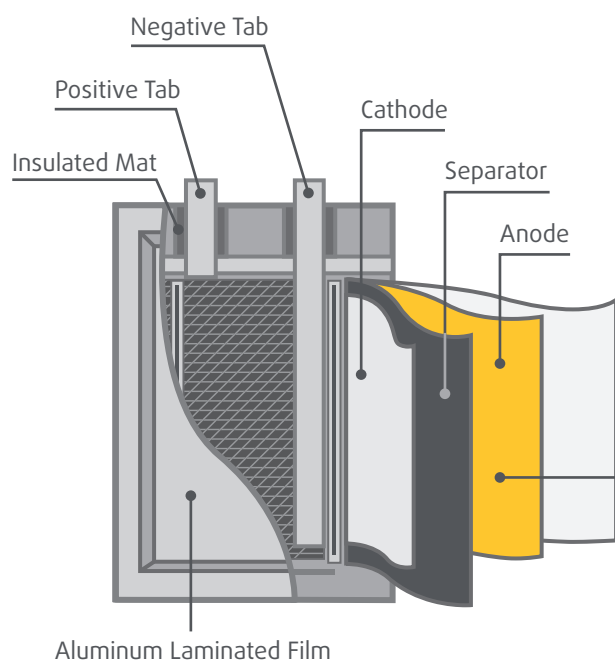
¹Auto & Mobility Trends In 2019." CB Insights Research. Retrieved 03-28-2019.



Trinseo Establishes Lithium Ion Battery Application Laboratory in Shanghai

In recent years, our lithium ion battery application has seen progressive development within Trinseo's latex binders business. During the first quarter of 2019, Trinseo unveiled a lithium ion battery application laboratory in Shanghai, China.

The Company's VOLTABOND™ Binders are a key material for creating highly-efficient adhesives within lithium ion batteries. VOLTABOND™ Binders are used in the anode coating to bind the graphite and conductivity agent powder together, as well as onto the current collector (copper foil), playing an important role in the conductivity, battery life, and low temperature performance of the battery.



Properties include:

- Strong peeling force to increase energy density of power battery;
- Excellent lithium ion conductivity for improved battery performance;
- Enhances the low-temperature performance of the battery; and
- Can be added at a low amount to enhance the life cycle of the battery.

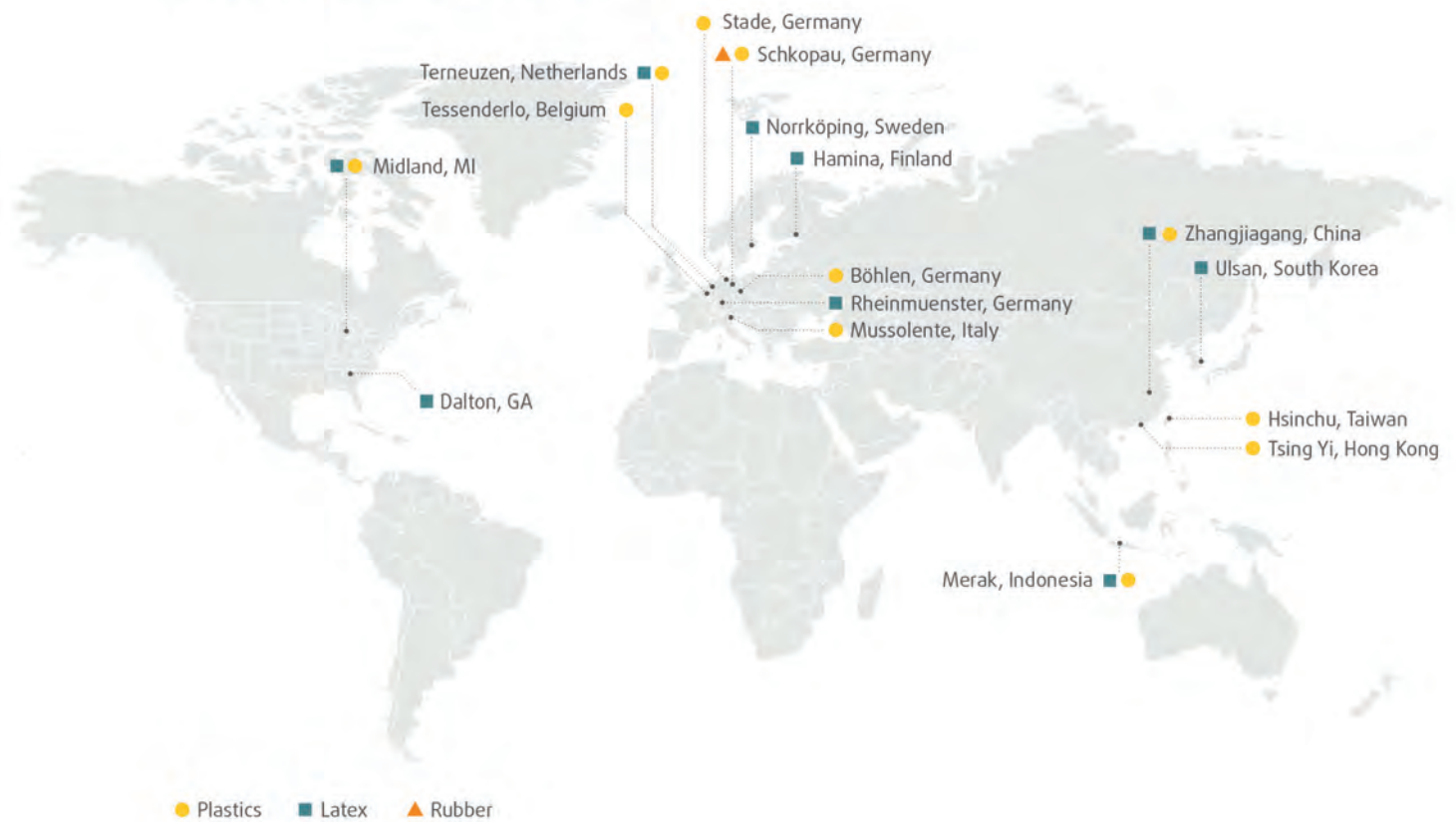
In order to further enhance product testing and R&D for its customers, Trinseo established a professional laboratory in Shanghai, supporting the localization of technical support and services. The laboratory includes the following testing capabilities:

- Anode slurry preparation and rheology testing
- Anode coating, calendaring and peel strength testing
- Coin cell making and testing
- Pouch cell testing, such as DCR, H/L temperature, C-rate, and Cycling performance

Combining more than 60 years of styrene-butadiene latex production and R&D experience, Trinseo will continue to develop leading-edge technology solutions for the lithium ion battery industry.

VOLTABOND™ Binders are used in the anode coating to bind the graphite and conductivity agent powder together and onto the current collector (copper foil).

Worldwide Manufacturing Assets



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

FORM 10-K

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

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

**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: **001-36473**

Trinseo S.A.

(Exact name of registrant as specified in its charter)

Luxembourg
(State or other jurisdiction of
incorporation or organization)

N/A
(I.R.S. Employer Identification Number)

1000 Chesterbrook Boulevard, Suite 300
Berwyn, PA 19312
(Address of Principal Executive Offices)
(610) 240-3200
(Registrant's telephone number)

Securities registered pursuant to Section 12(b) of the Act:

<u>Title of Each Class</u>	<u>Name of Each Exchange on Which Registered</u>
Ordinary Shares, par value \$0.01 per share	New York Stock Exchange

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 No

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 No

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 No

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

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.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the 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	<input checked="" type="checkbox"/>	Accelerated filer	<input type="checkbox"/>		
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>	Emerging growth company	<input type="checkbox"/>

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.

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

As of February 25, 2019, there were 41,289,829 shares of the registrant's ordinary shares outstanding.

The aggregate market value of the voting and non-voting shares of the registrant held by non-affiliates of Trinseo S.A. computed by reference to the closing price of the registrant's common shares on the New York Stock Exchange as of June 30, 2018 was approximately \$3,038,601,050.

Documents Incorporated by Reference

Portions of the registrant's definitive Proxy Statement for the 2018 Annual General Meeting of Shareholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days after the end of the fiscal year covered by this Form 10-K are incorporated by reference in Part III, Items 10-14 of this Form 10-K.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This annual report on Form 10-K (“Annual Report”) contains forward-looking statements including, without limitation, statements concerning plans, objectives, goals, projections, strategies, future events or performance, and underlying assumptions and other statements, which are not statements of historical facts. Forward-looking statements may be identified by the use of words like “expect,” “anticipate,” “intend,” “forecast,” “see,” “outlook,” “will,” “may,” “might,” “potential,” “likely,” “target,” “plan,” “contemplate,” “seek,” “attempt,” “should,” “could,” “would” or expressions of similar meaning. Forward-looking statements reflect management’s evaluation of information currently available and are based on our current expectations and assumptions regarding our business, the economy and other future conditions. Because forward-looking statements relate to the future, they are subject to inherent uncertainties, risks and changes in circumstances that are difficult to predict. Specific factors that may impact performance or other predictions of future actions have, in many but not all cases, been identified in connection with specific forward-looking statements. Our actual results may differ materially from those contemplated by the forward-looking statements. They are neither statements of historical fact nor guarantees or assurances of future performance. Important factors that could cause actual results to differ materially from those in the forward-looking statements include economic, business, competitive, market and regulatory conditions and the following:

- volatility in costs or disruption in the supply of the raw materials or energy utilized for our products;
- conditions in the global economy and capital markets;
- our migration from services and technologies provided by The Dow Chemical Company;
- the execution of capital projects and other growth investments in accordance with the Company’s plan, budget and forecasts;
- any disruptions in production at our manufacturing facilities;
- findings by European competition authorities that the Company violated the law with respect to our styrene monomer commercial activities;
- costs and business restrictions associated with complying to custom, international trade, export control and antitrust laws;
- strategic acquisitions or divestitures affecting our operations or financial condition;
- our continued reliance on our relationship with The Dow Chemical Company;
- regulatory and statutory changes applicable to our raw materials and products;
- the stability of our joint ventures;
- our current and future levels of indebtedness;
- the restrictions on our operations due to our indebtedness;
- any inability to continue technological innovation and successful introduction of new products;
- local business risks in the different countries in which we operate;
- liabilities and losses related to contamination, environmental damage, or chemical exposures or release;
- the limitations of our intellectual property licensing arrangements with The Dow Chemical Company;
- expenditures related to changes to and our compliance with environmental, health and safety laws;
- fluctuations in currency exchange rates;
- any inability to protect our trademarks, patents, and other intellectual property rights;
- our infringement on the intellectual property rights of others;
- data security breaches;
- risks associated with our incorporation in Luxembourg; and
- other risks described in the “Risk Factors” section or other sections of this Annual Report.

We derive many of our forward-looking statements from our operating budgets and forecasts, which are based upon many detailed assumptions. While we believe that our assumptions are reasonable, we caution that 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 our expectations, or cautionary statements, are disclosed under the sections entitled “Risk Factors,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and “Quantitative and Qualitative Disclosures About Market Risk” in this Annual Report. All written and oral forward-looking statements attributable to us, or persons acting on our behalf, are expressly qualified in their entirety by the cautionary statements as well as other cautionary statements that are made from time to time in our other public communications. You should evaluate all forward-looking statements made in this Annual Report in the context of these risks and uncertainties.

We caution you that the important factors referenced above may not contain all of the factors that are important to you. In addition, we cannot assure you that we will realize the results or developments we expect or anticipate or, even if substantially realized, that they will result in the consequences or affect us or our operations in the way we expect. The forward-looking statements included in this Annual Report are made only as of the date hereof. 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.

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Trinseo S.A.
Form 10-K Annual Report
For the Fiscal Year Ended December 31, 2018

Unless otherwise indicated or required by context, as used in this Annual Report, the term “Trinseo” refers to Trinseo S.A. (NYSE: TSE), a public limited liability company (société anonyme) existing under the laws of Luxembourg, and not its subsidiaries. The terms “Company,” “we,” “us” and “our” refer to Trinseo and its consolidated subsidiaries, taken as a consolidated entity and as required by context, may also include our business as owned by our predecessor, The Dow Chemical Company, for any dates prior to June 17, 2010. All financial data provided in this Annual Report is the financial data of the Company, unless otherwise indicated.

Prior to our formation, our business was wholly owned by The Dow Chemical Company, which we refer to as, together with its affiliates, “Dow.” We refer to our predecessor business as “the Styron business.” On June 17, 2010, investment funds advised or managed by affiliates of Bain Capital Partners, LP (“Bain Capital”) acquired Dow Europe Holding B.V. and the Styron business. We refer to our acquisition by Bain Capital as the “Acquisition.” During 2016, Bain Capital Everest Manager Holding SCA (the “former Parent”), an affiliate of Bain Capital, divested its entire ownership in the Company in a series of secondary offerings to the market.

The Company may distribute cash to shareholders under Luxembourg law via repayments of equity or an allocation of statutory profits. Since the Company began paying dividends, all distributions have been considered repayments of equity under Luxembourg law.

Definitions of capitalized terms not defined herein appear in the notes to our consolidated financial statements. Specifically, refer to Note 11 in the consolidated financial statements for definitions of the Company’s debt facilities.

PART I

Item 1. *Business*

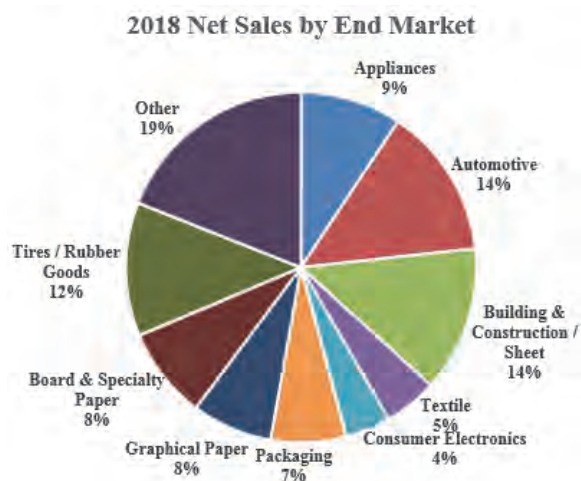
BUSINESS

The Company

Trinseo S.A. (NYSE: TSE) is a public limited liability company (société anonyme) formed in 2010 and existing under the laws of Luxembourg. Prior to our formation, our business was wholly owned by Dow. On June 17, 2010, investment funds advised or managed by affiliates of Bain Capital acquired our business and Dow Europe Holding B.V. During 2016, Bain Capital divested its entire ownership in the Company in a series of secondary offerings to the market.

We are a leading global materials company engaged in the manufacture and marketing of synthetic rubber, latex binders, and plastics, including various specialty and technologically differentiated products. We have leading market positions in many of the markets in which we compete. Our products are incorporated into a wide range of our customers' products throughout the world, including tires and other products for automotive applications, carpet and artificial turf backing, coated paper, specialty paper and packaging board, food packaging, appliances, medical devices, consumer electronics and construction applications, among others. We have long-standing relationships with a diverse base of global customers, many of whom are leaders in their markets and rely on us for formulation, technological differentiation, and compounding expertise to find sustainable solutions for their businesses. Many of our products represent only a small portion of a finished product's production costs, but provide critical functionality to the finished product and are often specifically developed to customer specifications. Therefore, we seek to regularly develop new and improved products and processes, supported by our intellectual property portfolio, designed to enhance our customers' product offerings. We believe these product traits result in substantial customer loyalty.

We have significant manufacturing and production operations around the world, which allow us to serve our global customer base. As of December 31, 2018, our production facilities included 30 manufacturing plants (which included a total of 75 production units) at 23 sites across 12 countries, including the Company's joint venture. Additionally, as of December 31, 2018, we operated 10 research and development ("R&D") facilities globally, including technology and innovation development centers and pilot plants and coaters, which we believe are critical to our global presence and innovation capabilities. Our significant global operations also provide diversity in the end markets for our products.



Our Strategy

We believe that there are significant opportunities to improve our business globally and enhance our position as a leading global materials company engaged in the manufacture and marketing of standard, specialty and technologically differentiated emulsion polymers and plastics. The Company's business strategy is to grow both organically and through the pursuit of strategic acquisitions and joint ventures that have attractive risk-adjusted returns that extend our leadership positions in attractive markets and geographies, while also achieving cost efficiencies across our businesses and making strategic divestitures or closures of non-performing businesses and geographies. The Company's organic growth will be developed through strategic capital investments to extend our leadership position in select market segments and by innovation that provides technological differentiation to our customers who seek our technological and development capabilities to create specialty grades, new and sustainable products, and technologically differentiated formulations.

In order to support the Company's strategic growth, we remain committed to maintaining a strong financial position with appropriate financial flexibility and liquidity. The Company employs a disciplined approach to capital allocation and deployment of cash that strives to balance the growth of our business and continued cash generation while providing attractive returns to our shareholders. For 2018, this included increasing our quarterly dividend to shareholders by more than 10% in June 2018, from \$0.36 to \$0.40 per share, and using \$142.9 million in cash to repurchase approximately 2.2 million ordinary shares, about 5% of our ordinary shares outstanding at the beginning of the year.

The priorities for uses of available cash include the servicing of our debt, the continued return of capital to our shareholders via quarterly dividends, the repurchase of our ordinary shares, and the funding of targeted growth initiatives. Management believes that strong cash flow generation, continued profitability, and spending discipline are critical to providing the Company with the ongoing flexibility to pursue our business strategy.

For more information regarding our strategic highlights see Item 7 – *Management's Discussion and Analysis of Financial Condition and Results of Operations – 2018 Highlights*.

Business Segments

Through December 31, 2017, the Company operated under six reporting segments: Latex Binders, Synthetic Rubber, Performance Plastics, Basic Plastics, Feedstocks, and Americas Styrenics. Effective January 1, 2018, the Company realigned our reporting segments to reflect the new model under which the business is being managed and results are being reviewed by the Chief Executive Officer, who is the Company's chief operating decision maker.

Under this new segmentation, we present operating results for six segments, four of which remain unchanged from the Company's prior segmentation: Latex Binders, Synthetic Rubber, Feedstocks, and Americas Styrenics. The results of our Polystyrene business, which were previously included within the Basic Plastics segment, are now reported as a stand-alone segment. Performance Plastics, which previously consisted of compounds, blends, and acrylonitrile-butadiene-styrene ("ABS") products sold to the automotive market, now includes the remaining portion of our ABS business, as well as the results of our styrene-acrylonitrile ("SAN") and polycarbonate ("PC") businesses. This segmentation change provides enhanced clarity to investors by concentrating the Company's more specialized plastics into a single reporting segment, while also reducing complexity as PC and ABS are the primary inputs into the downstream production of our compounds and blends.

Prior period financial information included within this Annual Report has been recast from its previous presentation to reflect the Company's new organizational structure.

Refer to Note 19 in the consolidated financial statements for information regarding sales and Adjusted EBITDA by segment, which is the performance metric used by management to evaluate our segments' performance, as well as sales and long-lived assets by geographic area.

Latex Binders Segment

Overview

We are a global leader in styrene-butadiene latex ("SB latex"), holding a strong market position across the geographies and applications in which we compete, including the #2 position in SB latex capacity in Europe and the #1 position in capacity in North America. In 2018, approximately 43% of our Latex Binders segment's sales were generated in Europe, 27% were generated in the United States, and the majority of the remaining net sales were generated in Asia.

Products and End Uses

We hold the #1 position for supplying SB latex for the coated paper market globally. SB latex is widely used as a binder for mineral pigments as it allows high coating speeds, improved smoothness, higher gloss level, opacity and water resistance that is valued in the product's end use in advertising, magazines, and packaging board coatings.

We are also a leading supplier of latex binders to the carpet and artificial turf industries and offer a diverse range of products for use in residential and commercial broadloom, needlefelt, and woven carpet backings. We produce high solids SB latex, styrene-acrylate latex ("SA latex"), vinylidene chloride, and butadiene-methacrylate latex products for the commercial and niche carpet markets. SB latex is also used in flooring as an adhesive for carpet and artificial turf fibers.

We also offer a broad range of performance latex products, including SB latex, SA latex, and vinylidene chloride latex primarily for the adhesive, building and construction as well as the technical textile paper market, and have begun to implement the use of starch and associated new chemistries in paper coatings and carpet backing.

Competition and Customers

Our principal competitors in our Latex Binders segment include BASF Group, Omnova Solutions Inc., and Synthomer plc. In this segment, we compete primarily based on our ability to offer differentiated and reliable products, the quality of our customer service and the length and depth of our relationships. We also believe our growth prospects could be enhanced if the recent trend of industry capacity reduction and consolidation continues.

We believe our Latex Binders segment is able to differentiate itself by offering customers value-added formulation and product development expertise. Our R&D team and Technical Services and Development ("TS&D") team are able to use our two pilot coating facilities in Switzerland and the United States, three paper fabrication and testing labs in China, Switzerland and the United States, three carpet technology centers located near carpet producers in China, the United States and Switzerland, and two product development and process research centers, one each in Germany and the United States, to assist customers in designing new products and enhancing the manufacturing process. Many of our major customers rely on our dedicated R&D and TS&D teams to complement their limited in-house resources for formulation and reformulation tests and trials. We believe that this capability allows us to capture new business, strengthen our existing customer relationships and broaden our technological expertise.

Additionally, our global manufacturing capabilities are key in serving customers cost-effectively, as latex binders are costly to ship over long distances due to their high water content. We believe that our global network of service and manufacturing facilities is highly valued by our customers. We seek to capture the value of our R&D and TS&D services and manufacturing capabilities through our pricing strategy. In 2018, we estimate that more than half of net sales in this segment related to contracts that include raw material pass-through clauses.

Seasonality

Reporting periods impacted by the winter season and unfavorable weather conditions that typically affect the construction and building materials end markets may result in seasonally lower performance in our Latex Binders segment.

Synthetic Rubber Segment

Overview

We are a significant producer of styrene-butadiene and polybutadiene-based rubber products and we have a leading European market position, providing approximately 52% of Western Europe's solution styrene butadiene rubber ("SSBR") capacity available for sale. While substantially all of our net sales were generated in Europe in 2018, approximately 21% of these net sales were exported to Asia, 12% to North America, and 5% to Latin America.

Products and End Uses

Our Synthetic Rubber segment produces synthetic rubber products used in high-performance tires, impact modifiers and technical rubber products, such as conveyor belts, hoses, seals and gaskets. We participate significantly in the European synthetic rubber industry, where tire producers focus on high-performance and ultra high-performance tires

and rely heavily on their rubber suppliers. This is in contrast to North America, where tire manufacturers produce most of their required rubber. We have a broad synthetic rubber technology and product portfolio, focusing on specialty products, such as SSBR, while also producing core products, such as emulsion styrene-butadiene rubber (“ESBR”). Our synthetic rubber products are extensively used in tires, with approximately 88% of our net sales from this segment in 2018 attributable to the tire market. We have strong relationships with many of the top global tire manufacturers and believe we have remained a supplier of choice as a result of our broad rubber portfolio and ability to offer technologically differentiated product and product customization capabilities. Other applications for our synthetic rubber products include polymer modification and technical rubber goods.

SSBR. We sell SSBR products for high-performance and ultra high-performance tire applications. We produce both clear and oil extended SSBR through batch polymerization in our four SSBR production lines. We believe these processes provide leading and technologically differentiated solutions to tire manufacturers.

During the last several years, we have been working closely with major tire producers around the world to develop multiple new SSBR grades, addressing key marketplace needs for improved tire fuel economy, grip, and abrasion characteristics, which we believe will lead to significant demand growth for our rubber products in Europe and around the world. We expect our synthetic rubber product mix to continue to shift to more advanced SSBR grades (noting approximately 12% of our total Synthetic Rubber segment volume sold in 2012, compared to 34% in 2018) in order to meet this shift in product demand. In 2018, SSBR represented approximately 60% of total segment net sales.

Performance tires represent an especially attractive market to rubber producers because they provide substantial value to end customers. In fact, the market for performance tires is expected to grow at a rate of 6-8% in 2019, which is approximately two to three times that of the total tire market. Tire manufacturers are expected to continually seek improvements in advanced rubber, which optimizes the combination of fuel economy and wet grip in order to meet EU regulations which set minimum requirements and are being phased in through 2020. Other jurisdictions have adopted or are considering similar legislation and are also beginning to adopt the tire labeling requirements that have become mandatory in Europe. We believe our growth prospects are enhanced by increasing demand for high-performance tires, which as a result of regulatory reforms aimed at improving fuel efficiency and reducing carbon dioxide emissions in the EU, Japan, and Korea, are now more commonly used by automakers as original equipment manufacturer specified tires in their vehicles.

ESBR. Our ESBR products are used in standard tires, technical goods, and footwear. Our ESBR product portfolio offers tire producers a comprehensive suite of synthetic rubber capabilities. For example, ESBR provides enhanced wet grip to tire treads and strength to the inner liner of tires, allowing the tires to be more easily processed. In 2018, ESBR represented approximately 33% of total segment net sales.

Ni-PBR and Nd-PBR. In November 2015, we completed the conversion of our nickel polybutadiene rubber (“Ni-PBR”) production capacity at our Schkopau, Germany facility to a swing line, allowing for the production of both Ni-PBR and neodymium polybutadiene rubber (“Nd-PBR”). We sell Ni-PBR products for use in standard tires, performance tires, technical goods, and footwear. Nd-PBR is a key material in the latest generation of performance tires, and is also sold for use in industrial rubber goods and polymer modification. In 2018, Ni-PBR and Nd-PBR represented in aggregate approximately 7% of total segment net sales.

Competition and Customers

Our principal competitors in our Synthetic Rubber segment include Asahi Kasei Corporation, JSR Corporation, ARLANXEO, Zeon Corporation, Kumho Petrochemical Co., Ltd., PetroChina Company Limited, Reliance Rubber Industries, Sinopec Corp., Versalis S.p.A and Synthos S.A. In our Synthetic Rubber segment, we compete primarily based on our ability to offer differentiated and reliable products, the quality of our customer service and the length and depth of our relationships. We maintain deep and long-standing relationships with a large number of multinational customers, including many of the top global tire manufacturers, as well as fast growing Asian tire manufacturers. Our relationships with our top customers, including with our predecessor business operated by Dow prior to the Acquisition (as defined in Note 1 in the consolidated financial statements), range from 10 to more than 20 years. In 2018, our top three customers in this segment accounted for 56% of segment net sales. The loss of one or more of these customers could have a material adverse effect on the performance of the Synthetic Rubber segment.

We believe that we are a supplier of choice to our customers, given our broad rubber portfolio, including technologically differentiated grades, and our product customization capabilities. Our R&D and TS&D teams use our

broad rubber portfolio to develop differentiated specialty products for customers. Once implemented with a customer, these newly-developed specialty products cannot be easily replaced with a competitor's product. As a result, we believe customers are likely to buy from us throughout the life cycle of specific tire models to avoid high switching costs and prevent repetition of the expensive development process.

Enhanced SSBR, which includes later generations of SSBR and functionalized SSBR and is used in the new generation of performance tires, is expected to approach 50% of the total SSBR market by 2019. We believe the Company is well-positioned to capture additional market share in the high-growth, high-performance tire application markets. We expect that demand for enhanced SSBR will grow at a rate in excess of supply, resulting in an expected increase in industry utilization rates over the next five years.

In order to address this anticipated demand, the Company has added 125 kilotons ("KT") of SSBR capacity since 2012, including additional SSBR capacity that came online in January 2018 at our Schkopau, Germany facility. In 2018, the Company also opened a new SSBR rubber pilot plant that allows us to expedite the product development process from lab sample to commercialization by delivering sufficient quantities of new formulations without the need to interrupt production in our industrial lines.

While we export our rubber products worldwide, our production facilities currently are solely in Europe. Therefore, we may face competitive challenges with customers who would prefer local manufacturers. In 2018, we estimate that approximately three quarters of net sales in this segment related to contracts that include raw material pass-through clauses.

Seasonality

Our Synthetic Rubber segment experiences some seasonality with its highest period of demand typically occurring during the first quarter of the year as inventories are built ahead of the summer season. The lowest period of demand normally occurs during the third quarter of the year due to the summer holidays.

Performance Plastics Segment

Overview

Our Performance Plastics segment consists of a variety of compounds and blends, and also includes our ABS, SAN, and PC businesses. We are a producer of highly engineered compounds and blends for automotive end markets, as well as consumer electronics, medical, electrical, lighting, building and construction, and appliances. Additionally this segment includes the results of API Applicazioni Plastiche Industriali S.p.A. ("API Plastics"), a manufacturer of soft-touch polymers and bioplastics, such as thermoplastic elastomers ("TPEs"), which we acquired in July 2017. In 2018, approximately 59% of our Performance Plastics segment's net sales were generated in Europe, approximately 21% were generated in the United States, and approximately 14% were generated in Asia, with the remainder in other geographic areas, including Mexico and Canada.

Products and End Uses

Our Performance Plastics segment consists of compounds and blends and some specialized ABS grades; SAN; PC; polypropylene; and thermoplastic elastomers.

Copolymers. Our copolymers products consist of ABS and SAN. In 2018, copolymers represented approximately 47% of total segment net sales.

We are a leading producer of ABS in Europe and are one of the few producers with a presence in North America. We produce mass ABS ("mABS"), a variation of ABS that has lower conversion and capital costs compared to the more common emulsion ABS ("eABS") process, marketed under our MAGNUM™ brand. mABS has similar properties to eABS but has greater colorability, thermal stability and lower gloss. mABS products can be manufactured to stricter specifications because they are produced in a continuous process as opposed to the batch process used in eABS. mABS also has environmental benefits such as waste reduction and higher yields. In addition to our own mABS production capacity, we have licensed our proprietary mABS technology to other producers. During the fourth quarter of 2017, the Company announced the successful start-up of a MAGNUM™ ABS production line at our manufacturing plant at the Zhangjiagang, China site, which added additional regional production capabilities in order to meet customer needs for MAGNUM™ ABS in the Asia Pacific automotive, appliance, electronics, lighting and consumer goods markets.

Primary end uses for our ABS products include automotive and construction sheet applications. We maintain a significant share of ABS sales into these markets, which we believe is due to the differentiating attributes of our mABS products, our reputation as a knowledgeable supplier, our broad product mix and our customer collaboration and design capabilities.

SAN is composed of styrene and acrylonitrile, which together provide clarity, stiffness, enhanced ability to be processed, mechanical strength, barrier properties, chemical resistance and heat resistance. SAN is used mainly in appliances, consumer goods and construction sheets, due to its low-cost, clarity and chemical resistance properties.

PC & Compounding. Our PC & Compounding products consist of PC/ABS compounds, PC blends, and PC and polypropylene blends. In 2018, PC & Compounding represented approximately 49% of total segment net sales.

PC has high levels of clarity, impact resistance and temperature resistance. PC can be used in its neat form (prior to any compounding or blending) for markets such as construction sheet, optical media and LED lighting. Additionally, PC can be compounded or blended with other polymers, such as ABS, which imparts specific performance attributes tailored to the product's end-use.

Our products for glazing and construction sheets are marketed under the CALIBRE™ brand name and offer customers a combination of clarity, heat resistance and impact performance. Glazing and construction sheet represents our largest PC application, and is a key growth focus for us. Key end-markets include the construction industry, with additional opportunities for growth with compounded products in the medical device market, consumer electronics and other applications such as smart meter casings that require plastics with enhanced weatherability, ignition resistance and impact performance.

We have a significant position in PC/ABS blends, which combine the heat resistance and impact strength of PC with the easy-to-process qualities and resilience of ABS. Our Performance Plastics segment also compounds and blends our PC and ABS plastics into differentiated products for customers, as well as compounds of polypropylene. We have also developed compounds containing post-consumer recycled polymers to respond to what we believe is a growing need for some customers to include recycled content in their products. We believe our ability to offer technologically differentiated products to meet customer needs sets us apart from our competitors, and with our history as a leading innovator in compounds and blends, we have established ourselves as a leading supplier of PC-based products.

For the automotive industry, we manufacture PC/ABS blends under the PULSE™ brand, and we innovate collaboratively with our customers to develop performance solutions to meet the industry's needs, such as reducing the weight of vehicles. As a result, we are a key supplier of these products to leading automotive companies in North America and Europe, who tend to specify these products on a per car program platform basis, making it difficult to be displaced as a supplier once selected and providing us with relatively stable and predictable cash flows for several years during the production lifecycle. We are also accelerating our development of similar supply capabilities in additional geographies, like China.

For the consumer electronics, electrical and lighting and medical device industries, we manufacture our products under the EMERGE™ brand, among others, and we believe that we have growth opportunities in tablets, notebooks, smart phones and other handheld devices, and electrical and lighting and medical device components. In serving these markets, we leverage our polymer and compound technologies to meet increasingly stringent performance requirements along with the aesthetic and color-matching requirements which are crucial characteristics for the products involved.

API Plastics. Through our acquisition of API Plastics in 2017, we have added TPEs and other soft polymers to our product offerings for the automotive industry. In 2018, API Plastics represented approximately 4% of total segment net sales.

Competition and Customers

Our principal competitors in our Performance Plastics segment are Covestro AG, Saudi Basic Industries Corporation, Borealis AG, Celanese Corporation, Shanghai Kumho Sunny Plastics Co., Ltd., Shanghai Pret Composites Co. Ltd., INEOS Styrolution, Lotte Chemical Corporation, and LyondellBasell. In our Performance Plastics segment, we compete primarily based on our ability to offer differentiated and reliable products, the quality of our customer service and the length and depth of our customer relationships.

We believe potential growth in the Performance Plastic segment will be impacted by a number of factors, including consumer preference for lighter weight and impact-resistant products and the development of new consumer

electronics and continuing growth in medical device applications. Additionally, we believe growth prospects are bolstered by sustainability trends, such as the substitution of lighter-weight plastics for metal in automobiles. Therefore, we believe our history of innovation and our focus on differentiated products enhances our growth prospects in this segment. Our innovation has contributed to long-standing relationships with customers who are recognized leaders in their respective end-markets. We also believe our global facilities are a competitive advantage that allows us to provide customers with consistent grades across markets and positions us to strategically serve emerging markets.

However, for PC, we have a lower competitive position than our peers, which may ultimately impact our ability to implement an effective pricing strategy. Of all the styrene derivative products, ABS has the highest projected growth rate over the next five years, which is expected to outpace supply, resulting in increasing operating rates.

Seasonality

Reporting periods impacted by the winter season and unfavorable weather conditions that typically affect the construction and building materials end markets may result in seasonally lower performance in our Performance Plastics segment.

Polystyrene Segment

Overview

We are a leading producer of polystyrene and focus on sales to injection molding and thermoforming customers. We do not anticipate investing in strategic growth initiatives in this segment in the near term. In 2018, approximately 60% of net sales from our Polystyrene segment were generated in Europe and 40% of net sales were generated in Asia.

Products and End Uses

Our product offerings include a variety of general purpose polystyrenes (“GPPS”) and high impact polystyrene (“HIPS”), which is polystyrene that has been modified with polybutadiene rubber to increase its impact resistant properties. These products provide customers with performance and aesthetics at a low cost across applications, including appliances, packaging, including food packaging and food service disposables, consumer electronics and building and construction materials.

We believe our STYRON™ brand is one of the longest established brands in the industry and is widely recognized in the global marketplace. We believe our R&D capabilities provide valuable, differentiated solutions for our customers, making us well-positioned to address the sustainability, weight reduction, and safety needs.

Competition and Customers

Our principal competitors in our Polystyrene segment are INEOS Styrolution, Versalis S.p.A., Total S.p.A., Covestro AG, LG Chem Ltd., Elix Polymers, Sinopec Corp., Formosa Chemicals & Fibre Corp., and Chi Mei Corporation. In this segment, we compete primarily based on our ability to offer reliable products as well as the quality of our customer service and the length and depth of our relationships.

Our customer-centric model focuses on understanding customers’ needs and developing tailored relationships that add an additional value over the value of the actual product performance. For durable applications, we focus our TS&D, R&D and marketing teams on product design engineering initiatives for developing and specifying plastics in the next generation of construction applications, and appliances. In non-durable applications, we focus on innovative products that provide clear cost advantages to our customers, serving customers with our cost-advantaged technology and operating excellence. We have leveraged industry-leading product development and technology capabilities in many of our product lines in this segment to develop long-standing customer relationships with many of our customers, including a number who have purchased from us, including our predecessor business operated by Dow for more than 20 years. We believe that our asset footprint is an advantage, allowing us to provide customers with consistent product grades and positioning us to strategically serve growth economies.

Seasonality

Due to the geographic diversity of the Company’s customers and end-markets for our polystyrene products across the globe, our Polystyrene segment does not typically experience material levels of seasonality. However, sales volumes

may fluctuate from quarter to quarter as customers may adjust their purchase patterns based on their expectations of polystyrene price changes.

Feedstocks Segment

Overview

Our Feedstocks segment is primarily focused on the revenue and profitability related to the Company's production and procurement of styrene monomer outside of North America. The Feedstocks segment supplied 15% of the styrene monomer capacity out of Europe in 2018. In 2019, the Company expects to produce approximately 700 KT of styrene in Western Europe and purchase approximately 60 KT of styrene in Asia on a raw material cost basis.

Products and End Uses

Styrene monomer is a basic building block of plastics and a key input to many of the Company's products. Styrene monomer is a key raw material for the production of polystyrene, expandable polystyrene, SAN resins, SA latex, SB latex, ABS resins, unsaturated polyethylene resins, and styrene-butadiene rubber.

Competition and Customers

Our principal competitors in our Feedstocks segment are: INEOS Styrolution, Versalis S.p.A., Total S.p.A., BASF SE, Saudi Basic Industries Corporation, LyondellBasell, Repsol S.A., Sinopec Corp., and Royal Dutch Shell plc. The majority of styrene monomer produced within the Feedstocks segment is consumed by the Company in our own manufacturing activities.

Global styrene operating rates were approximately 89% in 2018 and we believe operating rates will increase through 2020 due to continued demand growth, an aging industry asset base, and limited new capacity. These relatively high operating rates can result in periods of elevated margins due to planned or unplanned production outages. Additional capacity is expected to come online which could lower operating rates early in the next decade, but there is uncertainty around the quantity and timing of future capacity expansions and the net impact of future potential capacity closures.

Seasonality

Our Feedstocks segment does not generally experience material levels of seasonality affecting sales volumes; however, there may be seasonal fluctuations in margin as planned supply outages generally occur more often in the spring and fall seasons.

Americas Styrenics Segment

Overview

This segment consists solely of the operations of our 50%-owned joint venture with Chevron Phillips Chemical Company, Americas Styrenics LLC ("Americas Styrenics"), which continues to be a leading producer in North America of both styrene and polystyrene. In fact, in 2018 Americas Styrenics was the #1 producer of polystyrene and supplied 18% of the styrene monomer capacity in North America. We received a total of \$117.5 million in cash dividends from Americas Styrenics during 2018. We estimate that the contribution to our equity earnings from Americas Styrenics' polystyrene business was approximately 32% in 2018, 40% in 2017, and 51% in 2016. This translates to a contribution from Americas Styrenics' polystyrene business to our Adjusted EBITDA of approximately 8% in 2018, 8% in 2017, and 11% in 2016.

Products and End Uses

Styrene monomer is a basic building block of plastics and a key input to many of the Company's products. Styrene monomer is a key raw material for the production of polystyrene, and in 2018 approximately 58% of the styrene monomer produced by Americas Styrenics was consumed in its own production of polystyrene. The remainder of Americas Styrenics' product is sold as a key raw material to other manufacturers of polystyrene, expandable polystyrene, SB latex, ABS resins, unsaturated polyethylene resins, and styrene-butadiene rubber.

Americas Styrenics also produces GPPS, high heat, high impact resin, and STYRON A-TECH™ polystyrene products. Major applications for these polystyrene products include appliances, food packaging, food service disposables, consumer electronics and building and construction materials.

Competition and Customers

Americas Styrenics' principal competitors are INEOS Styrolution, Total S.p.A., and LyondellBasell. In our Americas Styrenics segment, we compete primarily based on our ability to offer reliable products as well as the quality of our customer service and the length and depth of our relationships.

As a leading styrenics producer in North America, this segment is well-positioned to benefit from consolidation dynamics in the styrene and polystyrene industries within the region. With global utilization rates expected to steadily improve as demand grows in end-markets, we believe opportunities will be created for us, given our scale and geographic reach that will benefit the Americas Styrenics segment. However, like many of competitors in the styrenics market, the aged assets associated with this segment may result in unplanned outages that may adversely impact our service levels and competitive position.

Seasonality

Reporting periods impacted by the winter season and unfavorable weather conditions that typically affect the construction and building materials end markets may result in seasonally lower performance in our Americas Styrenics segment.

Our Relationship with Dow

We have entered into certain agreements with Dow, including the Second Amended and Restated Master Outsourcing Services Agreement, which was modified on June 1, 2013 ("SAR MOSA"), the Amended and Restated MOD5 Computerized Process Control Software, Licenses and Services Agreement, with Rofan Services, Inc. which was modified on June 1, 2013 ("AR MOD5 Agreement"), site and operating services agreements ("SAR SSAs"), and supply agreements.

The SAR MOSA provides for ongoing worldwide services from Dow, in areas such as information technology, enterprise resource planning, finance, environmental health and safety, training, customer service, marketing and sales support, supply chain and certain sourcing and transactional procurement services. This agreement is effective through December 31, 2020, with automatic two-year renewals, barring six-months' notice of non-renewal provided by either party. The Company has the ability to terminate all or a portion of the services under the SAR MOSA, subject to payment of termination charges, with certain 'highly integrated' services following a separate process for evaluation and termination. In addition, either party may terminate for cause, for material breach which is not cured, or by Dow in the event of our failure to pay for the services thereunder. In the event of a change of control, as defined in the agreement, Dow has the right to terminate the SAR MOSA.

We use SAP's Enterprise Resource Planning ("ERP") software systems to support our operations worldwide and to manage our day-to-day business processes and relationships with customers and suppliers. Under the SAR MOSA, Dow provides us with ERP systems support, global data/voice network and server infrastructure for desktop computing, email, file sharing, intranet and internet website access, and mainframe and midrange computer access.

During 2018, the Company began efforts to insource, and in some cases outsource to other vendors, certain information technology, procurement, supply chain, and ERP services and systems currently provided by Dow. Before the end of 2019, the Company expects to cease having Dow provide certain customer service and logistics activities, procurement services, and environmental health and safety activities, with certain information security and information technology services and systems to be transitioned thereafter. During 2018, the Company incurred \$26.1 million in costs related to our transition of these services away from Dow, of which \$5.7 million was capitalized and \$20.4 million was recognized as expense. The Company expects to incur further significant costs related to transitioning services away from Dow.

Under the AR MOD5 Agreement, Dow provides worldwide process control technology, including hardware, software licenses and support services, and related enterprise resource planning services. The AR MOD5 Agreement, with a term through December 2020, may be terminated by either party for cause, which includes a bankruptcy,

liquidation or similar proceeding by the other party, for material breach which is not cured by us if we no longer wish to receive maintenance and support for any licensed software; or by Dow if we use the licensed software for any purposes other than Company business. Dow may terminate the maintenance and support terms at any time if we fail to make payments when due and the default is not corrected within 30 days from notice, or upon two-years' written notice to us, if Dow has made the decision not to support the software systems, provided that Dow will use commercially reasonable efforts to assist us in locating and transitioning to an alternate service provider. While we are not permitted to use this automation technology for new plants or to substantially expand existing plants, we can use other technology solutions for those situations. As of December 31, 2018, we have converted approximately half of our plants from the AR MOD5 process control technology through a strategic external relationship with ABB Ltd. and expect to convert six additional plants in 2019, with the remainder of our plants converted thereafter.

In addition, we entered into various site services agreements with Dow to provide site services to the Company at Dow owned sites, which were modified as of June 1, 2013 (the "Amendment Date"). Conversely, we entered into similar agreements with Dow in June 2010, where at Company owned sites, we provide such services to Dow. These SAR SSAs cover general services that are provided at specific facilities co-located with Dow, rather than organization-wide services, and include utilities, site administration, environmental health and safety, site maintenance and supply chain. In certain circumstances, the parties may adjust certain prices and volumes. These agreements generally have 25-year terms from the Amendment Date, with options to renew. These agreements may be terminated at any time by agreement of the parties, or, by either party, for cause, including a bankruptcy, liquidation or similar proceeding by the other party, or under certain circumstances for a material breach which is not cured. In addition, we may terminate for convenience any services that Dow has agreed to provide to us that are identified in any site services agreement as "terminable" with 12-months' prior notice to Dow, dependent upon whether the service is highly integrated into Dow operations. Highly integrated services are agreed to be nonterminable. With respect to "nonterminable" services that Dow has agreed to provide to us, such as electricity and steam, we generally cannot terminate such services prior to the termination date unless we experience a production unit shut down for which we provide Dow with 15-months' prior notice, or upon payment of a shutdown fee. Upon expiration or termination, we would be obligated to pay a monthly fee to Dow, which obligation extends for a period of 45 (in the case of expiration) to 60 months (in the case of termination) following the respective event of each site services agreement. The agreements under which Dow receives services from us may be terminated under the same circumstances and conditions.

For the years ended December 31, 2018, 2017, and 2016, we incurred a total of \$265.1 million, \$236.4 million, and \$224.7 million, respectively, in expenses under the SAR MOSA, AR MOD5 Agreement, and site services agreements (which include utilities), including \$210.8 million, \$183.3 million, and \$174.8 million, respectively, for both the variable and fixed cost components of the site services agreements and \$54.3 million, \$53.1 million, and \$49.9 million, respectively, covering all other agreements.

In addition, at the date of the Acquisition, we entered into a contract manufacturing agreement pursuant to which we operate and maintain our SAN facility in Midland, Michigan to produce products for Dow. This agreement has a 25-year term, with automatic renewals for five-year terms unless one party gives notice at least 18 months prior to the end of the period. We may terminate any operational service under the agreement in the event that we experience a production unit shutdown, with 15-months' prior notice to Dow. Furthermore, the agreement may be terminated by mutual agreement between the parties, by either party on notice that the other party fails to cure non-performance or if the other party is in material breach of a material obligation under the agreement within certain parameters, or because of either party's insolvency.

For the years ended December 31, 2018, 2017, and 2016, purchases and other charges from Dow and its affiliated companies (excluding the SAR MOSA, AR MOD5 Agreement, and site services agreements) were approximately \$1,145.5 million, \$1,120.8 million, and \$865.7 million, respectively. These purchases and other charges primarily relate to the purchase of raw materials for manufacturing of our products, as discussed further below. Additionally, for the years ended December 31, 2018, 2017, and 2016, sales to Dow and its affiliated companies were approximately \$248.4 million, \$235.2 million, and \$203.5 million, respectively.

We continue to leverage Dow's scale and operational capabilities by procuring certain raw materials, utilities, site services, and other information technology and business services from Dow. In connection with the Acquisition, we entered into several agreements with Dow relating to the provision of certain products and services and other operational arrangements. Dow provides significant operating and other services, and certain raw materials used in the production of our products, under agreements that are important to our business. The failure of Dow to perform their obligations, or the

termination of these agreements, could adversely affect our operations. Significant capital expenditures would be required to integrate these capabilities into our own operations. See Item 1A—*Risk Factors*.

Sources and Availability of Raw Materials

The prices of our key raw materials are volatile and can fluctuate significantly over time. While the predominant reason for this volatility is the impact of market imbalances in supply and demand from time to time, energy prices may also impact the volatility of some of our raw materials. The table below shows our key raw materials by reporting segment.

	<u>Latex Binders</u>	<u>Synthetic Rubber</u>	<u>Performance Plastics</u>	<u>Polystyrene</u>	<u>Feedstocks</u>	<u>Americas Styrenics</u>
<i>Benzene</i>					X	X
<i>Bisphenol A</i>			X			
<i>Butadiene</i>	X	X				
<i>Ethylene</i>					X	X
<i>Polycarbonate</i>			X			
<i>Styrenic resins</i>			X			
<i>Styrene</i>	X	X	X	X	X	X

We have supply contracts in place to help maintain our supply of raw materials at competitive market prices and seek to implement the most efficient and reliable raw material strategy for each of our segments, including maintaining a balance between contracted and spot purchases of raw materials. We also produce raw materials for use by our businesses, such as styrene monomer.

In 2018, we obtained approximately 31% of our raw materials from Dow (based on aggregate purchase price). While Dow provides a significant portion of our raw materials to us pursuant to supply agreements, we have developed a comprehensive strategy for obtaining additional sources of supply where needed. Our 2010 agreements with Dow for ethylene, benzene, and butadiene have 10-year terms with automatic two-year renewal provisions. Minimum and maximum monthly contract quantities were established based on historical consumption rates, and our pricing terms are based on commodity indices in the relevant geography.

In 2018, Dow supplied us with approximately 96% of our benzene requirements and 100% of our ethylene requirements through 10-year contracts that commenced in 2010 and include automatic two-year renewal provisions. Dow is our largest supplier for these materials in Europe, where we purchase directly from Dow’s existing butadiene extraction facilities pursuant to the terms of a 10-year contract that commenced in 2010 and includes an automatic two-year renewal term. Other supply sources in Europe include major producers with contract terms of up to five years at competitive market prices. Supply to North America and Asia are exclusively from other major third party producers via supply contracts.

In addition to purchasing styrene through long-term strategic contracts and spot market purchases, we produce styrene internally from purchased ethylene and benzene at our own manufacturing sites. These sources provided 36%, 17%, and 48%, respectively, of our supply in 2018. With this mix of purchased and produced styrene, we seek to optimize our overall costs of securing styrene through efficient logistics, manufacturing economics and market dynamics.

Bisphenol A (“BPA”) is the major raw material associated with PC production. This raw material is produced by a subsidiary of Olin Corporation and is supplied via pipeline to us through a supply contract in Europe that has an initial term expiring in December 2019.

Technology

Our R&D and TS&D activities across our segments focus on identifying needs in our customers’ end-markets. As part of our customer-centric model, our R&D/TS&D organization interfaces with our sales and marketing teams and

directly with customers to determine their product requirements in light of trends in their industries and market segments. This information is used to select R&D/TS&D projects that are value-enhancing for both our customers and us.

Our innovation and technology centers support our technological and R&D/TS&D capabilities. In addition, our R&D/TS&D efforts are also supported by our two SB latex pilot coaters and certain “mini-plants” operated by our businesses in Stade and Schkopau, Germany. These mini plants are used to make samples of experimental products for testing, which we believe is a critical step in our new product development process. In addition, in 2017, we opened a new Plastics Research Center, which modernized two existing technical support centers and research lab operations in a single location at our Terneuzen, The Netherlands office location.

R&D and TS&D costs are included in expenses as incurred. Our R&D and TS&D costs were \$56.0 million, \$54.3 million, and \$50.1 million, for the years ended December 31, 2018, 2017, and 2016, respectively.

Sales and Marketing

We have a customer-centric business model that has helped us to develop strong relationships with many customers. Our sales and marketing professionals are primarily located at our facilities or at virtual offices within their respective geographies. We have approximately 161 professionals working in sales and marketing around the world, along with approximately 80 customer service professionals and we sell our products to customers in approximately 80 countries. We primarily market our products through our direct sales force. Typically our direct sales are made by our employees in the regions closest to the given customer.

Intellectual Property

We evaluate on a case-by-case basis how best to utilize patents, trademarks, copyrights, trade secrets and other intellectual property in order to protect our products and our critical investments in research and development, manufacturing and marketing. We focus on securing and maintaining patents for certain inventions, while maintaining other inventions as trade secrets, derived from our customer-centric business model, in an effort to maximize the value of our product portfolio and manufacturing capabilities. Our policy is to seek appropriate protection for significant product and process developments in the major markets where the relevant products are manufactured or sold. Patents may cover products, processes, intermediate products and product uses. Patents extend for varying periods in accordance with the date of patent application filing and the legal life of patents in the various countries. The protection afforded, which may also vary from country to country, depends upon the type of subject matter covered by the patent and the scope of the claims of the patent.

In most industrial countries, patent protection may be available for new substances and formulations, as well as for unique applications and production processes. However, given the geographical scope of our business and our continued growth strategy, there are regions of the world in which we do business or may do business in the future where intellectual property protection may be limited and difficult to enforce. We maintain strict information security policies and procedures wherever we do business. These information security policies and procedures include data encryption, controls over the disclosure and safekeeping of confidential information, as well as employee awareness training. Moreover, we monitor our competitors’ products and, if circumstances were to dictate that we do so, we would vigorously challenge the actions of others that conflict with our patents, trademarks and other intellectual property rights.

The technologies we utilize in some of our business lines have been in use for many years (e.g., SB latex and ABS) and a number of our patents relating to such technologies have expired or will expire in within the next several years. As patents expire, or are allowed to lapse, the products and processes described and claimed in those patents become generally available for use by the public. We believe that the expiration of any single patent or family of patents that is scheduled to expire in the next three years would not materially adversely affect our business or financial results. We believe that our trade secrets relating to manufacturing and other processes used in connection with products to which expiring patents relate will continue to provide us with a competitive advantage after the expiration of these patents.

We use trademarks as a means of differentiating our products. We protect our trademarks against infringement where we deem appropriate. We have successfully registered the TRINSEO™ trademark in over 90 countries and have other trademark applications pending.

Dow has either transferred to us or granted perpetual, royalty-free licenses to us to use Dow's intellectual property that was used by Dow to operate the Styron business prior to the Acquisition. This intellectual property includes certain processes, compositions and apparatus used in the manufacture of our products. In addition to our license rights to use Dow's intellectual property related to the Styron business, we have obtained licenses to use Dow's intellectual property to the extent necessary to perform our obligations under the contracts transferred to us in the Acquisition and to use such intellectual property (other than patents) for products outside of the Styron business as it was conducted by Dow prior to the Acquisition, subject to certain limitations. While we believe our license rights with respect to Dow's intellectual property are sufficient to allow us to operate our current business, new growth opportunities in latex binders, and to a lesser extent plastics, involving new products may fall outside of our license rights with Dow. Therefore, our ability to develop new products may be impacted by intellectual property rights that have not been licensed to us by Dow. We have the right, with Dow's cooperation, to directly enforce the patents that are exclusively licensed to us by Dow where infringement is primarily within the scope of our business; but nothing obligates Dow to enforce against third parties the intellectual property rights of Dow that are licensed to us on a non-exclusive basis or where the infringement is primarily outside the scope of our business.

Since our formation on June 17, 2010, we have focused our product innovation on our product lines within the Company's Synthetic Rubber, Latex Binders and Performance Plastics segments. The intellectual property that we have created or acquired since the Acquisition is largely in these segments and covers areas such as material formulations, material process technologies and various end-use industrial applications.

Environmental, Health, Safety and Product Stewardship

Obtaining, producing and distributing many of our products involve the use, storage, transportation and disposal of toxic and hazardous materials. We are subject to extensive, evolving and increasingly stringent national and local environmental and safety laws and regulations, which address, among other things, the following:

- emissions to the air;
- discharges to soils and surface and subsurface waters;
- other releases into the environment;
- prevention, remediation or abatement of releases of hazardous materials into the indoor or outdoor environment;
- generation, handling, storage, transportation, treatment and disposal of waste materials;
- climate change impacts;
- process and maintenance of safe conditions in the workplace;
- registration and evaluation of chemicals;
- production, handling, labeling or use of chemicals used or produced by us; and
- stewardship of products after manufacture.

We monitor compliance with applicable state, national, and international environmental, health and safety requirements and maintain policies and procedures to monitor and control environmental, health and safety risks, which may in some circumstances exceed the requirements imposed by applicable law. We have a strong environmental, health and safety organization with a staff of professionals who are responsible for environmental, health, safety and product regulatory compliance and stewardship in addition to the standards, tools and services purchased from Dow. We supplement our programs and Dow's services with our participation in trade associations which monitor developments in legislation impacting our businesses. Additionally, our Supplier Code of Conduct includes our expectations for our suppliers to comply with applicable laws and regulations and encourages them to adhere to the highest principles of environmental responsibility.

We follow the American Chemistry Council Responsible Care® Guiding Principles for our global facilities and products and last received third party certification of our Responsible Care® Management System in September 2016. Many of our facilities have been certified to ISO 14001 and other ISO management systems. We have a mature corporate environmental, health and safety audit program for all of our facilities. We focus on emergency preparedness and crisis planning and drills, at both the facility and corporate level. We expect that stringent environmental regulations will continue to be imposed on us and our industry in general.

Sustainability and Climate Change

We recognize that climate change has had and will continue to have significant impacts on our environment, particularly as it relates to extreme weather conditions, rising sea levels, and regulations limiting the emission of greenhouse gases. In the countries in which we operate, particularly in the EU, we are required to comply with increasingly extensive regulations to address climate change impacts and resource conservation requirements.

We track and publicly report our greenhouse gas emissions, water usage, and energy consumptions and our facilities work to improve our performance at reducing chemical emissions, water usage and energy consumption. Our Sustainability and Corporate Social Responsibility Report, which is available on our website, provides our most recent sustainability highlights for our products, performance and operations. The report highlights our initiatives to improve our sustainability performance. We do not expect the costs to comply with legislation enacted as a result of climate change and other sustainability efforts will be material to our operations and consolidated financial position in the next 12 months.

Environmental Remediation

Environmental laws and regulations require mitigation or remediation of the effects of the disposal or release of chemical substances. Under some of these regulations, as the current owner or operator of a property, we could be held liable for the costs of removal or remediation of hazardous substances on or under the property, without regard to whether we knew of or caused the contamination, and regardless of whether the practices that resulted in the contamination were permitted at the time they occurred. At our Allyn's Point, Connecticut property we lease a portion of the property to our joint venture, Americas Styrenics, for its operations, which includes a regulated hazardous waste boiler. Potential liabilities resulting from our owner status are addressed through financial assurance mechanisms and other agreements. Many of our production sites have an extended history of industrial use, and it is impossible to predict precisely what effect these laws and regulations will have on us in the future. Soil and groundwater contamination has occurred at some of the sites, and might occur or be discovered at other sites. Subject to certain monetary and temporal limitations, Dow is obligated to indemnify and hold us harmless with respect to releases of hazardous material that existed at our sites prior to our separation from Dow in June 2010. However, we cannot be certain that Dow will fully honor the indemnity or that the indemnity will be sufficient to satisfy all claims that we may incur. In addition, we face the risk that future claims might fall outside of the scope of the indemnity, particularly if we experience a release of hazardous materials that occurs in the future or at any time after our separation from Dow. Except for minor monitoring activities that we are performing in Livorno, Italy pursuant to an agreement with Dow, we do not currently have any material obligations to perform environmental remediation on our properties, or for any Superfund site. Any active remedial projects on our properties are being performed by Dow pursuant to its indemnification obligations or for any Superfund sites. We conduct comprehensive environmental due diligence for potential acquisitions to mitigate the risk of assuming obligations to conduct material levels of environmental remediation.

Security

We recognize the importance of security and safety to our employees and the community. Physical security measures have been combined with process safety measures (including the use of technology) and emergency response preparedness into integrated security plans. We have conducted vulnerability assessments at our operating facilities in the U.S. and high priority sites worldwide and identified and implemented appropriate measures to protect these facilities from physical and cyber-attacks. Effort and resources in assessing security vulnerabilities and taking steps to reinforce security at our manufacturing facilities will continue to be required to comply with U.S. Department of Homeland Security ("DHS") and other requirements.

We use Dow's information security program and systems and have expanded our own information security resources, policies, programs and preparedness to respond to potential information security breaches and to maintain compliance with the increasing amount of data privacy laws and regulation.

Employees

As of December 31, 2018, we had approximately 2,500 employees worldwide. Nearly 68% of our personnel are located at the various manufacturing sites, research and development, pilot coating, paper fabrication and testing and technology centers. The remaining employees are located at operating centers, virtual locations or geographically dispersed marketing and sales locations. Our Midland, Michigan site is the only U.S. facility with union representation for its 48 hourly operations personnel, and employees at certain of our locations are represented by work councils. We consider relations with our personnel and the various labor organizations to be good. There have been no labor strikes or work stoppages in these locations in recent history.

Available Information

Our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, are available free of charge through the Investor Relations section of our website, www.trinseo.com, as soon as reasonably practicable after the reports are electronically filed or furnished with the U.S. Securities and Exchange Commission (“SEC”). We provide this website and the information contained in or connected to it for informational purposes only. That information is not part of this Annual Report.

Item 1A. Risk Factors

Risks Related to Our Business

Volatility in energy and the cost of the raw materials utilized for our products, or disruption in the supply of the raw materials utilized for our products, may adversely affect our financial condition and results of operations or cause our financial results to differ materially from our forecasts.

Our results of operations can be directly affected, positively and negatively, by volatility in the cost of our raw materials, which are subject to global supply and demand and other factors beyond our control. Our principal raw materials (benzene, ethylene, butadiene, BPA, and styrene) together represent approximately 56% of our total cost of goods sold. Additionally, we use natural gas and electricity to operate our facilities and generate heat and steam for our various manufacturing processes. Crude oil prices also impact our raw material and energy costs. Generally, higher crude oil prices lead to higher costs of natural gas and raw materials, although some raw materials are impacted less than others. Volatility in the cost of energy or raw materials makes it more challenging to manage pricing and pass the increases on to our customers in a timely manner. We believe that rapid changes in pricing also can affect the volume our customers consume. As a result, our gross profit and margins could also be adversely affected and our financial results may differ materially from our forecasts.

We have long-term supply agreements with Dow for ethylene, benzene, and butadiene, which are critical raw materials to our business and expire in June 2020. These raw materials and other less critical materials amount to approximately 31% of our raw materials (based on aggregate purchase price). The remainder is purchased via other third-party suppliers on a global basis. As our Dow contracts and other third-party contracts expire, we may be unable to renew these contracts or obtain new long-term supply agreements on terms comparable or favorable to us, depending on market conditions, which may significantly impact our operations. See Item 1—*Business— Sources and Availability of Raw Materials*.

If the availability of any of our principal raw materials is limited, we may be unable to produce some of our products in the quantities demanded by our customers, which could have an adverse effect on plant utilization and our sales of products requiring such raw materials. Suppliers may have temporary limitations preventing them from meeting our requirements, and we may not be able to obtain substitute alternative suppliers in a timely manner or on favorable terms.

Conditions in the global economy and capital markets may adversely affect our results of operations, financial condition and cash flows.

Our products are sold in markets that are sensitive to changes in general economic conditions, such as sales of automotive and construction products. Downturns in general economic conditions can cause fluctuations in demand for our products, product prices, volumes and margins.

Turbulence in the credit markets, fluctuating commodity prices, volatile exchange rates and other challenges affecting the global economy can affect us and our customers. Instability and uncertainty in financial and commodity markets throughout the world may cause, among other things, severely diminished liquidity and credit availability, rating downgrades of certain investments and declining valuations and pricing volatility of others, volatile energy and raw materials costs, geopolitical issues and failure and the potential failure of major financial institutions. Adverse events affecting the health of the economy, including sovereign debt and economic crises, refugee crises, terrorism, Brexit, rising protectionism, tariffs, and the threat of war, could have a negative impact on the health of the global economy. These developments, or the perception that any of them could occur, may have a material adverse effect on global economic conditions or on the stability of global financial markets. During any period of uncertainty or heightened market volatility, consumer confidence may decline which could lead to a decline in demand for our products or a shift to lower-margin products, which could adversely affect sales of our products and our profitability and could also result in impairments of certain of our assets.

Deterioration in the financial and credit market heightens the risk of customer bankruptcies and delay in payment. We are unable to predict the duration of the current economic conditions or their effects on financial markets, our business and results of operations. If economic conditions deteriorate, our results of operations, financial condition and cash flows could be materially adversely affected.

Our migration away from services and technologies provided by Dow will entail significant expense and may cause disruptions that could adversely affect our future results, business and financial condition.

During 2018, the Company began efforts to insource, and in some cases outsource to other vendors, certain information technology, procurement, supply chain, and ERP services and systems currently provided by Dow. Before the end of 2019, the Company expects to cease having Dow provide certain customer service and logistics activities, procurement services, and environmental health and safety activities, with certain information security and information technology services and systems to be transitioned thereafter. Additionally, the Company is migrating our manufacturing facilities away from Dow's AR MOD5 technology over the next several years. For more information regarding our relationship with Dow, please see Item 1—*Business — Our Relationship with Dow*.

During 2018, the Company incurred \$26.1 million in costs related to our transition of these services away from Dow, of which \$5.7 million was capitalized and \$20.4 million was recognized as expense. The Company expects to incur further significant costs related to transitioning services away from Dow. Unanticipated capital expenditures and additional expense associated with these migrations may reduce the Company's cash position and profitability, respectively. Further, if the replacement services and technologies are not integrated properly or their integration is delayed, the Company could experience production and operational delays that could significantly harm its reputation and its financial condition. The migration of these services and technologies may divert the attention of our management from day-to-day operations and impose significant administrative burdens on our business.

Capital projects and other growth investments may have lengthy deadlines during which market conditions may deteriorate between the capital expenditure's approval date and the conclusion of the project, negatively impacting projected returns. If we are unable to execute on our capital projects or growth plans within their expected budget and timelines, or if the market conditions assumed in our projections deteriorate, our business, financial condition, results of operations and cash flows could be materially and adversely affected.

Delays or cost increases related to capital and other spending programs involving engineering, procurement and construction of facilities or manufacturing lines or the development of new technologies could materially adversely affect our ability to achieve forecasted operating results. Project delays or budget overages may arise as a result of unpredictable events, which may be beyond our control, including, but not limited to:

- denial of or delay in receiving requisite regulatory approvals, licenses and/or permits;
- unanticipated increases in the cost of construction materials, labor, or utilities;

- disruptions in transportation of components or construction materials;
- adverse weather conditions or natural disasters, equipment malfunctions, explosions, fires or spills affecting our facilities, or those of vendors or suppliers;
- shortages of sufficiently skilled labor, or labor disagreements resulting in unplanned work stoppages; or
- non-performance by, or disputes with, vendors, partners, suppliers, contractors or subcontractors.

Furthermore, presumed demand for the technologies or products provided by the manufacturing facilities or lines being constructed or the technologies being developed may deteriorate during the project period. If we were unable to stay within a project's overall timeline or budget, or if market conditions change, it could materially and adversely affect our business, financial condition, results of operations and cash flows.

Production at our manufacturing facilities could be disrupted for a variety of reasons. Disruptions could expose us to significant losses or liabilities.

The hazards and risks of disruption associated with chemical manufacturing and the related storage and transportation of raw materials, products and wastes exist in our operations and the operations of other occupants with whom we share manufacturing sites. These potential risks of disruption include, but are not necessarily limited to:

- pipeline and storage tank leaks and ruptures;
- explosions and fires;
- inclement or unusual weather and natural disasters, which may be aggravated by climate change;
- terrorist attacks;
- failure of mechanical, process safety and pollution control equipment;
- failures or delays in properly implementing new technologies and processes;
- chemical spills and other discharge or releases of toxic or hazardous substances or gases; and
- exposure to toxic chemicals.

These hazards could expose employees, customers, the community and others to toxic chemicals and other hazards, contaminate the environment, damage property, result in personal injury or death, lead to an interruption or suspension of operations, damage our reputation and adversely affect the productivity and profitability of a particular manufacturing facility or us as a whole, and result in the need for remediation, governmental enforcement, regulatory shutdowns, the imposition of government fines and penalties, and claims brought by governmental entities or third parties. Legal claims and regulatory actions could subject us to both civil and criminal penalties, which could affect our product sales, reputation and profitability. Furthermore, the environmental, health and safety compliance, management systems, and emergency response and crisis management plans we have in place may not address or foresee all potential risks or causes of disruption.

If disruptions occur, alternative facilities with sufficient capacity or capabilities may not be available, may cost substantially more or may take a significant time to start production. Each of these scenarios could negatively affect our business and financial performance. If one of our key manufacturing facilities is unable to produce our products for an extended period of time, our sales may be reduced by the shortfall caused by the disruption and we may not be able to meet our customers' needs, which could cause them to seek other suppliers. Furthermore, to the extent a production disruption occurs at a manufacturing facility that has been operating at or near full capacity, the resulting shortage of our product could be particularly harmful because production at the manufacturing facility may not be able to reach levels achieved prior to the disruption. Our insurance policies may not fully insure against all potential causes of disruption due to limitations and exclusions in those policies. Therefore, incidents that significantly disrupt our operations may expose us to significant losses and/or liabilities.

Trinseo Europe GmbH, one of our subsidiaries, received a Request for Information from the European Commission Directorate General for Competition, involving commercial activity for styrene monomer. To the extent the European Commission's inquiry would lead to a finding that the Company's subsidiary violated the law, the results of this finding could have a material adverse effect on our business, financial condition, results of operations, and cash flows.

On June 6, 2018, Trinseo Europe GmbH, a subsidiary of the Company, received a Request for Information in the form of a letter from the European Commission Directorate General for Competition (the "European Commission")

related to styrene monomer commercial activity in the European Economic Area. In addition, the Company commenced an internal investigation into the matter and has discovered instances of inappropriate activity. The Company is fully cooperating with the European Commission's request and has delivered all requested documents responsive to its information request.

Notwithstanding the delivery of our response to the European Commission, this matter remains open with the European Commission. As a result, we are unable to make any predictions regarding the ultimate outcome of our response to the European Commission's request.

Based on its findings, the European Commission may decide to: (i) require further information; (ii) conduct unannounced raids of the Company's premises; (iii) adopt decisions imposing fines, interim measures to halt immediately any anti-competitive behavior, orders for the Company to cease anti-competitive activities, and/or certain behavioral or structural commitments from the Company; or (iv) take no further action. If Trinseo Europe GmbH is found to have violated one or more laws, it could also be subject to additional actions by local competition authorities. European Commission inquiries or investigations can continue over a long period of time, which can divert the attention of our management from day-to-day operations and impose significant administrative burdens. Any of these consequences could damage our reputation and impair our ability to conduct business, which could have a material adverse effect on our business, financial condition, results of operations, and cash flows.

We are subject to customs, international trade, export control, and antitrust laws that could require us to modify our current business practices and incur increased costs.

We are subject to numerous regulations, including customs and international trade laws, export/import control laws, and associated regulations. These laws and regulations limit the countries in which we can do business; the persons or entities with whom we can do business; the products which we can buy or sell; and the terms under which we can do business, including anti-dumping restrictions. In addition, we are subject to antitrust laws and zoning and occupancy laws that regulate manufacturers generally and/or govern the importation, promotion and sale of our products, the operation of factories and warehouse facilities and our relationship with our customers, suppliers and competitors. If any of these laws or regulations were to change or were violated by our management, employees, suppliers, buying agents or trading companies, the costs of certain goods could increase, or we could experience delays in shipments of our goods, be subject to fines or penalties, or suffer reputational harm, which could reduce demand for our products and hurt our business and negatively impact results of operations. In addition, in some areas we benefit from certain trade protections, including anti-dumping protection and the EU's Authorized Economic Operator program, which provides expedited customs treatment for materials crossing national borders. If we were to lose these protections, our results of operations could be adversely affected.

We may engage in strategic acquisitions or dispositions of certain assets and/or businesses that could affect our business, results of operations, financial condition and liquidity.

We may selectively pursue complementary acquisitions and joint ventures, each of which inherently involves a number of risks and presents financial, managerial and operational challenges, including, but not limited to:

- potential disruption of our ongoing business and the distraction of our management;
- difficulty with integration of personnel and financial and other systems;
- hiring additional management and other critical personnel; and
- increasing the scope, geographic diversity and complexity of our operations.

In addition, we may encounter unforeseen obstacles or costs in the integration of acquired businesses. Also, the presence of one or more material liabilities of an acquired company that are unknown to us at the time of acquisition may have a material adverse effect on our business or financial results. Our acquisition and joint venture strategy may not be successfully received by customers or other stakeholders, and we may not realize any anticipated benefits from acquisitions or joint ventures.

We may also opportunistically pursue dispositions of certain assets and/or businesses, which may involve material amounts of assets or lines of business, and adversely affect our results of operations, financial condition and liquidity. If any such dispositions were to occur, under the terms of our senior secured credit agreement (the "Credit Agreement") governing our senior secured financing facility of up to \$1,075.0 million (the "Senior Credit Facility") and the indenture (the "Indenture") governing our \$500.0 million aggregate principal of 5.375% senior notes due 2025 (the "2025 Senior

Notes”), we may be required to apply the proceeds of the sale to repay any borrowings under our Senior Credit Facility or our 2025 Senior Notes. Dispositions may also involve continued financial involvement in the divested business, such as through continuing equity ownership, transition service agreements, guarantees, indemnities or other current or contingent financial obligations. Under these arrangements, performance by the divested businesses or other conditions outside our control could affect our future financial results.

Dow provides significant operating and other services, and certain raw materials used in the production of our products, under agreements that are important to our business. The failure of Dow to perform its obligations, or the termination of these agreements, could adversely affect our operations.

Prior to our inception, we were operated by Dow, which has provided and continues to provide services under certain agreements that are important to our business. We are a party to:

- The SAR MOSA, an outsourcing service agreement pursuant to which Dow provides certain administrative and business services to us for our operations;
- The AR MOD5 Agreement, an outsourcing service agreement pursuant to which Dow provides worldwide process control technology and related enterprise resource planning services;
- supply and sales agreements pursuant to which Dow, among other things, provides us with raw materials, including ethylene, benzene, and butadiene; and
- an operating services agreement pursuant to which Dow will operate and maintain certain of our facilities at Rheinmunster, Germany as well as employ and provide almost all of the staff for this facility.

Under the terms of the above agreements, either party is permitted to terminate the applicable agreement in a variety of situations, including in the event of the other party’s uncured material breach, insolvency, change of control or cessation of operations. Should Dow fail to provide these services or raw materials, or should any of the above agreements be terminated, we would be forced to obtain these services and raw materials from third parties or provide them ourselves. Additionally, if Dow terminates agreements pursuant to which we are obligated to provide certain services, we may lose the fees received by us under these agreements. The failure of Dow to perform its obligations under, or the termination of, any of these contracts could adversely affect our operations and, depending on market conditions at the time of any such termination, we may not be able to enter into substitute arrangements in a timely manner, or on terms as favorable to us. For more information regarding our relationship with Dow, please see Item 1—*Business — Our Relationship with Dow*.

Regulatory and statutory changes applicable to our raw materials and products and our customers’ products could require material expenditures, changes in our operations and could adversely affect our financial condition and results of operations.

Changes in environmental, health and safety regulations, in jurisdictions where we manufacture and sell our products, could lead to a decrease in demand for our products. In addition to changes in regulations, health, sustainability, and safety concerns could increase the costs incurred by our customers to use our products and otherwise limit the use of these products, which could lead to decreased demand for these products. Such a decrease in demand likely would have an adverse effect on our business and results of operations. Materials such as acrylonitrile, ethylbenzene, styrene, butadiene, BPA and halogenated flame retardant are used in the manufacturing of our products and have come under scrutiny due to potentially significant or perceived health and safety concerns. Moreover, bans on single-use plastic and similar regulatory actions to reduce plastic waste may reduce the demand for some of our products over time.

Additionally, these regulatory regimes currently require significant compliance expenditures by us, and changes applicable to our raw materials and products or our customers’ products could require significant additional expenditures by us, or changes in our operations.

Our products are also used in a variety of end-uses that have specific regulatory requirements such as those relating to products that have contact with food or medical device end-uses. Our customers or distributors may not follow our policies and advice regarding the safe use and application of our products, which may unknowingly expose us to third-party claims. We and many of the applications for the products in the end markets in which we sell our products are regulated by various national and local rules, laws and regulations, such as the U.S. Toxic Substances Control Act and the EU’s Registration, Evaluation, Authorisation and Restriction of Chemicals regulations. Changes in regulations

could result in additional compliance costs, seizures, confiscations, recall or monetary fines, any of which could prevent or inhibit the development, distribution and sale of our products. Changes in environmental and safety laws and regulations banning or restricting the use of these residual materials in our products, or our customers' products, could adversely affect our results of operations and financial condition. Failure to appropriately manage safety, human health, product liability and environmental risks associated with our products, product life cycles and production processes could adversely impact employees, communities, stakeholders, our reputation and the results of our operations.

Joint ventures may not operate according to their business plans if we or our partners fail to fulfill our or their obligations, or differences in views among our joint venture partners result in delayed decisions, which may adversely affect our results of operations and may force us to dedicate additional resources to these joint ventures.

For the year ended December 31, 2018, we received dividends of \$117.5 million from our Americas Styrenics joint venture. We may enter into additional joint ventures in the future. The nature of a joint venture requires us to share control with unaffiliated third parties. If joint venture partners do not fulfill their obligations, the affected joint venture may not be able to operate according to its business plan. In that case, our results of operations may be adversely affected and we may be required to increase the level of our commitment to the joint venture. Differences in views among joint venture participants and our inability to unilaterally implement sales and production strategies or determine cash distributions from joint ventures may significantly impact short-term and longer term financial results, financial condition and the value of our ordinary shares.

Our current and future level of indebtedness of our subsidiaries could adversely affect our financial condition.

As of December 31, 2018, our indebtedness totaled approximately \$1.2 billion. Additionally, as of December 31, 2018, we had \$360.7 million (net of \$14.3 million outstanding letters of credit) of funds available for borrowings under our 2022 Revolving Facility, as well as \$150.0 million of funds available for borrowings under our Accounts Receivable Securitization Facility. Our level of indebtedness could have important consequences, including, but not limited to:

- increasing our vulnerability to economic downturns and adverse industry conditions;
- compromising our flexibility to capitalize on business opportunities and to react to competitive pressures, as compared to our competitors;
- placing us at a disadvantage compared to other, less leveraged competitors or competitors with comparable debt at more favorable interest rates; and
- increasing our cost of borrowing.

Although the Senior Credit Facility and the Indenture governing our 2025 Senior Notes contain restrictions on the incurrence of additional indebtedness, these restrictions are subject to a number of qualifications and exceptions and the indebtedness incurred in compliance with these restrictions could be substantial. Also, we are not prevented from incurring obligations that do not constitute "indebtedness" as defined in the Senior Credit Facility or the Indenture, such as operating leases and trade payables. If new debt is added to our subsidiaries' current debt levels, the risks related to indebtedness that we now face could intensify.

In addition, a substantial portion of our subsidiaries' current indebtedness is secured by substantially all of our assets, which may make it more difficult to secure additional borrowings at reasonable costs. If we default or declare bankruptcy, after these obligations are met, there may not be sufficient funds or assets to satisfy our subordinate interests, including those of our shareholders. For more information regarding our indebtedness, please see Item 7—*Management's Discussion and Analysis of Financial Conditions and Results of Operations—Capital Resources, Indebtedness and Liquidity*.

The terms of our subsidiaries' indebtedness may restrict our current and future operations, particularly our ability to respond to change or to take certain actions.

The Indenture and the Credit Agreement governing our Senior Credit Facility contain a number of covenants imposing certain restrictions on our subsidiaries' businesses. These restrictions may affect our ability to operate our

business and may limit our ability to take advantage of business opportunities. These agreements restrict, among other things, our subsidiaries' ability to:

- sell or assign assets;
- incur additional indebtedness;
- pay dividends to Trinseo S.A.;
- make investments or acquisitions;
- incur liens;
- repurchase or redeem capital shares;
- engage in mergers or consolidations;
- materially alter the business they conduct;
- engage in transactions with affiliates; and
- consolidate, merge or transfer all or substantially all of their assets.

The ability of our subsidiaries to comply with the covenants and financial ratios and tests contained in the Indenture and Credit Agreement, to pay interest on indebtedness, fund working capital, and make anticipated capital expenditures depends on our future performance, which is subject to general economic conditions and other factors, some of which are beyond our control. There can be no assurance that our business will generate sufficient cash flow from operations or that future borrowings will be available under our Senior Credit Facility to fund liquidity needs in an amount sufficient to enable them to service their indebtedness. Furthermore, if we need additional capital for general corporate purposes or to execute on an expansion strategy, there can be no assurance that this capital will be available on satisfactory terms or at all.

A failure to repay amounts owed under the Senior Credit Facility or 2025 Senior Notes at maturity would result in a default. In addition, a breach of any of the covenants in the Senior Credit Facility or Indenture governing our 2025 Senior Notes or our inability to comply with the required financial ratios or limits could result in a default. If a default occurs, lenders may refuse to lend us additional funds and the lenders or noteholders could declare all of the debt and any accrued interest and fees immediately due and payable. A default under one of our subsidiaries' debt agreements may trigger a cross-default under our other debt agreements. For more information regarding our indebtedness, please see Item 7—*Management's Discussion and Analysis of Financial Conditions and Results of Operations—Capital Resources, Indebtedness and Liquidity*.

If we are not able to continue the technological innovation and successful commercial introduction of new products, our customers may turn to other producers to meet their requirements.

Our industry and the end markets into which we sell our products experience periodic technological changes and ongoing product improvements. Our customers may introduce new generations of their own products or require new technological and increased performance specifications that would require us to develop customized products. Innovation or other changes in our customers' product performance requirements may also adversely affect the demand for our products. Our future growth will depend on our ability to gauge the direction of the commercial and technological progress in all key end markets, and upon our ability to successfully develop, manufacture and market products in such changing end markets. We need to continue to identify, develop and market innovative products on a timely basis to replace existing products in order to maintain our profit margins and our competitive position. We may not be successful in developing new products and technology that successfully compete with these materials, and our customers may not accept any of our new products. If we fail to keep pace with evolving technological innovations or fail to modify our products in response to our customers' needs, then our business, financial condition and results of operations could be adversely affected as a result of reduced sales of our products.

As a global business, we are exposed to local business risks in different countries, which could have a material adverse effect on our financial condition or results of operations.

We have significant operations worldwide, including manufacturing facilities, R&D facilities, sales personnel and customer support operations. As of December 31, 2018, we operated, or others operated on our behalf, 30 manufacturing plants (which include a total of 75 production units) at 23 sites around the world, including in Colombia, Germany, The Netherlands, Belgium, Finland, Sweden, Italy, China, South Korea, Indonesia, Taiwan, and the United States. Our

international operations are subject to risks inherent in doing business in foreign countries, including, but not necessarily limited to:

- new and different legal and regulatory requirements in local jurisdictions;
- restrictive labor and employment laws;
- uncertainties regarding interpretation and enforcement of laws and regulations;
- variation in political and economic policy of the local governments and social conditions;
- tariffs, export duties, or import quotas;
- domestic and foreign customs and tariffs or other trade barriers;
- potential staffing difficulties and labor disputes;
- managing and obtaining support and distribution for local operations;
- increased costs of transportation or shipping;
- credit risk and financial conditions of local customers and distributors;
- potential difficulties in protecting intellectual property;
- risk of nationalization of private enterprises by foreign governments;
- potential imposition of restrictions on investments;
- potentially adverse tax consequences, including imposition or increase of withholding and other taxes on remittances and other payments by subsidiaries;
- legal restrictions on doing business in or with certain nations, certain parties and/or certain products;
- foreign currency exchange restrictions and fluctuations; and
- local economic, political and social conditions, including the possibility of hyperinflationary conditions and political instability.

We may not be successful in developing and implementing policies and strategies to address the foregoing factors in a timely and effective manner at each location where we do business. Consequently, the occurrence of one or more of the foregoing factors could have a material adverse effect on our international operations or upon our financial condition and results of operations.

Our operations in developing markets could expose us to political, economic and regulatory risks that are greater than those we may face in established markets. For example, we operate in some nations that have experienced significant levels of governmental corruption. Any failure by us to ensure that our employees and agents comply with applicable laws and regulations in foreign jurisdictions could result in substantial civil and criminal penalties or restrictions on our ability to conduct business in certain foreign jurisdictions or reputational damage, and our results of operations and financial condition could be materially and adversely affected.

We may be subject to losses due to liabilities or lawsuits related to contaminated land we own or operate or arising out of environmental damage or personal injuries associated with exposure to chemicals or the release of chemicals.

Under the Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”) and similar statutes outside the U.S., the current or former owner or operator of a property contaminated by hazardous substance releases is subject to strict, unlimited, joint, several and retroactive liability for the investigation and remediation of the property, and also may be liable for natural resource damages associated with the releases. We also face the risk that individuals could seek damages for personal injury due to exposure to chemicals at our facilities, chemicals which have been released from our facilities, chemicals otherwise owned or controlled by us, or chemicals which allegedly migrated from products containing our materials. We may be subject to claims with respect to workplace exposure, workers’ compensation and other health and safety matters. Legal claims and regulatory actions could subject us to both civil and criminal penalties, which could affect our reputation as well as our results of operations, financial condition, and liquidity.

There are several properties which we now own on which Dow has been conducting remediation to address historical contamination. Those properties include Allyn’s Point, Connecticut; Dalton, Georgia; and Livorno, Italy. There are other properties with historical contamination that are owned by Dow that we lease for our operations, including our facility in Midland, Michigan. While we did not assume the liabilities associated with these properties in the U.S., because CERCLA and similar laws can impose liability for contamination on the current owner or operator of a property, even if it did not create the contamination, there is a possibility that a governmental authority or private party could seek

to include us in an action or claim for remediation or damages, even though the contamination may have occurred prior to our ownership or occupancy. While Dow has agreed to indemnify us for liability for releases of hazardous materials that occurred prior to our separation from Dow, the indemnity is subject to monetary and temporal limitations, and we cannot be certain that Dow will fully honor the indemnity or that the indemnity will be sufficient to satisfy all claims that we may incur. In addition, we face the risk that future claims might fall partially or fully outside of the scope of the indemnity, particularly if there is a release of hazardous materials that occurs in the future or at any time after our separation from Dow or if the condition requiring remediation is attributable to a combination of events or operations occurring prior to and after our separation from Dow.

We are party to certain license agreements with Dow relating to intellectual property that is essential to our business. Because of this relationship, we may have limited ability to expand our use of certain intellectual property beyond the field of the license or to police infringement that may be harmful to our business.

In connection with our separation from Dow, we acquired ownership of, or in some cases, a worldwide right and license to use, certain patents, patent applications and other intellectual property of Dow that were used by Dow to operate our business segments or held by Dow primarily for the benefit of our business segments, prior to the Acquisition. Generally, we acquired ownership of the intellectual property that was primarily used in our business segments and acquired a license to a more limited set of intellectual property that had broader application within Dow beyond our core business segments. Our license from Dow is perpetual, irrevocable, fully paid, and royalty-free. Furthermore, our license from Dow is exclusive within our business segments for certain patents and patent applications that were used by Dow primarily prior to our separation, subject to licenses previously granted by Dow, and to certain retained rights of Dow, including Dow's retained right to use patents and patent applications outside of our business segments and for internal consumption by Dow. Our license from Dow relates to polymeric compositions, manufacturing processes and end applications for the polymeric compositions; and is limited to use in defined areas corresponding to our current business segments excluding certain products and end-use application technology retained by Dow. Our ability to develop, manufacture or sell products and technology outside of these defined areas may be impeded by the intellectual property rights that have been retained by Dow, which could adversely affect our business, financial condition and results of operations. Additionally, infringement on these intellectual property rights could also impact our business and competitive position. We may not be able to enforce our rights, and Dow may be unwilling to enforce its rights, with respect to this intellectual property that has been licensed by Dow.

Compliance with extensive and evolving environmental, health and safety laws may require substantial expenditures.

We use large quantities of hazardous substances, generate hazardous wastes and emit wastewater and air pollutants in our manufacturing operations. Consequently, our operations are subject to extensive environmental, health and safety laws and regulations at both the national and local level in multiple jurisdictions. Many of these laws and regulations have become more stringent over time and the costs of compliance with these requirements may increase, including costs associated with any capital investments for pollution control facilities. In addition, our production facilities and operations require operating permits, licenses or other approvals that may be subject to periodic renewal and, in circumstances of noncompliance, may be subject to revocation. The necessary licenses, permits or other approvals may not be issued or continue in effect, and any issued licenses, permits or approvals may contain more stringent limitations that restrict our operations or that require further expenditures to meet the permit requirements.

This continuing focus on climate change in jurisdictions in which we operate has and will continue to result in new environmental regulations that may negatively affect us. This could cause us to incur additional costs in complying with any new regulations, which may adversely impact our operations and financial condition. Compliance with more stringent environmental requirements would likely increase our costs of transportation and storage of raw materials and finished products, as well as the costs of storage and disposal of wastes. Additionally, we may incur substantial costs, including penalties, fines, damages, criminal or civil sanctions and remediation costs for the failure to comply with these laws or permit requirements.

Fluctuations in currency exchange rates may significantly impact our results of operations and may significantly affect the comparability of our results between financial periods.

Our operations are conducted by subsidiaries in many countries. The results of the operations and the financial position of these subsidiaries are reported in the relevant foreign currencies and then translated into U.S. dollars at the applicable exchange rates for inclusion in our consolidated financial statements. The main currency to which we are exposed is the euro, noting that approximately 60% of our net sales were generated in Europe for the year ended December 31, 2018. To a lesser degree, we are also exposed to other currencies, including the Chinese yuan, Swiss franc, and Indonesian rupiah. The exchange rates between these currencies and the U.S. dollar in recent years have fluctuated significantly and may continue to do so in the future. A depreciation of these currencies against the U.S. dollar, in particular the euro, will decrease the U.S. dollar equivalent of the amounts derived from these operations reported in our consolidated financial statements and an appreciation of these currencies will result in a corresponding increase in such amounts. Because some of our raw material costs are procured in U.S. dollars rather than on these currencies, depreciation of these currencies may have an adverse effect on our profit margins or our reported results of operations. Conversely, to the extent that we are required to pay for goods or services in foreign currencies, the appreciation of such currencies against the U.S. dollar will tend to negatively impact our results of operations. In addition, currency fluctuations may affect the comparability of our results of operations between financial periods.

We incur currency translation risk whenever we enter into either a purchase or sale transaction using a currency other than the local currency of the transacting entity. From time to time, we enter into foreign exchange forward contracts to hedge fluctuations associated with certain monetary assets and liabilities, primarily accounts receivable, accounts payable and certain intercompany obligations. However, attempts to hedge against foreign currency fluctuation risk may be unsuccessful and result in an adverse impact to our operating results. Given the volatility of exchange rates, there can be no assurance that we will be able to effectively manage our currency translation risks or that any volatility in currency exchange rates will not have a material adverse effect on our financial condition or results of operations.

Our business relies on intellectual property and other proprietary information and our failure to adequately protect or effectively enforce our rights could harm our competitive advantages with respect to the manufacturing of some of our products.

Our success depends to a significant degree upon our ability to protect, preserve and enforce our intellectual property rights, including patents, trademarks, licenses, trade secrets and other proprietary information of our business. However, we may be unable to prevent third parties from using our intellectual property and other proprietary information without our authorization or independently developing intellectual property and other proprietary information that is similar to or competes with ours. Any inability by us to effectively prevent the unauthorized use of our intellectual property and other proprietary information by others could reduce or eliminate any competitive advantage we have developed, cause us to lose sales or otherwise harm our business or goodwill. If it becomes necessary for us to initiate litigation to protect our proprietary rights, any proceedings could be burdensome and costly, and we may not prevail.

We may be unable to determine when third parties are using our intellectual property rights without our authorization, particularly our manufacturing processes. In addition, we cannot be certain that any intellectual property rights that we have licensed to third parties are being used only as authorized by the applicable license agreement. The undetected, unremedied, or unauthorized use of our intellectual property rights or the legitimate development or acquisition of intellectual property that is similar to or competes with ours by third parties could reduce or eliminate the competitive advantage we have as a result of our intellectual property, adversely affecting our financial condition and results of operations.

If we fail to adequately protect our intellectual property and other proprietary information, including our processes, apparatuses, technology, trade secrets, trade names and proprietary manufacturing know how, methods and compounds, through obtaining patent protection, securing trademark registrations and securing our trade secrets through the use of confidentiality agreements of appropriate scope and other means, our competitive advantages over other producers could be materially adversely affected. If we determine to take legal action to protect, defend or enforce our intellectual property rights, any suits or proceedings could result in significant costs and diversion of our resources and our management's attention. We may not prevail in any such suits or proceedings. A failure to protect, defend or enforce our intellectual property rights could have an adverse effect on our financial condition and results of operations.

Our products may infringe the intellectual property rights of others, which may cause us to incur unexpected costs or prevent us from selling our products.

Many of our competitors have a substantial amount of intellectual property that we must continually strive to avoid infringing as we improve our own business processes and develop new products and applications. Although it is our policy and intention not to infringe valid patents of which we are aware, we cannot provide assurances that our processes and products and other activities do not and will not infringe issued patents (whether present or future) or other intellectual property rights belonging to others. There nonetheless could be third-party patents that cover our products, processes or technologies, and it is possible that we could be liable for infringement of such patents and could be required to take remedial or curative actions to continue our manufacturing and sales activities with respect to one or more products that are found to be infringing. We may also be subject to indemnity claims by our business partners arising out of claims of their alleged infringement of the patents, trademarks and other intellectual property rights of third parties in connection with their use of our products. Intellectual property litigation often is expensive and time-consuming, regardless of the merits of any claim, and our involvement in such litigation could divert our management's attention from operating our business. If we were to discover that any of our processes, technologies or products infringe on the valid intellectual property rights of others, we may not be able to obtain the necessary licenses on acceptable terms, or at all, or be able to modify our processes or technologies or re-engineer our products in a manner that is successful in avoiding infringement. Moreover, if we are sued for infringement and lose, we could be required to pay substantial damages and/or be enjoined from using or selling the infringing products or technology. Any of the foregoing could cause us to incur significant costs and prevent us from selling our products and could have an adverse effect on our financial condition and results of operations.

Data security breaches could compromise sensitive information related to our business or the private information of our employees, vendors, and customers, which could adversely affect our business and our reputation.

Cyberattacks or data security breaches could compromise confidential, private, business critical information or cause a failure in our computer or operating systems that may disrupt our operations. We have attractive information assets, including intellectual property, trade secrets and other sensitive, business critical information. We face an ever growing risk of attack from outside our organization (including attack by organized crime, so-called "hacktivists," and state-sponsored actors) using sophisticated technical and non-technical methodologies (including social engineering and "spear phishing" attacks). We also face risks from internal threats to information security, such as from negligent or dishonest employees or consultants. A successful cyberattack or other breach of security could result in the loss of critical business information and/or could negatively impact operations, which could have a negative impact on our financial results. Furthermore, in addition to using our own systems and infrastructure, we use information systems and infrastructure operated by third-party service providers, including Dow. If our third-party service providers experience an information security breach, depending on the nature of the breach, it could compromise confidential, business critical information or cause a disruption in our operations. In addition, the loss or disclosure of sensitive or private information about our employees, vendors, or customers as a result of such a breach may result in violations of various data privacy regulations and expose us to litigation, fines and other penalties. Therefore, any such disruptions to our operations or violations of data privacy laws could negatively impact our reputation and results of operations.

Risks Related to Our Ordinary Shares

We are a Luxembourg company and, as a result, shareholders may have difficulty effecting service of process or litigation against us or our officers and directors.

We are organized under the laws of the Grand Duchy of Luxembourg. Many of our assets are located outside the United States and some of our directors and officers reside outside the United States and most of their assets are located outside the United States. As a result, investors may find it more difficult to effect service of process within the United States upon us or these persons or to enforce outside the United States judgments obtained against us or these persons in U.S. courts, including judgments in actions predicated upon the civil liability provisions of the U.S. federal securities laws. Likewise, it may also be difficult for an investor to enforce in U.S. courts judgments obtained against us or these persons in courts located in jurisdictions outside the United States, including actions predicated upon the civil liability provisions of the U.S. federal securities laws. It may also be difficult for an investor to bring an original action in a Luxembourg court predicated upon the civil liability provisions of the U.S. federal securities laws against us or these persons. Luxembourg law does not recognize a shareholder's right to bring a derivative action on behalf of a company.

Item 1B. *Unresolved Staff Comments*

None.

Item 2. *Properties*

We own and operate 61 production units at 16 sites around the world. In addition, we source products from another 14 production units at 7 joint venture sites. We also own or lease other properties, including office buildings, warehouses, research and development facilities, testing facilities and sales offices.

The following table sets forth a list of our principal offices, production sites and other facilities as of December 31, 2018:

Site Name	Location	Leased/owned	Products/Functions	Business Segments
Corporate Offices				
Luxembourg City	Luxembourg	Leased	Corporate office	Not applicable
Berwyn	USA (PA)	Leased	Global operating center	Not applicable
Hong Kong	Hong Kong	Leased	Regional operating center	Not applicable
Horgen	Switzerland	Leased	Regional operating center	Not applicable
Midland	USA (MI)	Leased	Regional operating center	Not applicable
Production Sites				
Boehlen*	Germany	Leased	Styrene monomer	Feedstocks
Dalton	USA (GA)	Owned	Latex	Latex Binders
Hamina	Finland	Owned	Latex	Latex Binders
Hsinchu	Taiwan	Owned	Compounds and blends	Performance Plastics
Merak++	Indonesia	Owned	Latex, Polystyrene	Latex Binders, Polystyrene
Midland*	USA (MI)	Leased	ABS, Latex, PC, Compounds and blends	Latex Binders, Performance Plastics
Mussolente	Italy	Owned	Soft-touch polymers and bioplastics	Performance Plastics
Norrkoping	Sweden	Owned	Latex	Latex Binders
Rheinmunster*	Germany	Leased	Latex	Latex Binders
Schkopau*	Germany	Leased	ESBR, SSBR, PBR, Polystyrene	Synthetic Rubber, Polystyrene
Stade*	Germany	Leased	PC	Performance Plastics
Terneuzen*	The Netherlands	Leased	Compounds and blends, Latex, Styrene monomer, ABS	Latex Binders, Performance Plastics, Feedstocks
Tessenderlo*	Belgium	Leased	Polystyrene	Polystyrene
Tsing Yi+	Hong Kong	Leased	Polystyrene	Polystyrene
Ulsan	Korea	Owned	Latex	Latex Binders
Zhangjiagang*	China	Leased	Latex, ABS	Latex Binders, Performance Plastics
R&D Facilities				
Dalton	USA (GA)	Owned	Latex	Latex Binders
Hsinchu	Taiwan	Owned	Performance plastics	Performance Plastics
Midland 1300	USA (MI)	Leased	Latex	Latex Binders
Midland 1604	USA (MI)	Leased	Performance plastics and Latex	Performance Plastics, Latex Binders
Mussolente	Italy	Owned	Soft-touch polymers and bioplastics	Performance Plastics
Rheinmunster	Germany	Leased	Latex	Latex Binders
Samstagen	Switzerland	Leased	Latex	Latex Binders
Schkopau	Germany	Leased	Synthetic rubber	Synthetic Rubber
Shanghai	China	Leased	Latex	Latex Binders
Terneuzen	The Netherlands	Leased	Performance plastics	Performance Plastics
Tsing Yi	Hong Kong	Leased	Performance plastics	Performance Plastics
Joint Venture				
<i>Americas Styrenics</i>				
Allyn's Point	USA (CT)	Leased	Polystyrene	Americas Styrenics
Cartegena	Colombia	Owned	Polystyrene	Americas Styrenics
Hanging Rock	USA (OH)	Leased	Polystyrene	Americas Styrenics
Joliet	USA (IL)	Owned	Polystyrene	Americas Styrenics
Marietta	USA (OH)	Owned	Polystyrene	Americas Styrenics
St. James	USA (LA)	Owned	Styrene monomer	Americas Styrenics
Torrance	USA (CA)	Leased	Polystyrene	Americas Styrenics

* Facility co-located with Dow facilities under ground lease agreements. Plant facilities are owned by us.

+ Facility located on property owned by the applicable government.

++ Facility located on property under certification with right to build.

We believe that our properties and equipment are generally in good operating condition and are adequate for our present needs. Production capacity at our sites can vary depending upon product mix and operating conditions.

Our global production facilities are certified to ISO 9001 standards. Our manufacturing facilities have established reliability and maintenance programs and leverage production between sites to maximize efficiency.

Our plants have similar layouts, technology and manufacturing processes, depending upon the product being manufactured. We believe this global uniformity creates a key competitive advantage for us and helps lower overall operating costs.

Item 3. *Legal Proceedings*

From time to time we may be subject to various legal claims and proceedings incidental to the normal conduct of business, relating to such matters as product liability, antitrust, competition, waste disposal practices, release of chemicals into the environment and other matters that may arise in the ordinary course of our business. We currently believe that there is no litigation pending that is likely to have a material adverse effect on our business. Regardless of the outcome, legal proceedings can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Item 4. *Mine Safety Disclosures*

Not applicable.

PART II

Item 5. *Market for Registrant's Common Equity, Related Shareholder Matters, and Issuer Purchases of Equity Securities*

The principal market on which our ordinary shares is traded is the New York Stock Exchange, under the ticker symbol "TSE." As of February 25, 2019, there were three record holders of our ordinary shares and 48,777,934 ordinary shares issued and 41,289,829 ordinary shares outstanding. By including persons holding shares in broker accounts under street names, however, we estimate that we have approximately 23,993 beneficial holders.

Performance Graph

The following performance graph reflects the comparative changes in the value from June 12, 2014, the first trading day of our ordinary shares on the NYSE, through December 31, 2018, assuming an initial investment of \$100 and the reinvestment of dividends or other cash distributions, if any, in (1) our ordinary shares, (2) the S&P 500 Index, and (3) the S&P 500 Chemicals Industry GICS Level 3 Index. The share price performance shown in the graph is not necessarily indicative of future price performance.



Purchases of equity securities by the Company and affiliated purchasers

The following table provides information regarding purchases of the Company's ordinary shares by the Company during the three months ended December 31, 2018:

Issuer Purchases of Equity Securities				
Period	Total number of shares purchased	Average price paid per share	Total number of shares purchased as part of publicly announced plans or programs	Approximate number of shares that may yet be purchased under the plans or programs
October 1 - October 31, 2018	202,624	\$ 65.14	202,624	39,333 ⁽¹⁾
November 1 - November 30, 2018	45,000	\$ 50.24	45,000	1,994,333 ⁽¹⁾
December 1 - December 31, 2018	755,000	\$ 46.80	755,000	1,239,333 ⁽¹⁾
Total	1,002,624	\$ 50.66	1,002,624	

(1) The general meeting of our shareholders on June 21, 2017 authorized the Company to repurchase up to 4.0 million ordinary shares at a price per share of not less than \$1.00 and not more than \$1,000. This authorization ends on June 21, 2020 or on the date of its renewal or replacement by a subsequent general meeting of shareholders. On June 22, 2017 the Company announced that the board of directors had authorized the Company to repurchase, subject to market and other conditions, up to 2.0 million shares over the subsequent 18 months under the 2017 share repurchase authorization. The Company concluded on the repurchase of the initial 2.0 million ordinary shares under this board authorization in October 2018. On November 8, 2018 the Company subsequently announced that the board of directors had authorized the Company to repurchase, subject to market and other conditions, the 2.0 million shares remaining under the 2017 share repurchase authorization.

Luxembourg Tax Considerations

Tax Regime Applicable to Capital Gains Realized Upon Disposal of Shares

The following is a summary discussion of the material Luxembourg tax considerations of the acquisition, ownership and disposition of your ordinary shares that may be applicable to you. It is not intended to be, nor should it be construed to be, legal or tax advice. This discussion is based on Luxembourg laws and regulations as they stand on the date of this report and is subject to any change in law or regulations or changes in interpretation or application thereof (and which may possibly have a retroactive effect). Investors should therefore consult their own professional advisers as to the effects of state, local or foreign laws and regulations, including Luxembourg tax law and regulations, to which they may be subject. As used herein, a "Luxembourg individual" means an individual resident in Luxembourg who is subject to personal income tax (*impôt sur le revenu*) on his or her worldwide income from Luxembourg or foreign sources, and a "Luxembourg corporate holder" means a company (that is, a fully taxable *collectivité* within the meaning of Article 159 of the Luxembourg Income Tax Law) resident in Luxembourg subject to corporate income tax (*impôt sur le revenu des collectivités*) on its worldwide income from Luxembourg or foreign sources. For purposes of this discussion, Luxembourg individuals and Luxembourg corporate holders of our ordinary shares are collectively referred to as "Luxembourg Holders." A "non-Luxembourg Holder" means any investor in our ordinary shares other than a Luxembourg Holder.

Luxembourg individual holders. For Luxembourg individuals holding (together, directly or indirectly, with his or her spouse or civil partner or minor children) 10% or less of the share capital of Trinseo, capital gains will only be taxable if they are realized on a sale of shares, which takes place before their acquisition or within the first six months following their acquisition. The capital gain or liquidation proceeds will be taxed at progressive income tax rates.

For Luxembourg individuals holding (together with his/her spouse or civil partner and minor children) directly or indirectly more than 10% of the capital of Trinseo, capital gains will be taxable at a special rate, if the disposal or liquidation takes place:

- within six months from the acquisition, the capital gain or liquidation proceeds are generally expected to be taxed at progressive income tax rates (ranging from 0 to 45.78% for 2019).
- after six months from the acquisition, the capital gain or the liquidation proceeds will be taxed at a reduced tax rate corresponding to half of the investor's global tax rate and EUR 50,000 (doubled for taxpayers filing jointly) of gains realized over a ten-year period are exempt from taxation.

Luxembourg corporate holders. Capital gains realized upon the disposal of shares by a Luxembourg corporate holder will in principle be subject to corporate income tax and municipal business tax. The combined applicable rate for Luxembourg corporate holders with taxable income in excess of EUR 30,000 will be 26.01% for fiscal year ended 2019 for a Luxembourg corporate holder established in Luxembourg-City. An exemption from such taxes may be available to the Luxembourg corporate holder pursuant to Article 166 of the Luxembourg Income Tax law subject to the fulfillment of the conditions set forth therein. The scope of the capital gains exemption may be limited in the cases provided by the Grand Ducal Decree of December 21, 2001.

Non-Luxembourg Holders

An individual non-Luxembourg Holder of shares will only be subject to Luxembourg taxation on capital gains arising upon disposal of such shares if such holder has (together with his or her spouse or civil partner and underage children) directly or indirectly held more than 10% of the capital of Trinseo, at any time during the five years preceding the disposal, and either (i) such holder has been a resident of Luxembourg for tax purposes for at least 15 years and has become a non-resident within the five years preceding the realization of the gain, subject to any applicable tax treaty, or (ii) the disposal of shares occurs within six months from their acquisition (or prior to their actual acquisition), subject to any applicable tax treaty. If we and a U.S. relevant holder are eligible for the benefits of the Convention Between the Government of the Grand Duchy of Luxembourg and the Government of the United States for the Avoidance of Double Taxation and the Prevention of Fiscal Evasion with Respect to Taxes on Income and Capital (the "Luxembourg-U.S. Treaty"), such U.S. relevant holder generally should not be subject to Luxembourg tax on the gain from the disposal of such shares unless such gain is attributable to a permanent establishment of such U.S. relevant holder in Luxembourg. Subject to any restrictions imposed by the substantially and regularly traded clause in the limitation on benefits article of the Luxembourg-U.S. treaty, we expect to be eligible for the benefits of the Luxembourg-U.S. Treaty.

A corporate non-Luxembourg Holder (that is, a collectivité within the meaning of Article 159 of the Luxembourg Income Tax Law), which has a permanent establishment, a permanent representative or fixed place of business in Luxembourg to which shares would be attributable, will bear corporate income tax and municipal business tax on a gain realized on a disposal of such shares as set forth above for a Luxembourg corporate holder. However, gains realized on the sale of the shares may benefit from the full exemption provided for by Article 166 of the Luxembourg Income Tax Law and by the Grand Ducal Decree of December 21, 2001 subject in each case to fulfillment of the conditions set out therein.

A corporate non-Luxembourg Holder, which has a permanent establishment, permanent representative or fixed place of business in Luxembourg to which the shares would be attributable will not be subject to any Luxembourg tax on a gain realized on a disposal of such shares unless such holder holds, directly or through tax transparent entities, more than 10% of the share capital of Trinseo, and the disposal of shares occurs within six months from their acquisition (or prior to their actual acquisition), subject to any applicable tax treaty. If we and a U.S. corporate holder without a permanent establishment in Luxembourg are eligible for the benefits of the Luxembourg-U.S. Treaty, such U.S. corporate holder generally should not be subject to Luxembourg tax on the gain from the disposal of such shares.

Tax Regime Applicable to Distributions

Withholding Tax. Dividend distributions by Trinseo are subject to a withholding tax of 15%. Distributions by the Company sourced from a reduction of capital as defined in Article 97 (3) of the Luxembourg Income Tax Law including, among others, share premium should not be subject to withholding tax provided that such reduction of capital is

motivated by serious business reasons as meant in said provision. We or the applicable paying agent will withhold on a distribution if required by applicable law.

Where a withholding needs to be applied, the rate of the withholding tax may be reduced pursuant to the double tax treaty existing between Luxembourg and the country of residence of the relevant holder, subject to the fulfillment of the conditions set forth therein. If we and a U.S. relevant holder are eligible for the benefits of the Luxembourg-U.S. Treaty, the rate of withholding on distributions generally is 15% or 5% if the U.S. relevant holder is a beneficial owner that owns at least 10% of our voting shares.

No withholding tax applies if the distribution is made to (i) a Luxembourg resident corporate holder (that is, a fully taxable collectivité within the meaning of Article 159 of the Luxembourg Income Tax Law), (ii) a corporation which is resident of a Member State of the EU and is referred to by article 2 of the Council Directive of July 23, 1990 concerning the common fiscal regime applicable to parent and subsidiary companies of different member states (90/435/EEC), (iii) a corporation or a cooperative resident in Norway, Iceland or Liechtenstein and subject to a tax comparable to corporate income tax as provided by Luxembourg Income Tax Law, (iv) a corporation resident in Switzerland which is subject to corporate income tax in Switzerland without benefiting from an exemption, (v) a corporation subject to a tax comparable to corporate income tax as provided by Luxembourg Income Tax Law which is resident in a country that has concluded a tax treaty with Luxembourg and (vi) a Luxembourg permanent establishment of one of the above-mentioned categories, provided each time that at the date of payment, the holder has held or commits itself to continue to hold directly or through a tax transparent vehicle, during an uninterrupted period of at least twelve months, shares representing at least 10% of the share capital of Trinseo or which had an acquisition price of at least EUR 1,200,000.

Equity Repayment. The repayment of equity, by the Company is not treated as a dividend distribution under Luxembourg law, and therefore is not subject to any withholding tax, provided: (i) the Company has no statutory reserves or profits at the Company level, and (ii) the capital decrease is motivated by sound business reasons. The Company did not have any statutory profits or reserves as of December 31, 2018. In case the Company does not have sound business reasons to provide a repayment of equity, the entire amount repaid will be subject to a 15% withholding tax, unless the conditions for an exemption or a reduction from the withholding tax on dividends set forth above are met.

Luxembourg Holders

Dividend and liquidation proceeds are in principle taxable at the general income tax rates indicated above. A partial dividend exemption may be available to Luxembourg Holders pursuant to Article 115.15a of the Luxembourg Income Tax law or a full dividend exemption may be available to a Luxembourg corporate holder pursuant to Article 166 of the Luxembourg Income Tax law, subject to the fulfillment of the conditions set forth therein.

Non-Luxembourg Holders

Non-Luxembourg holders of the shares who have neither a permanent establishment, permanent representative nor a fixed place of business in Luxembourg to which the shares would be attributable are not liable for any Luxembourg tax on dividends paid on the shares, other than a potential withholding tax as described above.

Net Wealth Tax

Luxembourg Holders

Luxembourg net wealth tax will not be levied on a Luxembourg Holder with respect to the shares held unless the Luxembourg Holder is an entity subject to net wealth tax in Luxembourg.

Net wealth tax is levied annually at the rate of 0.5% on the net wealth up to 500 million euros for an enterprise resident in Luxembourg, as determined for net wealth tax purposes. The shares may be exempt from net wealth tax subject to the conditions set forth by Article 60 of the Law of October 16, 1934 on the valuation of assets (Bewertungsgesetz), as amended.

Non-Luxembourg Holders

Luxembourg net wealth tax will not be levied on a non-Luxembourg Holder with respect to the shares held unless the shares are attributable to an enterprise or part thereof which is carried on through a permanent establishment or a permanent representative in Luxembourg.

Stamp and Registration Taxes

No registration tax or stamp duty will be payable by a holder of shares in Luxembourg solely upon the disposal of shares or by sale or exchange.

Item 6. Selected Financial Data

The following tables set forth our selected historical financial and operating data and other information. The historical results of operations data for the years ended December 31, 2018, 2017, and 2016, and the historical balance sheet data as of December 31, 2018 and 2017 presented below were derived from our audited consolidated financial statements and the related notes thereto included elsewhere within this Annual Report. The historical results of operations data for the years ended December 31, 2015 and 2014 and the historical balance sheet data as of December 31, 2016, 2015, and 2014 were derived from our audited financial statements and the related notes thereto not included within this Annual Report. As a result of accounting guidance adopted in 2018 related to pension accounting, certain prior period financial information included in the sections below has been recast to conform to the current year presentation. Refer to Note 2 in the consolidated financial statements for further information. Our historical results are not necessarily indicative of the results to be expected for any future periods.

You should read the information contained in this table in conjunction with Item 7—*Management's Discussion and Analysis of Financial Condition and Results of Operations* and the audited financial statements and the related notes thereto included elsewhere in this Annual Report.

Definitions of capitalized terms not defined herein appear in the notes to our consolidated financial statements.

(In millions, except per share data)	Year Ended				
	December 31,				
	2018	2017	2016	2015	2014
Statement of Operations Data:					
Net sales ⁽¹⁾	\$ 4,622.8	\$ 4,448.1	\$ 3,716.6	\$ 3,971.9	\$ 5,128.0
Cost of sales ⁽¹⁾	4,094.0	3,807.8	3,124.4	3,496.7	4,823.5
Gross profit	528.8	640.3	592.2	475.2	304.5
Selling, general and administrative expenses	258.5	239.0	238.7	205.0	230.6
Equity in earnings of unconsolidated affiliates	144.1	123.7	144.7	140.2	47.7
Operating income	414.4	525.0	498.2	410.4	121.6
Interest expense, net	46.4	70.1	75.0	93.2	124.9
Loss on extinguishment of long-term debt	0.2	65.3	—	95.2	7.4
Other expense (income), net	3.5	(21.5)	17.9	18.2	36.9
Income (loss) before income taxes	364.3	411.1	405.3	203.8	(47.6)
Provision for income taxes	71.8	82.8	87.0	70.2	19.7
Net income (loss)	\$ 292.5	\$ 328.3	\$ 318.3	\$ 133.6	\$ (67.3)
Weighted average shares— basic	42.8	43.8	46.5	48.8	43.5
Net income (loss) per share— basic	\$ 6.83	\$ 7.49	\$ 6.84	\$ 2.74	\$ (1.55)
Weighted average shares— diluted	43.7	45.0	47.5	49.0	43.5
Net income (loss) per share— diluted	\$ 6.70	\$ 7.30	\$ 6.70	\$ 2.73	\$ (1.55)
Dividends per share	\$ 1.56	\$ 1.38	\$ 0.90	\$ —	\$ —

(In millions)	As of and for the Year Ended				
	December 31,				
	2018	2017	2016	2015	2014
Other Financial Data:					
Depreciation and amortization	\$ 130.2	\$ 110.6	\$ 96.4	\$ 96.8	\$ 103.7
Capital expenditures, net of subsidy ⁽²⁾	120.4	147.4	123.9	107.1	98.6
Balance Sheet Data:					
Cash and cash equivalents	\$ 452.3	\$ 432.8	\$ 465.1	\$ 431.3	\$ 220.8
Working capital	1,094.3	1,019.6	890.7	839.8	748.7
Total assets	2,726.8	2,772.0	2,421.3	2,270.7	2,367.9
Debt ⁽³⁾	1,192.4	1,199.7	1,187.4	1,207.8	1,202.2
Total liabilities	1,958.1	2,097.2	1,973.6	1,879.0	2,044.4
Total shareholders' equity	768.7	674.8	447.7	391.7	323.6

- (1) Net sales and cost of sales increase or decrease, in part, based on fluctuations in raw material prices. Consistent with industry practice, and as permitted under agreements with many of our customers, raw material price changes are generally passed through to customers by means of corresponding price changes. See Item 7A—*Quantitative and Qualitative Disclosures about Market Risk—Commodity Price Risk* for further information.
- (2) Represents capital expenditures, net of government subsidies received for SSBR expansion of \$1.0 million and \$2.2 million for the years ended December 31, 2018 and 2015, respectively. No government subsidies were received for the other periods presented above. Included in capital expenditures for the year ended December 31, 2017 were amounts related to a number of key growth initiatives, including our ABS capacity expansion in China, a 50 KT increase to our global production capabilities in SSBR, and the opening of our new SSBR pilot plant in Germany. During the year ended December 31, 2016, we completed the upgrade of our legacy ERP environment to the latest version of SAP, resulting in capitalized software of \$57.4 million. The majority of the capital spending for this project occurred in 2016. For the year ended December 31, 2014, capital expenditures included approximately \$26.1 million for the reacquisition of production capacity rights at the Company's rubber production facility in Schkopau, Germany.
- (3) Balances reflect gross debt balances outstanding at each period end and are not net of unamortized deferred financing fees and unamortized original issue discount.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion summarizes the significant factors affecting the operating results, financial condition, liquidity and cash flows of our Company as of and for the periods presented below. The following discussion and analysis should be read in conjunction with Item 6 — "Selected Financial Data" and the audited consolidated financial statements and the accompanying notes thereto, included elsewhere within this Annual Report. The statements in this discussion regarding industry outlook, our expectations regarding our future performance, liquidity and capital resources and all other non-historical statements in this discussion are forward-looking statements and are based on the beliefs of our management, as well as assumptions made by, and information currently available to, our management and are made as of the date of this Annual Report. See "Cautionary Note Regarding Forward-Looking Statements." Actual results could differ materially from those discussed in or implied by forward-looking statements as a result of various factors, including those discussed below and elsewhere within this Annual Report, particularly in Item 1A— "Risk Factors." Definitions of capitalized terms not defined herein appear in the notes to our consolidated financial statements.

2018 Highlights

For the year ended December 31, 2018, we had net income of \$292.5 million and Adjusted EBITDA of \$573.2 million. Trinseo noted strong performance for much of 2018. However, we finished 2018 with lower than anticipated profitability due to challenging market dynamics and economic conditions toward the end of the year, particularly in November and December. Despite this, the Company delivered strong cash generation throughout 2018 and returned significant cash to our shareholders, purchasing approximately 2.2 million ordinary shares for an aggregate purchase price of \$142.9 million and declaring quarterly dividends for an aggregate value of \$1.56 per ordinary share, or \$67.2

million. Refer to “Non-GAAP Performance Measures” below for further discussion of our use of non-GAAP measures in evaluating our performance. Other highlights of 2018 are described below.

Chief Executive Officer Transition

On December 11, 2018, the Company announced that our President and Chief Executive Officer, Christopher D. Pappas, intended to retire in 2019. On January 30, 2019, the Company named Frank A. Bozich the Company’s President and Chief Executive Officer, effective March 4, 2019, at which time Mr. Pappas will assume the role of Special Advisor to the Chief Executive Officer in order to support Mr. Bozich’s transition.

Term Loan Repricing

During the second quarter of 2018, the Company executed a repricing of our 2024 Term Loan B, thereby reducing the stated interest rate on this facility from the London Interbank Offered Rate (“LIBOR”) plus 2.50% to LIBOR plus 2.00% (subject to a 0.00% LIBOR floor in both instances). At current LIBOR, the Company expects an aggregate cash interest savings from this repricing of \$3.5 million annually.

New Segmentation

Through December 31, 2017, the Company operated under six reporting segments: Latex Binders, Synthetic Rubber, Performance Plastics, Basic Plastics, Feedstocks, and Americas Styrenics. Effective January 1, 2018, the Company realigned our reporting segments to reflect the new model under which the business is being managed and results are being reviewed by the Chief Executive Officer, who is the Company’s chief operating decision maker.

Under this new segmentation, we present operating results for six segments, four of which remain unchanged from the Company’s prior segmentation: Latex Binders, Synthetic Rubber, Feedstocks, and Americas Styrenics. The results of our Polystyrene business, which were previously included within the Basic Plastics segment, are now reported as a stand-alone segment. Performance Plastics, which previously consisted of compounds, blends, and ABS products sold to the automotive market, now includes the remaining portion of our ABS business, as well as the results of our SAN and PC businesses. This segmentation change provides enhanced clarity to investors by concentrating the Company’s more specialized plastics into a single reporting segment, while also reducing complexity as PC and ABS are the primary inputs into the downstream production of our compounds and blends.

Prior period financial information included within this Annual Report has been recast from its previous presentation to reflect the Company’s new organizational structure.

SSBR Capacity Expansion and Pilot Plant

During the first quarter of 2018, the Company completed the initial phase of the 50 KT SSBR capacity expansion at the Schkopau, Germany facility, and also opened a new SSBR pilot plant at this same facility which will expedite the product development process from lab sample to commercialization by delivering sufficient quantities of new formulations without the need to interrupt production in our industrial lines.

Results of Operations

Results of Operations for the Years Ended December 31, 2018, 2017, and 2016

The table below sets forth our historical results of operations, and these results as a percentage of net sales for the periods indicated. As a result of accounting guidance adopted in 2018 related to pension accounting, certain prior period financial information included in the sections below has been recast to conform to the current year presentation. Refer to Note 2 in the consolidated financial statements for further information.

(in millions)	Year Ended December 31,					
	2018	%	2017	%	2016	%
Net sales	\$ 4,622.8	100 %	\$ 4,448.1	100 %	\$ 3,716.6	100 %
Cost of sales	4,094.0	89 %	3,807.8	86 %	3,124.4	84 %
Gross profit	528.8	11 %	640.3	14 %	592.2	16 %
Selling, general and administrative expenses	258.5	6 %	239.0	5 %	238.7	6 %
Equity in earnings of unconsolidated affiliates	144.1	3 %	123.7	3 %	144.7	4 %
Operating income	414.4	9 %	525.0	12 %	498.2	14 %
Interest expense, net	46.4	1 %	70.1	2 %	75.0	2 %
Loss on extinguishment of long-term debt	0.2	— %	65.3	1 %	—	— %
Other expense (income), net	3.5	— %	(21.5)	— %	17.9	— %
Income before income taxes	364.3	8 %	411.1	9 %	405.3	12 %
Provision for income taxes	71.8	2 %	82.8	2 %	87.0	2 %
Net income	\$ 292.5	6 %	\$ 328.3	7 %	\$ 318.3	10 %

2018 vs. 2017

Net Sales

The 4% increase in net sales was primarily due to currency impacts as the euro strengthened in comparison to the U.S. dollar in 2018. Overall, the impact of sales volumes was not significant, as increases in the Performance Plastics and Polystyrene segments were offset by decreases in the Feedstocks, Latex Binders, and Synthetic Rubber segments. Additionally, selling prices did not have a significant effect on net sales, as increases in the Performance Plastics, Polystyrene, and Feedstocks segments were fully offset by decreases in the Synthetic Rubber and Latex Binders segments.

Cost of Sales

Of the 8% increase in cost of sales, 4% was due to currency impacts as the euro strengthened in comparison to the U.S. dollar in 2018. Additionally, 3% of the increase was due to higher raw material costs, particularly styrene and BPA, as well as higher utility costs. Overall, the impact of sales volumes was not significant, as increases in the Performance Plastics and Polystyrene segments were offset by decreases within the Feedstocks, Latex Binders, and Synthetic Rubber segments.

Gross Profit

The decrease in gross profit of 17% was primarily attributable to weaker results within the Performance Plastics, Latex Binders, Polystyrene, and Synthetic Rubber segments. The weaker results were mainly due to lower margins, which were partially offset by higher sales volumes in the Performance Plastics and Polystyrene segments, as well as favorable currency impacts as the euro strengthened in comparison to the U.S. dollar in 2018. Refer to the segment discussion below for further information.

Selling, General and Administrative Expenses

The \$19.5 million, or 8%, increase in selling, general and administrative (“SG&A”) is due to several factors. Higher advisory and professional fees resulted in a \$14.9 million increase in external spend, primarily related to fees incurred in conjunction with the Company’s recently initiated project to complete the transition of business and technical services from Dow, as well as fees related to certain growth initiatives. Additionally, approximately \$4.3 million of the increase was due to currency impacts on our euro-based expenses, as the euro strengthened in comparison to the U.S. dollar, with an additional \$3.8 million of depreciation expense compared to the prior year. Also contributing to this increase was \$1.3 million in additional restructuring charges incurred compared to the prior year (refer to Note 20 in the consolidated financial statements for further information). Partially offsetting these increases was a reduction of

approximately \$2.0 million in employee incentive compensation and other personnel costs, as well as a \$2.8 million reduction in asset-related impairment charges.

Equity in Earnings of Unconsolidated Affiliates

The increase in equity earnings of \$20.4 million resulted from higher equity earnings from Americas Styrenics, primarily due to the impact from an extended prior year styrene outage at its St. James, Louisiana facility.

Interest Expense, Net

The decrease in interest expense, net of \$23.7 million was primarily attributable to a reduction in interest rates from the Company's debt refinancing during the third quarter of 2017, coupled with the benefits received from the cross currency swaps that the Company entered in September 2017, which are recorded as a benefit within interest expense as a result of our adoption of new hedging accounting guidance during the second quarter of 2018. Refer to Note 11 in the consolidated financial statements for further information.

Loss on Extinguishment of Long-Term Debt

Loss on extinguishment of long-term debt was \$0.2 million for the year ended December 31, 2018, comprised entirely of the write-off of a portion of the existing unamortized deferred financing fees related to the 2024 Term Loan B repricing during the second quarter of 2018.

Loss on extinguishment of long-term debt was \$65.3 million for the year ended December 31, 2017, which related to the Company's debt refinancing during the third quarter of 2017. This amount was comprised of a \$53.0 million call premium paid to retire the Company's 2022 Senior Notes and a \$11.5 million write-off of unamortized deferred financing fees related to these notes, as well as the write-off of \$0.8 million of unamortized deferred financing fees and unamortized original issue discount related to the termination of the Company's 2021 Term Loan B.

Other Expense (Income), net

Other expense, net for the year ended December 31, 2018 was \$3.5 million, which included \$7.3 million of expense related to the non-service cost components of net periodic benefit cost, \$0.5 million of fees incurred in conjunction with the repricing of the Company's 2024 Term Loan B during the second quarter of 2018, and other miscellaneous expenses of \$0.9 million. These expenses were partially offset by net foreign exchange transaction gains for the period of \$5.2 million. Net foreign exchange transactions gains included \$15.8 million of foreign exchange transaction losses primarily from the remeasurement of our euro denominated payables due to the relative changes in rates between the U.S. dollar and the euro during the period, more than offset by \$21.0 million of gains from our foreign exchange forward contracts.

Other income, net for the year ended December 31, 2017 was \$21.5 million, which primarily consisted of \$13.7 million of income related to the non-service cost components of net periodic benefit cost and a \$9.3 million gain related to the sale of the Company's 50% share in Sumika Styron Polycarbonate in January 2017 (refer to Note 5 in the consolidated financial statements for further information). Additionally, net foreign exchange transaction gains for the period were \$1.4 million, which included \$20.6 million of foreign exchange transaction gains primarily due to the remeasurement of our euro denominated payables due to the relative changes in rates between the U.S. dollar and the euro during the period, offset by \$19.2 million of losses from our foreign exchange forward contracts. Partially offsetting these net gains was \$1.2 million of fees incurred in conjunction with the Company's debt refinancing during the third quarter of 2017.

Provision for Income Taxes

Provision for income taxes was \$71.8 million and \$82.8 million, respectively, for the years ended December 31, 2018 and 2017, each of which resulted an effective tax rate of 20%. The decrease in provision for income taxes was primarily driven by the reduction in the U.S. federal corporate tax rate from 35% to 21%, effective January 1, 2018, in accordance with the enactment of the "Tax Cuts and Jobs Act" signed into law on December 22, 2017, as well as a \$46.8 million decrease in income before income taxes. These decreases were partially offset by a lower proportion of income before taxes attributable to non-U.S. jurisdictions, where the statutory income tax rate is lower than the U.S. statutory income tax rate.

For the year ended December 31, 2017, the provision for income taxes was favorably impacted by the recording of a previously unrecognized tax benefit in the amount of \$8.5 million, including penalties and interest, upon completion of the 2010 through 2013 audit with the German taxing authority. This tax benefit was partially offset by \$3.1 million of income tax expense related to the revaluation of our U.S. federal deferred tax assets and liabilities at the new U.S. federal corporate income tax rate of 21% in accordance with the enactment of the “Tax Cuts and Jobs Act” signed into law on December 22, 2017.

2017 vs. 2016

Net Sales

Of the 20% increase, 18% was due to higher selling prices primarily from the pass through of higher raw material costs, including higher styrene and butadiene costs to customers across our segments. Additionally, 1% of the increase was due to slightly higher sales volume, as increases due to Performance Plastics, Feedstocks, and Synthetic Rubber sales volume were partially offset by decreases from Latex Binders and Polystyrene sales volume.

Cost of Sales

Of the 22% increase, 19% was attributable to higher prices for raw materials, primarily related to styrene monomer and butadiene, and an additional 1% of the increase was due to increased sales volume, primarily in Performance Plastics and Synthetic Rubber. Partially offsetting these increases was a 1% decrease related to a curtailment gain recorded in 2017 as a result of changes to certain of the Company’s pension plans in Europe.

Gross Profit

The year-over-year 8% increase was primarily attributable to higher margins per unit sold, especially within Latex Binders and Feedstocks, due to more favorable market conditions. Higher sales volume in Performance Plastics and Synthetic Rubber was partially offset by lower sales volume in Latex Binders and Polystyrene, as well as margin compression in Performance Plastics, due to end market mix, and in Synthetic Rubber, due to unfavorable raw material timing impacts.

Selling, General and Administrative Expenses

The \$0.3 million year-over-year increase is comprised of several offsetting factors. There were increased costs incurred supporting growth initiatives of approximately \$5.0 million, transaction and integration related costs of \$3.4 million related to the API Plastics acquisition, and \$3.6 million of asset impairment charges on certain long-lived assets within the Performance Plastics segment. Additionally, there was an increase of \$2.8 million year-over-year attributable to the non-service cost components of net periodic benefit income in 2016. Offsetting the above increases in expenses was a decrease in restructuring expenses by \$15.9 million, noting \$19.9 million in asset impairment and other charges recorded in 2016 as a result of our decision to cease manufacturing operations at our latex facility in Livorno, Italy, partially offset by \$3.3 million in charges in 2017 related to the upgrade and replacement of the Company’s compounding facility in Terneuzen, The Netherlands as well as an additional \$3.1 million of charges related to the Livorno, Italy action discussed above and further described within Note 20 in the consolidated financial statements. We also recorded a \$3.1 million curtailment gain in 2017 on certain of the Company’s pension plans in Europe, which further offset the increases in expenses.

Equity in Earnings of Unconsolidated Affiliates

Equity earnings decreased in 2017, as equity earnings from Americas Styrenics decreased from \$135.8 million in 2016 to \$122.9 million in 2017, primarily due to the planned and extended first quarter styrene outage at its St. James, Louisiana facility, including lower margins on second quarter sales of styrene purchased during the outage. Additionally, equity earnings from Sumika Styron Polycarbonate decreased from \$8.9 million in 2016 to \$0.8 million in 2017, as the Company completed the sale of our 50% share in the entity to Sumitomo Chemical Company Limited in January 2017, and therefore did not have an ownership interest in the joint venture for the majority of the year ended December 31, 2017. Refer to Note 5 in the consolidated financial statements for further information.

Interest Expense, Net

The decrease was primarily attributable to a reduction in interest rates from the Company's debt refinancing during the third quarter of 2017 as well as lower deferred financing fee amortization recorded into interest expense from our Accounts Receivable Securitization Facility. Refer to Note 11 in the consolidated financial statements for further information.

Loss on Extinguishment of Long-Term Debt

Loss on extinguishment of long-term debt was \$65.3 million for the year ended December 31, 2017, which related to the Company's debt refinancing during the third quarter of 2017. This amount was comprised of a \$53.0 million call premium paid to retire the Company's 2022 Senior Notes and a \$11.5 million write-off of unamortized deferred financing fees related to these notes, as well as the write-off of \$0.8 million of unamortized deferred financing fees and unamortized original issue discount related to the termination of the Company's 2021 Term Loan B.

Other Expense (Income), net

Other income, net for the year ended December 31, 2017 was \$21.5 million, which primarily consisted of \$13.7 million of income related to the non-service cost components of net periodic benefit cost and a \$9.3 million gain related to the sale of the Company's 50% share in Sumika Styron Polycarbonate in January 2017 (refer to Note 5 in the consolidated financial statements for further information). Additionally, net foreign exchange transaction gains for the period were \$1.4 million, which included \$20.6 million of foreign exchange transaction gains primarily due to the remeasurement of our euro denominated payables due to the relative changes in rates between the U.S. dollar and the euro during the period, offset by \$19.2 million of losses from our foreign exchange forward contracts. Partially offsetting these net gains was \$1.2 million of fees incurred in conjunction with the Company's debt refinancing during the third quarter of 2017.

Other expense, net for the year ended December 31, 2016 was \$17.9 million, which primarily consisted of \$7.4 million of expense related to the non-service cost components of net periodic benefit cost and an impairment charge for the loss on sale of our latex binders and PC & Compounding businesses in Brazil of \$15.1 million (refer to Note 4 in the consolidated financial statements for further information). Additionally, net foreign exchange transaction losses for the period were \$1.8 million, which included \$5.5 million of foreign exchange transaction losses primarily due to the remeasurement of our euro denominated payables due to the relative changes in rates between the U.S. dollar and the euro during the period, offset by \$3.7 million of gains from our foreign exchange forward contracts. Partially offsetting these net losses was \$6.4 million of other income, which primarily related to the effective settlement of certain value-added tax positions during the period.

Provision for Income Taxes

Provision for income taxes for 2017 totaled \$82.8 million, resulting in an effective tax rate of 20%. Provision for income taxes for 2016 totaled \$87.0 million resulting in an effective tax rate of 21%. The decrease in provision for income taxes was primarily due to the recording of a previously unrecognized tax benefit in the amount of \$8.5 million, including penalties and interest, upon completion of the 2010 through 2013 audit with the German taxing authority during the year ended December 31, 2017. This decrease was partially offset by \$3.1 million of one-time income tax expense related to the revaluation of our U.S. federal deferred tax assets and liabilities at the new U.S. federal corporate income tax rate of 21% in accordance with the enactment of the "Tax Cuts and Jobs Act" signed into law on December 22, 2017.

In addition, the decrease in provision for income taxes was partially offset by the tax effect on the increase in income before income taxes, which increased from \$405.3 million for the year ended December 31, 2016 to \$411.1 million for the year ended December 31, 2017.

Selected Segment Information

Effective January 1, 2018, the Company realigned our organizational structure to reflect the new model under which the business is being managed and results are being reviewed by the Chief Executive Officer, who is the Company's chief operating decision maker. The Company's reportable segments are as follows: Latex Binders,

Synthetic Rubber, Performance Plastics, Polystyrene, Feedstocks, and Americas Styrenics. Refer to Item 1—*Business* for a description of our segments, including a detailed overview, products and end uses, and competition and customers.

The following sections describe net sales, Adjusted EBITDA, and Adjusted EBITDA margin by segment for the years ended December 31, 2018, 2017, and 2016. Intersegment sales have been eliminated. Refer to Note 19 in the consolidated financial statements for a detailed definition of Adjusted EBITDA and a reconciliation of income before income taxes to segment Adjusted EBITDA.

Latex Binders Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Net sales	\$ 1,069.0	\$ 1,097.1	\$ 925.3	(3)%	19 %
Adjusted EBITDA	\$ 110.4	\$ 138.5	\$ 94.3	(20)%	47 %
Adjusted EBITDA margin	10 %	13 %	10 %		

2018 vs. 2017

Of the 3% decrease in net sales, 2% was due to lower pricing from the pass through of lower raw material costs, as well as competitive market conditions, and 3% was due to lower sales volume, mainly to the European paper market. Partially offsetting these decreases was a 2% increase due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period.

Adjusted EBITDA decreased by \$28.1 million, or 20%, including a 23% decrease due to margins, which was primarily attributable to raw material impacts as well as competitive market conditions. Additionally, lower sales volume, primarily to the Europe paper market, resulted in a 5% decrease in Adjusted EBITDA. Partially offsetting these decreases was a 5% increase due to fixed cost improvements as well as a 2% increase due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period.

2017 vs. 2016

Of the 19% increase in net sales, 25% was due to higher selling prices, primarily due to the pass through of higher butadiene and styrene costs to our customers. Offsetting this increase was a 4% decrease due to lower sales volume and a 3% decrease due to the net impact of the Company's acquisition of API Plastics in 2017 and the sales of our joint venture Sumika Styron Polycarbonate in 2017 and our business in Brazil in 2016.

Full year Adjusted EBITDA was a record \$138.5 million, noting stronger results from the Company's diversified chemistries and cost actions, as well as improved market conditions in Asia. Specifically, Adjusted EBITDA increased by \$44.2 million, or 47%, year-over-year primarily due to margin improvements resulting from favorable market conditions, particularly in Asia, which resulted in a 65% increase. Partially offsetting these margin improvements was a 14% decrease due to lower sales volume, primarily within the North America and European paper and carpet markets. Additionally, 3% of the decrease in Adjusted EBITDA was due to the net impact of the Company's acquisition of API Plastics in 2017 and the sales of our joint venture Sumika Styron Polycarbonate in 2017 and our business in Brazil in 2016.

Synthetic Rubber Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Net sales	\$ 572.5	\$ 582.8	\$ 450.7	(2)%	29 %
Adjusted EBITDA	\$ 77.0	\$ 83.3	\$ 110.9	(8)%	(25)%
Adjusted EBITDA margin	13 %	14 %	25 %		

2018 vs. 2017

Net sales decreased 2% from the prior year, primarily due to the pass through of lower butadiene cost, which resulted in a 6% decrease, as well as a 2% decrease due to lower sales volume due to weaker tire market conditions. These decreases were partially offset by a 6% increase due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period.

Adjusted EBITDA decreased by \$6.3 million, or 8%, compared to the prior year. Of this decrease, 11% was due to lower margins and 3% was due to lower sales volume, both attributable primarily to weaker tire market conditions. Partially offsetting these decreases was a 5% increase due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period, as well as a 2% increase due to fixed cost improvements.

2017 vs. 2016

Of the 29% increase in net sales, 25% was due to higher selling prices, primarily resulting from the pass through of higher butadiene and styrene costs to customers. Additionally, 3% of the increase was due to record sales volume which was a result of higher customer demand for SSBR, as well as higher sales of Ni-PBR.

The majority of the overall \$27.6 million decrease in Adjusted EBITDA was primarily due to unfavorable raw material timing resulting from a favorable impact in 2016 compared to an unfavorable impact in the 2017, which resulted in a 15% decrease due to lower margins. Higher fixed costs as well as sales volume mix resulted in a 10% decrease primarily from growth initiatives, including our SSBR capacity expansion and SSBR pilot plant development.

Performance Plastics Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Net sales	\$ 1,577.6	\$ 1,419.1	\$ 1,218.0	11 %	17 %
Adjusted EBITDA	\$ 188.9	\$ 230.9	\$ 232.2	(18)%	(1)%
Adjusted EBITDA margin	12 %	16 %	19 %		

2018 vs. 2017

Of the 11% increase in net sales, 4% was due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period and 3% was due to higher sales volume, mainly from the Company's ABS expansion in China. Additionally, 2% of the net sales increase was due to price increases, mainly from higher polycarbonate prices, and 2% of the increase was due to increased volumes from the acquisition of API Plastics.

Adjusted EBITDA decreased by \$42.0 million, or 18%, primarily due to lower margins, which resulted in a 31% decrease in Adjusted EBITDA. These lower margins were due to a combination of factors, including generally higher raw material costs, a slowdown in the automotive industry, and trade uncertainty in China, as well as end market mix. Partially offsetting these decreases was a 6% increase due to higher sales volume, particularly from the Company's ABS expansion in China, a 5% increase due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period, and a 2% increase due to increased volumes from the acquisition of API Plastics.

2017 vs. 2016

Of the 17% increase in net sales, 9% was due to higher selling prices, primarily due to the pass through of higher raw material costs to our customers. Additionally, 6% of the increase was due to increased volumes, primarily related to the ABS expansion in China, as well as higher sales in the automotive markets in all regions and in the consumer electronics market in Asia.

Adjusted EBITDA decreased by \$1.3 million, or 1%, due to several factors. Higher fixed costs resulted in a 6% decrease in Adjusted EBITDA. An additional 3% decrease in Adjusted EBITDA was due to margin compression from end market mix in ABS, which was partially offset by margin expansion in PC. Partially offsetting these decreases was a 10% increase in Adjusted EBITDA due to increased sales volumes from the ABS expansion in China as well as from the automotive markets in all regions and in the consumer electronics market in Asia. Additionally, 2% of the decrease was due to the net impact of the Company's acquisition of API Plastics in 2017 and the sales of our joint venture Sumika Styron Polycarbonate in 2017 and our business in Brazil in 2016.

Polystyrene Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Net sales	\$ 1,017.1	\$ 941.4	\$ 828.1	8 %	14 %
Adjusted EBITDA	\$ 33.7	\$ 48.2	\$ 52.3	(30)%	(8)%
Adjusted EBITDA margin	3 %	5 %	6 %		

2018 vs. 2017

Of the 8% increase in net sales, 4% was due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period, 2% was due to higher selling prices due to the pass through of higher styrene costs to customers, and 2% was due to higher sales volume in Europe and Asia.

The \$14.5 million, or 30%, decrease in Adjusted EBITDA was primarily due to lower margins, mostly from weaker third quarter market conditions, as well as higher raw material costs, which resulted in a 51% decrease. Partially offsetting this decrease were fixed cost reductions, which resulted in a 9% increase in Adjusted EBITDA, and a 7% increase due to higher sales volumes in Europe and Asia. Additionally, there was a 6% increase due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period.

2017 vs. 2016

Of the 14% increase in net sales, 16% was due to higher selling prices due to the pass through of higher styrene costs to customers, partially offset by a 4% decrease due to lower sales volume in Asia, with an increased focus on higher margin business.

Adjusted EBITDA decreased \$4.1 million, or 8%, primarily due to a 6% decrease from lower sales volumes, particularly in Asia, as well as a 4% decrease due to lower margins in Europe, which were impacted by higher raw material costs. Partially offsetting these decreases was a 3% increase due to lower fixed costs.

Feedstocks Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Net sales	\$ 386.6	\$ 407.7	\$ 294.5	(5)%	38 %
Adjusted EBITDA	\$ 107.1	\$ 110.5	\$ 80.2	(3)%	38 %
Adjusted EBITDA margin	28 %	27 %	27 %		

2018 vs. 2017

The 5% decrease in net sales was comprised of several mostly offsetting factors. Lower styrene related sales volume resulted in a 10% decrease, which was partially offset by a 2% increase due to higher prices and a 3% increase due to currency impacts as the euro strengthened in comparison to the U.S. dollar during the period.

The decrease in Adjusted EBITDA of \$3.4 million, or 3%, was mainly due to a decline in margin, which resulted in a 14% decrease. Higher styrene margins over raw materials in Europe and Asia were more than offset by the impact of raw material timing, particularly with declining benzene costs in the fourth quarter. This decrease was partially offset by an 8% increase due to currency impacts, as the euro strengthened in comparison to the U.S. dollar during the period, as well as a 3% increase due to fixed costs improvements.

2017 vs. 2016

The 38% increase in net sales was mainly due to the pass through of higher styrene prices, which contributed to 27% of the increase. Higher styrene-related sales volume also resulted in a 10% increase in net sales.

The 38% increase in Adjusted EBITDA was primarily due to higher margins as a result of favorable market conditions, which resulted in a 44% increase in Adjusted EBITDA, but was slightly offset by a 7% decrease due to higher maintenance-related fixed costs.

Americas Styrenics Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Adjusted EBITDA*	\$ 144.1	\$ 122.9	\$ 135.8	17 %	(9)%

* *The results of this segment are comprised entirely of earnings from Americas Styrenics, our equity method investment. As such, Adjusted EBITDA related to this segment is included within "Equity in earnings of unconsolidated affiliates" in the consolidated statements of operations.*

2018 vs. 2017

The 17% increase in Adjusted EBITDA was primarily due to an extended production outage in 2017 at the Americas Styrenics' St. James, Louisiana facility, described more fully below.

2017 vs. 2016

The 9% decrease in Adjusted EBITDA was primarily due to the planned first quarter of 2017 styrene outage at the Americas Styrenics' St. James, Louisiana facility, which was extended in order to complete repairs on critical equipment. The facility came back online at full production in early April 2017. As a result of this extended outage, the Company incurred an unfavorable impact of approximately \$23 million to Adjusted EBITDA, of which approximately \$15 million was related to lost production margin and the remaining was related to sales of excess spot styrene following the outage. Partially offsetting the impact of this outage was an increase in Adjusted EBITDA due to higher styrene sales volume, including impacts from a stronger export market.

Outlook

As noted above, we finished 2018 with lower than anticipated profitability due to challenging market dynamics and economic conditions, including weak demand in China across a number of end markets, customer destocking due to rapidly falling feedstock prices, and weak automotive and tire markets. These dynamics intensified in late November through December 2018. We expect the unfavorable market conditions that affected the latter part of 2018 to continue impacting our business in the first quarter of 2019, but with signs of market improvement across many product areas. Our results for 2019 will depend largely on the timing of market recovery in these areas. Regardless of the timing of market recovery, Trinseo remains committed to optimizing business performance, generating strong cash flow, and returning cash to shareholders.

Non-GAAP Performance Measures

We present Adjusted EBITDA as a non-GAAP financial performance measure, which we define as income from continuing operations before interest expense, net; provision for income taxes; depreciation and amortization expense; loss on extinguishment of long-term debt; asset impairment charges; gains or losses on the dispositions of businesses and assets; restructuring charges; acquisition related costs and other items. In doing so, we are providing management, investors, and credit rating agencies with an indicator of our ongoing performance and business trends, removing the impact of transactions and events that we would not consider a part of our core operations.

There are limitations to using the financial performance measures such as Adjusted EBITDA. This performance measure is not intended to represent net income or other measures of financial performance. As such, it should not be used as an alternative to net income as an indicator of operating performance. Other companies in our industry may define Adjusted EBITDA differently than we do. As a result, it may be difficult to use this or similarly-named financial measures that other companies may use, to compare the performance of those companies to our performance. We compensate for these limitations by providing a reconciliation of this performance measure to our net income, which is determined in accordance with accounting principles generally accepted in the United States of America (“GAAP”).

Adjusted EBITDA is calculated as follows for the years ended December 31, 2018, 2017, and 2016:

(in millions)	Year Ended		
	December 31,		
	2018	2017	2016
Net income	\$ 292.5	\$ 328.3	\$ 318.3
Interest expense, net	46.4	70.1	75.0
Provision for income taxes	71.8	82.8	87.0
Depreciation and amortization	130.2	110.6	96.4
EBITDA ^(a)	<u>\$ 540.9</u>	<u>\$ 591.8</u>	<u>\$ 576.7</u>
Loss on extinguishment of long-term debt	0.2	65.3	—
Net (gain) loss on disposition of businesses and assets ^(b)	(1.0)	(9.7)	15.1
Restructuring and other charges ^(c)	8.2	6.0	23.5
Acquisition transaction and integration costs ^(d)	0.6	4.7	—
Asset impairment charges or write-offs ^(e)	1.5	4.3	—
Other items ^(f)	22.8	(19.9)	(4.4)
Adjusted EBITDA	<u>\$ 573.2</u>	<u>\$ 642.5</u>	<u>\$ 610.9</u>

- (a) EBITDA is a non-GAAP financial performance measure that we refer to in making operating decisions because we believe it provides our management as well as our investors and credit agencies with meaningful information regarding the Company’s operational performance. We believe the use of EBITDA as a metric assists our board of directors, management and investors in comparing our operating performance on a consistent basis. Other companies in our industry may define EBITDA differently than we do. As a result, it may be difficult to use EBITDA, or similarly-named financial measures that other companies may use, to compare the performance of those companies to our performance. We compensate for these limitations by providing reconciliations of our EBITDA results to our net income, which is determined in accordance with GAAP.
- (b) Net (gain) loss on disposition of businesses and assets during the years ended December 31, 2018 and 2016 related to the sale of our primary operating entity in Brazil, which includes both latex binders and PC & Compounding

businesses. In 2018, these amounts related to consideration earned for the subsequent performance of our former latex business. For 2016, these amounts reflect the impairment changes recorded for the original loss on sale of this operating entity in Brazil. Net gain on disposition of businesses and assets during the year ended December 31, 2017 relates primarily to the sale of our 50% share in Sumika Styron Polycarbonate to Sumitomo Chemical Company Limited, for which the Company recorded a gain on sale of \$9.3 million during the period. Refer to Note 4 and Note 5, respectively, in the consolidated financial statements for further information.

- (c) Restructuring and other charges for the year ended December 31, 2018 primarily relate to employee termination benefit charges incurred in connection with restructuring in our Synthetic Rubber segment. A portion of the restructuring charges for 2018 and the majority of the restructuring and other charges for the year ended December 31, 2017 relate to decommissioning, contract termination, and employee termination benefit charges incurred in connection with the upgrade and replacement of our compounding facility in Terneuzen, The Netherlands as well as our decision to cease manufacturing activities at our latex binders manufacturing facility in Livorno, Italy. Restructuring and other charges for the year ended December 31, 2016 relate primarily to \$20.0 million in charges incurred in connection with the Livorno, Italy action discussed above. The remaining restructuring charges for 2016 relate to the Company's decision to divest our operations in Brazil as well as the closure of our Allyn's Point latex binders manufacturing facility. Refer to Note 20 in the consolidated financial statements for further information regarding restructuring activities.

Note that the accelerated depreciation charges incurred as part of both the upgrade and replacement of the Company's compounding facility in Terneuzen, The Netherlands as well as the Allyn's Point shutdown are included within the "Depreciation and amortization" caption above, and therefore are not included as a separate adjustment within this caption.

- (d) Acquisition transaction and integration costs for the years ended December 31, 2018 and 2017 relate to advisory and professional fees incurred in conjunction with our acquisition of API Plastics, which closed in July 2017. Additionally, the year ended December 31, 2017 includes a non-cash fair value inventory adjustment incurred in conjunction with the acquisition of API Plastics. Refer to Note 4 in the consolidated financial statements for further information.
- (e) Asset impairment charges for the years ended December 31, 2018 and 2017 relate to the impairment of certain corporate long-lived assets and certain long-lived assets within the Company's Performance Plastics segment, respectively.
- (f) Other items for the year ended December 31, 2018 primarily relate to advisory and professional fees incurred in conjunction with our initiative to transition business services from Dow, including certain administrative services such as accounts payable, logistics, and IT services, as well as fees incurred in conjunction with the 2024 Term Loan B repricing completed during the second quarter of 2018. Other items for the year ended December 31, 2017 primarily relate to a curtailment gain recorded on certain of the Company's pension plans in Europe, offset by fees incurred in conjunction with the Company's debt refinancing which was completed during the third quarter of 2017. Other items for the year ended December 31, 2016 include other income of \$6.9 million from the effective settlement of certain value-added tax positions, offset by \$2.5 million of fees incurred in conjunction with the Company's secondary offerings completed during the year.

Liquidity and Capital Resources

Cash Flows

The table below summarizes our primary sources and uses of cash for the years ended December 31, 2018, 2017, and 2016. We have derived the summarized cash flow information from our audited financial statements.

(in millions)	Year Ended December 31,		
	2018	2017	2016
Net cash provided by (used in):			
Operating activities	\$ 366.5	\$ 391.3	\$ 403.7
Investing activities	(118.7)	(182.6)	(117.3)
Financing activities	(222.2)	(253.0)	(247.6)
Effect of exchange rates on cash	(6.1)	12.0	(5.0)
Net change in cash and cash equivalents	\$ 19.5	\$ (32.3)	\$ 33.8

Operating Activities

Net cash provided by operating activities during the year ended December 31, 2018 totaled \$366.5 million, inclusive of \$117.5 million in dividends from Americas Styrenics. Net cash used in operating assets and liabilities for the year ended December 31, 2018 totaled \$52.1 million, noting an increase in inventories of \$16.0 million and decreases in accounts payable and other current liabilities, and income taxes payable of \$43.8 million and \$19.7 million, respectively. These were partially offset by a decrease in accounts receivable of \$21.2 million. The increase in inventories was primarily due to higher days sales in inventory, partially offset by decreased raw material prices. The decreases in accounts payable and other current liabilities as well as accounts receivable were primarily due to decreased raw material prices as well as lower volumes. The decrease in income taxes payable was primarily due to the overall reduction in earnings before income taxes and the mix of jurisdictional earnings.

Net cash provided by operating activities during the year ended December 31, 2017 totaled \$391.3 million, inclusive of \$120.0 million in dividends from Americas Styrenics, as well as dividends from Sumika Styron Polycarbonate, \$8.9 million of which were classified as operating activities, with the remaining \$0.9 million classified as investing activities. Refer to Note 5 in the consolidated financial statements for further information. Net cash used in operating assets and liabilities for the year ended December 31, 2017 totaled \$126.7 million, noting increases in accounts receivable of \$51.8 million and inventories of \$80.2 million, respectively. The increase in accounts receivable was primarily due to the pass through of increased raw material prices to our customers while the increase in inventories was primarily a result of building inventories in advance of certain growth initiatives.

Net cash provided by operating activities during the year ended December 31, 2016 totaled \$403.7 million, primarily due to improved net income for the period. Also impacting cash flow from operating activities for the period was \$130.0 million in dividends from Americas Styrenics. Net cash used in operating assets and liabilities for the year ended December 31, 2016 totaled \$69.8 million, noting increases in accounts receivable of \$96.4 million and inventories of \$51.0 million, respectively, offset by an increase in accounts payable and other current liabilities of \$57.1 million. The increase in accounts receivable was primarily due to higher sales and lower collections, due to timing, during the fourth quarter of 2016 compared to the same period in 2015. The increase in inventory was primarily due to increases in raw material prices in the fourth quarter of 2016 as compared to the same period in 2015. The increase in accounts payable and other current liabilities was primarily due to increases in raw material prices, as noted above, as well as timing of vendor payments.

Investing Activities

Net cash used in investing activities during the year ended December 31, 2018 totaled \$118.7 million, primarily resulting from capital expenditures of \$121.4 million. This was partially offset by proceeds received of \$1.7 million from the sale of businesses and other assets, primarily comprised of \$1.3 million received as a prepayment in connection with the Company's preliminary agreement for the sale of certain land in Livorno, Italy, as described further in Note 20 within the consolidated financial statements.

Net cash used in investing activities for the year ended December 31, 2017 totaled \$182.6 million, resulting from capital expenditures of \$147.4 million and cash paid to acquire API Plastics of \$82.3 million during the period, net of cash acquired (refer to Note 4 in the consolidated financial statements for further information). Offsetting these uses of cash was an increase from proceeds received of \$42.1 million from the sale of Sumika Styron Polycarbonate during the year.

Net cash used in investing activities for the year ended December 31, 2016 totaled \$117.3 million, resulting from capital expenditures of \$123.9 million during the period, a significant portion of which related to our project to upgrade our legacy ERP environment to the latest version of SAP. Partially offsetting these capital expenditures were \$1.8 million in proceeds received from the sale of our businesses in Brazil and dividends received from Sumika Styron Polycarbonate during the period, \$4.8 million of which were classified as investing activities in the consolidated statement of cash flows, with the remaining \$1.4 million classified as operating activities.

Financing Activities

Net cash used in financing activities during the year ended December 31, 2018 totaled \$222.2 million. This activity was primarily due to \$142.9 million of payments related to the repurchase of ordinary shares, \$66.0 million of dividends paid, and \$7.0 million of net principal payments related to our 2024 Term Loan B during the period. Additionally, net cash used in financing activities included \$8.2 million of withholding taxes paid related to the vesting of certain RSUs during the period, partially offset by \$2.8 million of proceeds received from the exercise of option awards.

Net cash used in financing activities during the year ended December 31, 2017 totaled \$253.0 million. The most significant activity during the period related to debt refinancing, which included net proceeds of \$1,200.0 million from the issuance of our 2024 Term Loan B and our 2025 Senior Notes, offset by the retirement of our existing 2021 Term Loan B and 2022 Senior Notes totaling \$1,238.5 million and deferred financing fees paid totaling \$21.5 million. The Company also paid a call premium of \$53.0 million in conjunction with the redemption of the 2022 Senior Notes. In addition, we paid \$88.9 million related to the repurchase of ordinary shares as well as \$58.0 million of dividends. Partially offsetting these uses of cash was \$9.3 million of proceeds received from the exercise of option awards.

Net cash used in financing activities during the year ended December 31, 2016 totaled \$247.6 million. This activity was primarily from \$215.1 million of payments related to the repurchase of ordinary shares during the period and \$27.3 million of dividends paid, as well as \$5.0 million of principal payments related to our 2021 Term Loan B.

Free Cash Flow

We use Free Cash Flow as a non-GAAP measure to evaluate and discuss the Company's liquidity position and results. Free Cash Flow is defined as cash from operating activities, less capital expenditures. We believe that Free Cash Flow provides an indicator of the Company's ongoing ability to generate cash through core operations, as it excludes the cash impacts of various financing transactions as well as cash flows from business combinations that are not considered organic in nature. We also believe that Free Cash Flow provides management and investors with a useful analytical indicator of our ability to service our indebtedness, pay dividends (when declared), and meet our ongoing cash obligations.

Free Cash Flow is not intended to represent cash flows from operations as defined by GAAP, and therefore, should not be used as an alternative for that measure. Other companies in our industry may define Free Cash Flow differently than we do. As a result, it may be difficult to use this or similarly-named financial measures that other companies may use, to compare the liquidity and cash generation of those companies to our own. We compensate for these limitations by providing a reconciliation to cash provided by operating activities, which is determined in accordance with GAAP.

<u>(in millions)</u>	<u>Year Ended</u> <u>December 31,</u>		
	<u>2018</u>	<u>2017</u>	<u>2016</u>
Cash provided by operating activities	\$ 366.5	\$ 391.3	\$ 403.7
Capital expenditures	(121.4)	(147.4)	(123.9)
Free Cash Flow	<u>\$ 245.1</u>	<u>\$ 243.9</u>	<u>\$ 279.8</u>

Refer to the discussion above for significant impacts to cash provided by operating activities for the years ended December 31, 2018, 2017, and 2016.

Capital Resources, Indebtedness and Liquidity

We require cash principally for day-to-day operations, including the purchase of raw materials for production, to finance capital investments and other initiatives, to service our outstanding indebtedness, and to fund the return of capital to shareholders via dividend payments and ordinary share repurchases. Our sources of liquidity include cash on hand, cash flow from operations, and amounts available under the Senior Credit Facility and the Accounts Receivable Securitization Facility (discussed further below).

As of December 31, 2018 and 2017, we had \$1,192.4 million and \$1,199.7 million, respectively, in outstanding indebtedness and \$1,094.3 million and \$1,019.6 million, respectively, in working capital. In addition, as of December 31, 2018 and 2017, we had \$113.7 million and \$128.3 million, respectively, of foreign cash and cash equivalents on our consolidated balance sheets, outside of our country of domicile of Luxembourg, all of which is readily convertible into other foreign currencies, including the U.S. dollar. Our intention is not to permanently reinvest our foreign cash and cash equivalents. Accordingly, we record deferred income tax liabilities related to the unremitted earnings of our subsidiaries. For a detailed description of the Company's debt structure, borrowing rates, and expected future payment obligations, refer to Note 11 in the consolidated financial statements.

The following table outlines our outstanding indebtedness as of December 31, 2018 and 2017 and the associated interest expense, including amortization of deferred financing fees and issuance discounts. Effective interest rates for the borrowings included in the table below exclude the impact of deferred financing fee amortization, certain other fees charged to interest expense (such as fees for unused commitment fees during the period), and the impacts of derivatives designated as hedging instruments.

(\$ in millions)	As of and for the Year Ended December 31, 2018			As of and for the Year Ended December 31, 2017		
	Balance	Effective Interest Rate	Interest Expense	Balance	Effective Interest Rate	Interest Expense
Senior Credit Facility						
2024 Term Loan B	\$ 691.3	4.1 %	\$ 31.6	\$ 698.3	3.9 %	\$ 9.6
2022 Revolving Facility	—	—	2.9	—	—	1.0
2020 Senior Credit Facility						
2021 Term Loan B	—	—	—	—	4.3 %	15.9
2020 Revolving Facility	—	—	—	—	—	2.3
2025 Senior Notes	500.0	5.4 %	16.1	500.0	5.4 %	9.4
2022 Senior Notes						
USD Notes	—	—	—	—	6.8 %	14.4
Euro Notes	—	—	—	—	6.4 %	18.8
Accounts Receivable Securitization Facility						
	—	—	1.5	—	—	2.8
Other indebtedness	1.1	4.8 %	0.1	1.4	4.8 %	0.1
Total	\$ 1,192.4		\$ 52.2	\$ 1,199.7		\$ 74.3

Our Senior Credit Facility includes the 2022 Revolving Facility, which matures in September 2022 and has a borrowing capacity of \$375.0 million. As of December 31, 2018 the Company had no outstanding borrowings, and had \$360.7 million (net of \$14.3 million outstanding letters of credit) of funds available for borrowing under this facility. Further, as of December 31, 2018, the Company is required to pay a quarterly commitment fee in respect of any unused commitments under the 2022 Revolving Facility equal to 0.375% per annum.

Also included in our Senior Credit Facility is our 2024 Term Loan B, which had original principal of \$700.0 million, maturing in September 2024, requires scheduled quarterly payments in amounts equal to 0.25% of the original principal. During the second quarter of 2018, the Company executed a repricing of our 2024 Term Loan B, thereby reducing the stated interest rate on this facility from LIBOR plus 2.50% to LIBOR plus 2.00% (subject to a 0.00% LIBOR floor in both instances). During the year ended December 31, 2018, the Company made net payments of \$7.0 million on the 2024 Term Loan B, with an additional \$7.0 million of scheduled future payments classified as current debt on the consolidated balance sheet as of December 31, 2018.

Our 2025 Senior Notes issued in August 2017 under the Indenture include \$500.0 million aggregate principal

amount of 5.375% senior notes that mature on September 1, 2025. Interest on the 2025 Senior Notes is payable semi-annually on May 3 and November 3 of each year, which commenced on May 3, 2018. These notes may be redeemed prior to their maturity at the option of the Company under certain circumstances at specific redemption prices. Refer to Note 11 in the consolidated financial statements for further information.

We also continue to maintain our Accounts Receivable Securitization Facility which, as a result of an amendment to this agreement executed during the third quarter of 2018, matures in September 2021. The borrowing capacity of the Accounts Receivable Securitization Facility remains \$150.0 million. As of December 31, 2018, there were no amounts outstanding under this facility and the Company had accounts receivable available to support this facility in excess of our borrowing capacity, based on the pool of eligible accounts receivable.

Our ability to raise additional financing and our borrowing costs may be impacted by short- and long-term debt ratings assigned by independent rating agencies, which are based, in significant part, on our performance as measured by certain credit metrics such as interest coverage and leverage ratios.

We and our subsidiaries, affiliates, or significant shareholders may from time to time seek to retire or purchase our outstanding debt through cash purchases in the open market, privately negotiated transactions, exchange transactions or otherwise. Such repurchases or exchanges, if any, will depend on prevailing market conditions, our liquidity requirements, contractual restrictions and other factors. The amounts involved may be material.

Trinseo Materials Operating S.C.A. and Trinseo Materials Finance, Inc. (the “Issuers” of our 2025 Senior Notes and “Borrowers” under our Senior Credit Facility) are dependent upon the cash generation and receipt of distributions and dividends or other payments from our subsidiaries and joint venture in order to satisfy their debt obligations. There are no known significant restrictions by third parties on the ability of subsidiaries of the Company to disburse or dividend funds to the Issuers and the Borrowers in order to satisfy these obligations. However, as the Company’s subsidiaries are located in a variety of jurisdictions, the Company can give no assurances that our subsidiaries will not face transfer restrictions in the future due to regulatory or other reasons beyond our control.

The Senior Credit Facility and Indenture also limit the ability of the Borrowers and Issuers, respectively, to pay dividends or make other distributions to Trinseo S.A., which could then be used to make distributions to shareholders. During the year ended December 31, 2018, the Company declared total dividends of \$1.56 per ordinary share, or \$67.2 million, of which \$18.2 million remains accrued as of December 31, 2018 and the majority of which will be paid in January 2019. These dividends are well within the available capacity under the terms of the restrictive covenants contained in the Senior Credit Facility and Indenture. Further, significant additional capacity continues to be available under the terms of these covenants to support expected future dividends to shareholders, should the Company continue to declare them.

The Company’s cash flow generation in recent years has been strong, as discussed above. We believe that funds provided by operations, our existing cash and cash equivalent balances, and borrowings available under our 2022 Revolving Facility and our Accounts Receivable Securitization Facility will be adequate to meet planned operating and capital expenditures for at least the next 12 months under current operating conditions. Nevertheless, our ability to generate future cash and to pay our indebtedness and fund other liquidation needs is subject to certain risks described under Item 1A—*Risk Factors*. As of December 31, 2018 and 2017, we were in compliance with all the covenants and default provisions under our debt agreements. Refer to Note 11 in the consolidated financial statements for further information on the details of the covenant requirements.

Derivative Instruments

The Company’s ongoing business operations expose it to various risks, including fluctuating foreign exchange rates and interest rate risk. To manage this risk, the Company periodically enters into derivative financial instruments, such as foreign exchange forward contracts and interest rate swap agreements. A brief summary of these derivative financial instrument programs is described below; however, refer to Note 12 of the consolidated financial statements for further information. The Company does not hold or enter into financial instruments for trading or speculative purposes.

The Company adopted new hedge accounting guidance effective April 1, 2018, the impacts of which are discussed below. Refer to Note 2 in the consolidated financial statements for further information on the new accounting guidance.

Foreign Exchange Forward Contracts

Certain subsidiaries have assets and liabilities denominated in currencies other than their respective functional currencies, which creates foreign exchange risk. Our principal strategy in managing exposure to changes in foreign currency exchange rates is to naturally hedge the foreign currency-denominated liabilities on our consolidated balance sheets against corresponding assets of the same currency such that any changes in liabilities due to fluctuations in exchange rates are offset by changes in their corresponding foreign currency assets. In order to further reduce our exposure, the Company also uses foreign exchange forward contracts to economically hedge the impact of the variability in exchange rates on our assets and liabilities denominated in certain foreign currencies. These derivative contracts are not designated for hedge accounting treatment.

Foreign Exchange Cash Flow Hedges

The Company also enters into forward contracts with the objective of managing the currency risk associated with forecasted U.S. dollar-denominated raw materials purchases by one of our subsidiaries whose functional currency is the euro. By entering into these forward contracts, which are designated as cash flow hedges, the Company buys a designated amount of U.S. dollars and sells euros at the prevailing market rate to mitigate the risk associated with the fluctuations in the euro-to-U.S. dollar foreign currency exchange rate.

Interest Rate Swaps

The Company enters into interest rate swap agreements to manage our exposure to variability in interest payments associated with the Company's variable rate debt. Under these interest rate swap agreements, which are designated as cash flow hedges, the Company is effectively converting a portion of our variable rate borrowings into a fixed rate obligation to mitigate the risk of variability in interest rates.

Net Investment Hedge

The Company has certain fixed-for-fixed cross currency swaps ("CCS"), swapping U.S. dollar principal and interest payments on the Company's 2025 Senior Notes for euro-denominated payments, which were designated as a hedge of the Company's net investment in certain European subsidiaries under the forward method through March 31, 2018. As such, changes in their fair value, to the extent effective, were recorded within the cumulative translation adjustment account as a component of accumulated other comprehensive income or loss ("AOCI") through March 31, 2018.

Effective April 1, 2018, in conjunction with the adoption of recently issued hedging accounting guidance, the Company elected as an accounting policy to re-designate the CCS as a net investment hedge (and any future similar hedges) under the spot method. As such, changes in the fair value of the CCS that are included in the assessment of effectiveness (changes due to spot foreign exchange rates) are recorded as cumulative foreign currency translation within AOCI, and will remain in AOCI until either the sale or substantially complete liquidation of the subsidiary. As an additional accounting policy election applied to similar hedges under this new standard, the initial value of any component excluded from the assessment of effectiveness is recognized in income using a systematic and rational method over the life of the hedging instrument. Any difference between the change in the fair value of the excluded component and amounts recognized in income under that systematic and rational method is recognized in AOCI. The Company has elected to amortize the initial excluded component value as a reduction of "Interest expense, net" in the consolidated statements of operations using the straight-line method over the remaining term of the CCS. Additionally, the accrual of periodic USD and euro-denominated interest receipts and payments under the terms of the CCS will also be recognized within "Interest expense, net" in the consolidated statements of operations.

Contractual Obligations and Commercial Commitments

The following table reflects our contractual obligations as of December 31, 2018. Amounts we pay in future periods may vary from those reflected in the table:

(In millions)	Payments due by year						Total
	2019	2020	2021	2022	2023	Thereafter	
Purchase commitments ⁽¹⁾	\$ 1,292.2	\$ 825.9	\$ 12.4	\$ —	\$ —	\$ —	\$ 2,130.5
Long-term indebtedness ⁽²⁾	7.0	7.0	7.0	7.0	7.0	1,156.3	1,191.3
Interest payments on long-term debt (net of interest rate swap effects) ⁽³⁾	57.0	56.8	56.4	56.0	55.6	68.8	350.6
Pension and other postretirement benefits ⁽⁴⁾	21.2	5.4	5.8	7.0	9.4	54.0	102.8
Minimum operating lease commitments and other obligations ⁽⁵⁾	17.5	14.4	9.0	10.6	5.4	16.0	72.9
Uncertain tax positions, including interest and penalties ⁽⁶⁾	—	—	—	—	—	5.8	5.8
Total	\$ 1,394.9	\$ 909.5	\$ 90.6	\$ 80.6	\$ 77.4	\$ 1,300.9	\$ 3,853.9

- (1) We have certain raw material purchase contracts where we are required to purchase certain minimum volumes at the then prevailing market prices. These commitments range from one to three years. In certain raw material purchase contracts, we have the right to purchase less than required minimums and pay a liquidated damages fee, or, in case of a permanent plant shutdown, to terminate the contracts. In such cases these obligations would be less than the obligations shown in the table above.
- (2) The long-term indebtedness line in the table includes obligations on our outstanding borrowing amounts as of December 31, 2018, which are related to the 2024 Term Loan B and the 2025 Senior Notes. The impacts of certain fixed-for-fixed cross currency swaps, which are discussed in Note 12 of the consolidated financial statements, as well as all other debt outstanding as of December 31, 2018 totaling \$1.1 million are not included in this line.
- (3) Interest payments on debt are calculated for future periods using interest rates in effect as of December 31, 2018. The amounts above include estimated interest on the 2024 Term Loan B and the related effects of interest rate swap agreements, as well as interest on the 2025 Senior Notes; however, they do not include the impacts of certain fixed-for-fixed cross currency swaps. Interest on the 2024 Term Loan B is payable quarterly and interest on the 2025 Senior Notes is payable semi-annually on each May 3 and November 3. Refer to Item 7A—*Quantitative and Qualitative Disclosures about Market Risk* for further discussion of interest rate and foreign currency risks. Certain of these projected interest payments may differ in the future based on changes in floating interest rates or other factors and events. This line does not include the 2022 Revolving Facility or Accounts Receivable Securitization Facility as amounts outstanding under these facilities vary due to periodic borrowings and repayments and there are no such amounts outstanding under either facility as of December 31, 2018.
- (4) Includes minimum contributions required to be made to the funded pension plans and expected benefit payments to the employees for unfunded pension plans. With respect to our minimum funding requirements under our pension obligations, we may elect to make contributions in excess of the minimum funding requirements in response to investment performance or changes in interest rates or when we believe that it is financially advantageous to do so and based on our other cash requirements. Our minimum funding requirements after 2018 will depend on several factors, including investment performance and interest rates. Our minimum funding requirements may also be affected by changes in applicable legal requirements. We also have payments due with respect to our postretirement benefit obligations, which we do not fund in advance. Rather, payments are made as costs are incurred by covered retirees. We expect benefit payments related to our postretirement benefit obligations to be \$3.2 million through 2028. The payments identified above as subsequent to 2023 represent estimated pension and postretirement payments from 2024 through 2028. Also included in the above is a \$16.0 million expected benefit obligation for payments estimated to be payable in 2019 under the Company's non-qualified supplemental employee retirement plan. Refer to Note 16 in the consolidated financial statements for further information.

- (5) Excludes certain estimated future commitments under agreements with Dow, including the SAR MOSA, under which Dow provides administrative and operational services to us, and the 25-year SAR SSAs, under which Dow provides utilities and site services to certain of our facilities co-located with Dow. For more information regarding these agreements, including details regarding the rights of the Company and Dow to terminate said agreements, refer to Item 1— *Business— Our Relationship with Dow*.

As of December 31, 2018, we estimate our minimum obligation under the SAR MOSA to be approximately \$11.3 million. Utilizing current year known costs and assuming that we continue with this agreement through its completion on December 31, 2020, we estimate our contractual obligations for the SAR MOSA to be approximately \$47.0 million annually for 2019 through 2020.

Additionally, utilizing current year known costs and assuming that we continue with the SAR SSAs, we estimate our contractual obligations under these agreements to be approximately \$213.9 million annually for 2019 through 2023, and a total of \$3,095.7 million thereafter through June 2038.

Refer to Note 18 in the consolidated financial statements for further information.

- (6) Due to uncertainties in the timing of the effective settlement of tax positions with the respective taxing authorities, we are unable to determine the timing of payments related to our uncertain tax positions, including interest and penalties. Amounts are therefore reflected in “Thereafter.”

Critical Accounting Policies and Estimates

Our discussion and analysis of results of operations and financial condition are based upon our financial statements, which have been prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the amounts reported. We base these estimates and judgments on historical experiences and assumptions believed to be reasonable under the circumstances. Actual results could vary from our estimates under different conditions. Our significant accounting policies, which may be affected by our estimates and assumptions, are more fully described in Note 2 in the consolidated financial statements. An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, and if different estimates that reasonably could have been used, or changes in the accounting estimates that are reasonably likely to occur periodically, could materially impact the financial statements. The following critical accounting policies reflect our most significant estimates and assumptions used in the preparation of the consolidated financial statements.

Pension Plans and Postretirement Benefits

We have various company-sponsored retirement plans covering substantially all employees. We also provide certain health care and life insurance benefits to retired employees in the United States. Prior to the divestiture of our latex binders and PC & Compounding businesses in Brazil in 2016 (refer to Note 4 in the consolidated financial statements), we also provided health care and life insurance benefits to retired employees in Brazil. The U.S.-based plan provides health care benefits, including hospital, physicians’ services, drug and major medical expense coverage, and life insurance benefits. We recognize the underfunded or overfunded status of a defined benefit pension or postretirement plan as an asset or liability in our consolidated balance sheets and recognize changes in the funded status in the year in which the changes occur through AOCI, which is a component of shareholders’ equity.

A settlement is a transaction that is an irrevocable action that relieves the employer (or the plan) of primary responsibility for a pension or postretirement benefit obligation, and that eliminates significant risks related to the obligation and the assets used to effect the settlement. The Company does not record settlement gains or losses during interim periods when the cost of all settlements in a year is less than or equal to the sum of the service cost and interest cost components of net periodic pension cost for the plan in that year.

Pension benefits associated with these plans are generally based on each participant’s years of service, compensation, and age at retirement or termination. The discount rate is an important element of expense and liability measurement. We evaluate our assumptions at least once each year, or as facts and circumstances dictate, and make changes as conditions warrant.

We determine the discount rate used to measure plan liabilities as of the December 31 measurement date for the pension and postretirement benefit plans. The discount rate reflects the current rate at which the associated liabilities could be effectively settled at the end of the year. We set our rate to reflect the yield of a portfolio of high quality, fixed-income debt instruments that would produce cash flows sufficient in timing and amount to settle projected future benefits. Using this methodology, we determined weighted-average discount rates of 1.86% and 4.38% for pension and postretirement benefits, respectively, to be appropriate as of December 31, 2018.

We use a full yield curve approach in the estimation of the future service and interest cost components of net periodic benefit cost for our defined benefit pension and other postretirement benefit plans by applying the specific spot rates along the yield curve used in the determination of the benefit obligation to the relevant projected cash flows. The weighted-average discount rates that we used to measure service cost for pension and postretirement plans during 2018 were 1.72% and 3.70%, respectively. The weighted-average discount rates that we used to measure interest cost for pension and postretirement plans during 2018 were 1.53% and 3.46%, respectively.

In accordance with recently issued accounting standards, service cost related to our defined benefit pension plans and other postretirement plans is included within "Cost of sales" and "Selling, general and administrative expenses," whereas all other components of net periodic benefit cost are included within "Other expense (income), net" in the consolidated statements of operations. Refer to Note 2 in the consolidated financial statements for further information.

We determine the expected long-term rate of return on assets by performing a detailed analysis of historical and expected returns based on the underlying assets, which generally are insurance contracts. We also consider our historical experience with the pension fund asset performance. The expected return of each asset class is derived from a forecasted future return confirmed by current and historical experience. The weighted-average long-term rate of return assumptions used for determining net periodic pension expense were 1.54% and 1.44% for 2018 and 2017, respectively. The increase was primarily due to higher interest rates during 2018 on certain assets with guaranteed returns. Future actual pension expense will depend on the performance of the underlying assets and changes in future discount rates, among other factors.

Holding all other factors constant, a 0.25% increase (decrease) in the discount rate used to determine net periodic cost would decrease (increase) 2019 pension expense by approximately \$1.5 million and \$(1.4) million, respectively. Holding all other factors constant, a 0.25% increase (decrease) in the long-term rate of return on assets used to determine net periodic cost would decrease (increase) 2019 pension expense by approximately \$0.1 million and \$(0.1) million, respectively.

As noted above, plan assets are invested primarily in insurance contracts that provide for guaranteed returns. As of December 31, 2018 and 2017, plan assets totaled \$138.5 million and \$140.1 million, respectively. Investments in the pension plan insurance are valued utilizing unobservable inputs, which are contractually determined based on cash surrender values, returns, fees, and the present value of the future cash flows of the contracts, and are classified as Level 3 investments.

Business Combinations and Asset Impairments

Business Combinations

Acquisitions that qualify as a business combination are accounted for using the purchase accounting method. Amounts paid for an acquisition are allocated to the assets acquired and liabilities assumed based on their fair value as of the date of acquisition. Goodwill is recorded as the difference between the fair value of the acquired assets and liabilities assumed (net assets acquired) and the purchase price. Goodwill is not amortized, but is reviewed for impairment annually as of October 1, or when events or changes in the business environment indicate that the carrying value of a reporting unit may exceed its fair value. Refer to the discussion below for further information on asset impairments.

Under the purchase accounting method, the Company completes valuation procedures for an acquisition, often with the assistance of third-party valuation specialists, to determine the fair value of the assets acquired and liabilities assumed. These valuation procedures require management to make assumptions and apply significant judgment to estimate the fair value of the assets acquired and liabilities assumed. If the estimates or assumptions used should significantly change, the resulting differences could materially affect the fair value of net assets.

Specifically, the calculation of the fair value of tangible assets, including property, plant and equipment, utilizes the cost approach, which computes the cost to replace the asset, less accrued depreciation resulting from physical

deterioration and functional and external obsolescence. The calculation of the fair value of identified intangible assets is determined using cash flow models following the income approach. Significant inputs include estimated future cash flows, discount rates, royalty rates, growth rates, sales projections, retention rates, and terminal values, all of which require significant management judgment. Definite-lived intangible assets, which are primarily comprised of developed technology, customer relationships, manufacturing capacity rights, and software, are amortized over their estimated useful lives using the straight-line method and are assessed for impairment whenever events or changes in circumstances indicate the carrying value of the asset may not be recoverable.

Asset Impairments

As of December 31, 2018 net property, plant and equipment, net identifiable finite-lived intangible assets, and goodwill totaled \$592.1 million, \$191.1 million, and \$69.0 million, respectively. Management makes estimates and assumptions in preparing the consolidated financial statements for which actual results will emerge over long periods of time. This includes the recoverability of long-lived assets employed in the business. These estimates and assumptions are closely monitored by management and periodically adjusted as circumstances warrant. For instance, expected asset lives may be shortened or impairment may be recorded based on a change in the expected use of the asset or performance of the related asset group.

We evaluate long-lived assets and identifiable finite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset or asset grouping may not be recoverable. In the event the carrying value of the asset exceeds its undiscounted future cash flows and the carrying value is not considered recoverable, impairment may exist. An impairment loss, if any, is measured as the excess of the asset's carrying value over its fair value, generally based on a discounted future cash flow method, independent appraisals, etc.

In August 2016, we announced our plan to cease manufacturing activities at the Company's latex binders manufacturing facility in Livorno, Italy. As a result, we determined that the long-lived assets at this facility, which included land and depreciable long-lived assets, should be assessed for impairment. This assessment indicated that the carrying value of the asset group was not recoverable when compared to the expected undiscounted cash flows from the operation and eventual disposition of these assets. The fair value of the depreciable assets was determined under the income approach, utilizing a discounted cash flow model. The key assumption in this model was cash flow projections, which were determined to be nil, as the plant ceased manufacturing operations in October 2016. The fair value of the land was determined utilizing a combination of the market and income approaches, utilizing key inputs such as recent comparable market transactions, expected date of sale, and discount rate. Based upon this assessment, for the year ended December 31, 2016, we recorded an impairment loss of \$13.7 million. The amount was included in "Selling, general and administrative expenses" in the consolidated statement of operations and was allocated entirely to the Latex Binders segment.

Through December 31, 2018, we have continued to assess the recoverability of certain assets, and concluded there are no additional significant events or circumstances identified by management that would indicate these assets are not recoverable. However, the current environment is subject to changing market conditions and requires significant management judgment to identify the potential impact to our assessment. If we are not able to achieve certain actions or our future operating results do not meet our expectations, it is possible that impairment charges may need to be recorded on one or more of our operating facilities.

Long-lived assets to be disposed of by sale are classified as held-for-sale and are reported at the lower of carrying amount or fair value less cost to sell, and depreciation is ceased. Long-lived assets to be disposed of in a manner other than by sale are classified as held-and-used until they are disposed. In June 2018, we entered into a preliminary agreement to sell the land on which our aforementioned former Livorno facility was located, subject to certain activities being completed prior to closing. The sale is considered probable to close within one year following the balance sheet date; therefore, as of December 31, 2018, the \$12.0 million of land is recorded as held-for-sale within "Other current assets" and a deferred tax liability associated with that land of \$2.9 million is recorded as held-for-sale within "Accrued expenses and other current liabilities" on our consolidated balance sheets. Refer to Note 20 in the consolidated financial statements for further information.

As noted above, our goodwill impairment testing is performed annually as of October 1 at a reporting unit level. We perform more frequent impairment tests when events or changes in circumstances indicate that the fair value of a reporting unit has more likely than not declined below its carrying value. As of our annual assessment date of October 1,

2018, each of our reporting units had fair values that exceeded the carrying value of their net assets, indicating that no impairment of goodwill is warranted.

A goodwill impairment loss generally would be recognized when the carrying amount of the reporting unit's net assets exceeds the estimated fair value of the reporting unit. The estimated fair value of a reporting unit is determined using a market approach and an income approach (under the discounted cash flow method). When supportable, the Company employs the qualitative assessment of goodwill impairment prescribed by Accounting Standards Codification 350. As of December 31, 2018, our \$69.0 million in total goodwill is allocated to our reportable segments as follows: \$15.9 million to Latex Binders, \$11.3 million to Synthetic Rubber, \$37.3 million to Performance Plastics, and \$4.5 million to Polystyrene, with no amounts allocated to the Feedstocks or Americas Styrenics segments.

Factors which could result in future impairment charges, among others, include changes in worldwide economic conditions, changes in technology, changes in competitive conditions and customer preferences, and fluctuations in foreign currency exchange rates. These factors are discussed in Item 7A—*Quantitative and Qualitative Disclosures about Market Risk* and Item 1A—*Risk Factors* included in this Annual Report.

Income Taxes

We account for income taxes using the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences of temporary differences between the carrying amounts and tax bases of assets and liabilities using enacted rates. The effect of a change in tax rates on deferred taxes is recognized in income in the period that includes the enactment date.

On December 22, 2017, the "Tax Cuts and Jobs Act" was signed into law in the U.S. This tax reform legislation includes a broad range of new tax laws affecting businesses, including corporate tax rates, business deductions, and international tax provisions. The impact of the legislation was a one-time \$3.1 million increase to tax expense recorded during the year ended December 31, 2017 related to the revaluation of the Company's U.S. federal deferred tax assets and liabilities at the new U.S. federal corporate tax rate of 21%. Additionally, effective October 1, 2018, we adopted accounting guidance related to the stranded income tax effects in accumulated other comprehensive income/loss resulting from the new tax legislation, which resulted in a one-time reclassification of less than \$0.1 million from "Accumulated other comprehensive loss" to "Retained Earnings" on the consolidated balance sheet as of December 31, 2018. Refer to Note 2 in the consolidated financial statements for further information.

Deferred taxes are provided on the outside basis differences and unremitted earnings of subsidiaries outside of Luxembourg. All undistributed earnings of foreign subsidiaries and affiliates are expected to be repatriated as of December 31, 2018. Based on the evaluation of available evidence, both positive and negative, we recognize future tax benefits, such as net operating loss carryforwards and tax credit carryforwards, to the extent that realizing these benefits is considered to be more likely than not.

As of December 31, 2018, we had deferred tax assets of \$33.6 million, after valuation allowances of \$167.6 million. In evaluating the ability to realize the deferred tax assets, we rely on, in order of increasing subjectivity, taxable income in prior carryback years, the future reversals of existing taxable temporary differences, tax planning strategies and forecasted taxable income using historical and projected future operating results.

As of December 31, 2018, we had deferred tax assets for tax loss carryforward of approximately \$601.7 million, \$32.5 million of which is subject to expiration in the years between 2019 and 2023. We continue to evaluate our historical and projected operating results for several legal entities for which we maintain valuation allowances on net deferred tax assets.

We are subject to income taxes in Luxembourg, the United States and numerous foreign jurisdictions, and are subject to audit within these jurisdictions. Therefore, in the ordinary course of business there is inherent uncertainty in quantifying our income tax positions. The tax provision includes amounts considered sufficient to pay assessments that may result from examinations of prior year tax returns; however, the amount ultimately paid upon resolution of issues raised may differ from the amounts accrued. Since significant judgment is required to assess the future tax consequences of events that have been recognized in our financial statements or tax returns, the ultimate resolution of these events

could result in adjustments to our financial statements and such adjustments could be material. Therefore, we consider such estimates to be critical in preparation of our financial statements.

The financial statement effect of an uncertain income tax position is recognized when it is more likely than not, based on the technical merits, that the position will be sustained upon examination. Accruals are recorded for other tax contingencies when it is probable that a liability to a taxing authority has been incurred and the amount of the contingency can be reasonably estimated. Uncertain income tax positions have been recorded in “Other noncurrent obligations” in the consolidated balance sheets for the periods presented.

Management judgment is required in determining our provision for income taxes, our deferred tax assets and liabilities, and any valuation allowance recorded against our deferred tax assets. The valuation allowance is based on our estimates of future taxable income and the period over which we expect the deferred tax assets to be recovered. Our assessment of future taxable income is based on historical experience and current and anticipated market and economic conditions and trends. In the event that actual results differ from these estimates or we adjust our estimates in the future, we may need to adjust our valuation allowance, which could materially impact our financial position and results of operations.

Off-balance Sheet Arrangements

We do not have any off-balance sheet arrangements.

Recent Accounting Pronouncements

We describe the impact of recent accounting pronouncements in Note 2 of the consolidated financial statements, included elsewhere within this Annual Report.

Item 7A. *Quantitative and Qualitative Disclosures About Market Risk*

We are exposed to changes in interest rates and foreign currency exchange rates because we finance certain operations through fixed and variable rate debt instruments and denominate our transactions in a variety of foreign currencies. We are also exposed to changes in the prices of certain commodities that we use in production. Changes in these rates and commodity prices may have an impact on future cash flows and earnings. We manage these risks through normal operating and financing activities and, when deemed appropriate, through the use of derivative financial instruments. We do not enter into financial instruments for trading or speculative purposes.

By using derivative instruments, we are subject to credit and market risk. The fair market value of the derivative instruments is determined by using valuation models whose inputs are derived using market observable inputs, including interest rate yield curves, as well as foreign exchange and commodity spot and forward rates, and reflects the asset or liability position as of the end of each reporting period. When the fair value of a derivative contract is positive, the counterparty owes us, thus creating a receivable risk for us. We are exposed to counterparty credit risk in the event of non-performance by counterparties to our derivative agreements. We minimize counterparty credit (or repayment) risk by entering into transactions with various major financial institutions of investment grade credit rating.

Our exposure to market risk is not hedged in a manner that completely eliminates the effects of changing market conditions on earnings or cash flows.

Interest Rate Risk

Given the Company’s debt structure, we have certain exposure to changes in interest rates. Refer to Note 11 in the consolidated financial statements for further information regarding the Company’s debt facilities.

The Company’s 2024 Term Loan B bears an interest rate of LIBOR plus 2.00% subject to a 0.00% LIBOR floor as of December 31, 2018, pursuant to a repricing executed in May 2018. In order to reduce the variability in interest payments associated with our variable rate debt, the Company has entered into interest rate swap agreements that convert a portion of these variable rate borrowings into a fixed rate obligation. These interest rate swap agreements are designated as cash flow hedges, and as such, the contracts are marked-to-market at each reporting date and any

unrealized gains or losses are included in AOCI to the extent effective and reclassified to interest expense in the period during which the transaction affects earnings or it becomes probable that the forecasted transaction will not occur.

Based on weighted-average outstanding borrowings under the 2024 Term Loan B from the date of issuance through December 31, 2018, an increase in 100 basis points in LIBOR would have resulted in approximately \$5.3 million of additional interest expense for the period, inclusive of the impact of the interest rate swap agreements discussed above.

Loans under the 2022 Revolving Facility, at the Borrowers' option, may be maintained as (a) LIBOR loans, which bear interest at a rate per annum equal to LIBOR plus the applicable margin (as defined in the Credit Agreement), if applicable, or (b) base rate loans which shall bear interest at a rate per annum equal to the base rate plus the applicable margin (as defined in the Credit Agreement). As of December 31, 2018, the Borrowers are required to pay a quarterly commitment fee in respect of any unused commitments under the 2022 Revolving Facility equal to 0.375% per annum. As of and throughout the year ended December 31, 2018, we had no variable rate debt issued under our 2022 Revolving Facility and as such we incurred no variable rate interest related to these facilities during the period.

Our Accounts Receivable Securitization Facility is subject to interest charges on both the amount of outstanding borrowings as well as the amount of available, but undrawn commitments under the facility. As of December 31, 2018, fixed interest charges on outstanding borrowings for this facility are 1.95% plus variable commercial paper rates which vary by month and by currency, as outstanding balances can be denominated in euros and U.S. dollars, and fixed interest charges on available, but undrawn commitments for this facility are 1.00%. As of and throughout the year ended December 31, 2018, we had no variable rate debt issued under our Accounts Receivable Securitization Facility, and as such we incurred no variable rate interest related to this facility during the period.

Foreign Currency Risks

The Company's ongoing business operations expose us to foreign currency risks, including fluctuating foreign exchange rates. Our primary foreign currency exposure is the euro-to-U.S. dollar exchange rate, noting that approximately 60% of our net sales were generated in Europe for the year ended December 31, 2018. To a lesser degree, we are also exposed to the exchange rates between the U.S. dollar and other currencies, including the Chinese yuan, Swiss franc, and Indonesian rupiah. To manage these risks, the Company periodically enters into derivative financial instruments such as foreign exchange forward contracts.

Certain subsidiaries have monetary assets and liabilities denominated in currencies other than their respective functional currencies, which creates foreign exchange risk. Our principal strategy in managing exposure to changes in foreign currency exchange rates is to naturally hedge the foreign currency-denominated liabilities on our consolidated balance sheets against corresponding assets of the same currency such that any changes in liabilities due to fluctuations in exchange rates are offset by changes in their corresponding foreign currency assets. In order to further reduce our exposure, we also use foreign exchange forward contracts to economically hedge the impact of the variability in exchange rates on our monetary assets and liabilities denominated in certain foreign currencies. These derivative contracts are not designated for hedge accounting treatment.

The Company also enters into forward contracts with the objective of managing the currency risk associated with forecasted U.S. dollar-denominated raw materials purchases by one of our subsidiaries whose functional currency is the euro. By entering into these forward contracts, which are designated as cash flow hedges, the Company buys a designated amount of U.S. dollars and sells euros at the prevailing market rate to mitigate the risk associated with the fluctuations in the euro-to-U.S. dollar foreign currency exchange rate. The qualifying hedge contracts are marked-to-market at each reporting date and any unrealized gains or losses are included in AOCI to the extent effective, and reclassified to cost of sales in the period during which the transaction affects earnings or it becomes probable that the forecasted transaction will not occur. For 2019, the Company has hedged approximately 50% of our exposure to the euro at a rate of 1.18. Inclusive of these hedges, a 1% change in the euro will impact our annual profitability by approximately \$2.0 million on a pre-tax basis.

We have legal entities consolidated in our financial statements that have functional currencies other than the U.S. dollar, our reporting currency. As a result of currencies fluctuating against the U.S. dollar, currency translation gains and losses are recorded in other comprehensive income, primarily as a result of the remeasurement of our euro functional legal entities as of December 31, 2018 and 2017.

Commodity Price Risk

We purchase certain raw materials such as benzene, ethylene, butadiene, BPA, and styrene primarily under short- and long-term supply contracts. The pricing terms for these raw material purchases are generally determined based on commodity indices and prevailing market conditions within the relevant geography. The selling prices of our products are generally based, in part, on the current or forecasted costs of our key raw materials, but are often subject to a predetermined lag period for the pass through of these costs. As such, during periods of significant raw material price volatility, the Company may experience material volatility in earnings and cash flows due to the lag in passing through raw material costs, primarily for benzene, ethylene, butadiene, and styrene. Assuming no changes in sales price, volume or mix, a hypothetical 10% change in the market price of our raw materials would have impacted cost of sales by approximately \$322.2 million for the year ended December 31, 2018.

We mitigate the risk of volatility in commodity prices where possible by passing changes in raw material costs through to our customers by adjusting our prices or including provisions in our contracts that allow us to adjust prices in such a circumstance or by including pricing formulas which utilize commodity indices. Nevertheless, we may be subject to the timing differences described above for the pass through of these costs. In addition, even when raw material costs may be passed on to our customers, during periods of high raw material price volatility, customers without minimum purchase requirements with us may choose to delay purchases of our materials or, in some cases, substitute purchases of our materials with less costly products. We do not currently enter into derivative financial instruments to manage our commodity price risk relating to our raw material contracts.

Item 8. *Financial Statements and Supplementary Data*

The financial statements and supplementary data required by Regulation S-X are included in Item 15- *Exhibits, Financial Statements Schedules* contained in Part IV of this Annual Report.

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

Our management is responsible for establishing and maintaining disclosure controls and procedures designed to provide reasonable assurance that information required to be disclosed by us in our reports that we file or submit under the Exchange Act (as defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended) is recorded, processed, summarized, and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures. Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the Company's disclosure controls and procedures as of December 31, 2018. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures as of the end of the period covered by this Annual Report were effective to provide the reasonable level of assurance described above.

Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of the Company's financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles.

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 policies and procedures may deteriorate.

Management conducted an assessment of the Company's internal control over financial reporting as of December 31, 2018 based on the framework in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on the assessment, management concluded that, as of December 31, 2018, the Company's internal control over financial reporting is effective.

The effectiveness of the Company's internal control over financial reporting as of December 31, 2018 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) that occurred during the quarter ended December 31, 2018 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Part III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item 10 is incorporated herein by reference from the sections captioned "Election of Directors," "Corporate Governance," "Stock Ownership Information," and "Section 16(a) Beneficial Ownership Reporting Compliance" of the Company's definitive proxy statement for the 2019 annual general meeting of shareholders to be filed with the SEC pursuant to Regulation 14A under the Securities Exchange Act of 1934 (the "2019 Proxy Statement").

Code of Ethics

The Company has adopted a Code of Business Conduct applicable to all of our directors, officers and employees, and a Code of Ethics for Senior Financial Employees applicable to our principal executive, financial and accounting officers, and all persons performing similar functions. A copy of each of those Codes is available on the Company's corporate website at www.trinseo.com under Investor Relations—Corporate Governance—Ethics and Compliance. If we make any substantive amendments to these Codes, or grant any waivers, including any implicit waivers from the provisions of these Codes, we will make a disclosure on our website or in a report on Form 8-K. Our Code of Business of Conduct is supported by a number of support policies which are specifically referenced in the Code, and most of which are also available on our corporate website. Our website and the information contained on that site, or accessible through that site, are not incorporated into and are not a part of this Annual Report.

Item 11. Executive Compensation

The information required by this Item 11 will be contained in our 2019 Proxy Statement and is incorporated by reference herein.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Shareholder Matters

The information required by this Item 12 will be contained in our 2019 Proxy Statement and is incorporated by reference herein.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item 13 will be contained in our 2019 Proxy Statement and is incorporated by reference herein.

Item 14. Principal Accounting Fees and Services

The information required by this Item 14 will be contained in our 2019 Proxy Statement and is incorporated by reference herein.

Part IV

Item 15. Exhibits, Financial Statement Schedules

(a) The following documents are filed as part of this report:

1. Financial statements:

Report of Independent Registered Public Accounting Firm	F-2
Consolidated Balance Sheets as of December 31, 2018 and 2017	F-4
Consolidated Statements of Operations for the years ended December 31, 2018, 2017, and 2016	F-5
Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2018, 2017, and 2016	F-6
Consolidated Statements of Shareholders' Equity for the years ended December 31, 2018, 2017, and 2016	F-7
Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017, and 2016	F-8
Notes to Consolidated Financial Statements for the years ended December 31, 2018, 2017, and 2016	F-9
Financial Statement Schedule – Schedule II. Valuation and Qualifying Accounts for the years ended December 31, 2018, 2017, and 2016	F-57

Americas Styrenics LLC

Audited Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm	F-58
Consolidated Balance Sheets as of December 31, 2018 and 2017	F-59
Consolidated Statements of Comprehensive Income for the years ended December 31, 2018, 2017, and 2016	F-60
Consolidated Statements of Members' Equity for the years ended December 31, 2018, 2017, and 2016	F-61
Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017, and 2016	F-62
Notes to Consolidated Financial Statements for the years ended December 31, 2018, 2017, and 2016	F-63

2. Exhibits: The exhibits to this report are listed in the exhibit index below.

EXHIBIT INDEX

Exhibit No.	Description
3.1	Amended and Restated Articles of Association of Trinseo S.A., as amended (incorporated herein by reference to Exhibit 3.1 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed August 3, 2017)
4.1	Indenture among Trinseo Materials Operating S.C.A., Trinseo Materials Finance, Inc. and The Bank of New York Mellon, as Trustee, dated as of August 29, 2017 (incorporated herein by reference to Exhibit 4.1 to the Current Report filed on Form 8-K, File No. 001-36473, filed September 5, 2017)
4.2	Form of Specimen Share Certificate of Trinseo S.A. (incorporated herein by reference to Exhibit 4.1 to Amendment No. 3 of the Registration Statement filed on Form S-1, File No. 333-194561, filed May 16, 2014)
10.1	Credit Agreement among Trinseo Materials Operating S.C.A., Trinseo Materials Finance, Inc. together with Trinseo Holdings S.à r.l., and Trinseo Materials S.à r.l., Deutsche Bank AG New York Branch, as administrative agent, collateral agent, L/C issuer and swing line lender, and the guarantors and lenders from time to time party thereto, dated as of September 6, 2017 (incorporated herein by reference to Exhibit 10.1 to the Current Report filed on Form 8-K, No. 001-36473, filed September 7, 2017)
10.2	Amendment to the Credit Agreement dated September 6, 2017 among Trinseo Materials Operating S.C.A., Trinseo Materials Finance, Inc., together with Trinseo Holding S.à r.l. and Trinseo Materials S.à r.l., Deutsche Bank AG New York Branch, as administrative agent, collateral agent, L/C issuer and swing line lender, and the guarantors and lenders party thereto from time to time, dated as of May 22, 2018 (incorporated by reference to Exhibit 10.2 to the Quarterly Report filed on Form 10-Q, No. 001-36473, filed on August 3, 2018)
10.3	Form of Cross-Currency Rate Swap Transaction Confirmation (incorporated herein by reference to Exhibit 10.2 to the Current Report filed on Form 8-K, File No. 001-36473, filed September 7, 2017)
10.4	Amended and Restated Employment Agreement, among Trinseo US Holding, Inc., Trinseo S.A. and Christopher D. Pappas, dated December 20, 2017 (incorporated herein by reference to Exhibit 10.3 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 3, 2018)
10.5	Amendment to Employment Agreement between Trinseo US Holding, Inc., Trinseo S.A. and Christopher D. Pappas, dated December 2018 (incorporated herein by reference to Exhibit 10.1 to the Current Report filed on Form 8-K, File No. 001-36473, filed on December 21, 2018)
10.6	Employment Agreement between Trinseo LLC and Barry Niziolek, dated May 20, 2016 (incorporated herein by reference to Exhibit 10.1 to the Current Report filed on Form 8-K, File No. 001-36473, filed May 23, 2016)
10.7	Employment Agreement, dated September 14, 2015 by and between Trinseo Europe GmbH. and Timothy M. Stedman (incorporated herein by reference to Exhibit 10.11 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 11, 2016)
10.8	Employment Agreement, dated August 7, 2015, by and between Trinseo Europe GmbH and Hayati Yarkadas (incorporated herein by reference to Exhibit 10.12 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 11, 2016)

Exhibit No.	Description
10.9	Employment Agreement, among Trinseo US Holding, Inc. (f/k/a Bain Capital Everest US Holding, Inc.) Bain Capital Everest Manager Holding SCA and Marilyn Horner, dated January 5, 2011 (incorporated herein by reference to Exhibit 10.12 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 10, 2015)
10.10	First Amendment to Employment Agreement, among Trinseo US Holding, Inc. (f/k/a Bain Capital Everest US Holding, Inc.) Bain Capital Everest Manager Holding SCA and Marilyn Horner, dated February 14, 2012 (incorporated herein by reference to Exhibit 10.13 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 10, 2015)
10.11	Second Amendment to Employment Agreement, among Trinseo US Holding, Inc., Trinseo S.A. and Marilyn Horner, dated December 20, 2017 (incorporated herein by reference to Exhibit 10.9 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 1, 2018)
10.12	Retention Award Letter Agreement, dated December 21, 2017, between Trinseo US Holding, Inc., Trinseo LLC and Marilyn Horner (incorporated herein by reference to Exhibit 10.10 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 1, 2018)
10.13	Letter Agreement, dated March 1, 2016, between Trinseo S.A. and Marilyn N. Horner, defining retirement for purpose of equity awards (incorporated by reference to Exhibit 10.5 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 5, 2016)
10.14	Employment Agreement, dated November 17, 2014, by and between Trinseo US Holding, Inc. (f/k/a Bain Capital Everest US Holding, Inc.) and Angelo N. Chaclas (incorporated herein by reference to Exhibit 10.10 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 11, 2016)
10.15	Letter Agreement, dated June 18, 2018, between Trinseo S.A. and Angelo N. Chaclas, defining retirement for purpose of equity awards (incorporated by reference to Exhibit 10.4 to the Quarterly Report filed on Form 10-Q, No. 001-36473, filed on August 3, 2018)
10.16	Employment Agreement between Trinseo Europe GmbH and Alice Heezen, dated March 26, 2018 (incorporated herein by reference to Exhibit 10.4 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 3, 2018)
10.17*	Second Amended and Restated Master Outsourcing Services Agreement, among The Dow Chemical Company and Trinseo LLC (f/k/a Styron LLC) and Trinseo Holding B.V. (f/k/a Styron Holding B.V.), dated June 1, 2013 (incorporated herein by reference to Exhibit 10.19 to Amendment No. 2 to the Registration Statement filed on Form S-4, File No. 333-191460, filed December 17, 2013)
10.18*	Amended and Restated Ethylene Sales Contract (Europe), between Dow Europe GmbH and Trinseo Europe GmbH (f/k/a Styron Europe GmbH), dated June 17, 2010 (incorporated herein by reference to Exhibit 10.22 to Amendment No. 2 to the Registration Statement filed on Form S-4, File No. 333-191460, filed December 17, 2013)
10.19*	Amended and Restated Benzene Sales Contract (Europe), between Dow Europe GmbH and Trinseo Europe GmbH (f/k/a Styron Europe GmbH), dated June 17, 2010 (incorporated herein by reference to Exhibit 10.23 to Amendment No. 2 to the Registration Statement filed on Form S-4, File No. 333-191460, filed December 17, 2013)

Exhibit No.	Description
10.20*	Amended and Restated Butadiene Sales Contract (Europe), between Dow Europe GmbH and Trinseo Europe GmbH (f/k/a Styron Europe GmbH), dated June 17, 2010 (incorporated herein by reference to Exhibit 10.27 to Amendment No. 2 to the Registration Statement filed on Form S-4, File No. 333-191460, filed December 17, 2013)
10.21*	Amended and Restated MOD5 Computerized Process Control Software Agreement, Licenses and Services, between Rofan Services Inc. and Trinseo LLC (f/k/a Styron LLC), dated as of June 17, 2010 (incorporated herein by reference to Exhibit 10.29 to the Registration Statement filed on Form S-4, File No. 333-191460, filed September 30, 2013)
10.22*	Amendment No. 1 to the Amended and Restated MOD5 Computerized Process Control Software Agreement, Licenses and Services, between Rofan Services Inc. and Trinseo LLC (f/k/a Styron LLC), dated as of June 1, 2013 (incorporated herein by reference to Exhibit 10.30 to Amendment No. 2 to the Registration Statement filed on Form S-4, File No. 333-191460, filed December 17, 2013)
10.23*	Amended and Restated Styron License Agreement, among The Dow Chemical Company, Dow Global Technologies Inc. and Trinseo LLC (f/k/a Styron LLC), dated as of June 17, 2010. (incorporated herein by reference to Exhibit 10.31 to Amendment No. 2 to the Registration Statement filed on Form S-4, File No. 333-191460, filed December 17, 2013)
10.24	Deed of Amendment, Restatement and Accession, dated September 28, 2018, entered into by and among Trinseo Europe GmbH, Trinseo Export GmbH, Trinseo Deutschland Anlagengesellschaft mbH, Trinseo Netherlands B.V., Trinseo LLC, Trinseo U.S. Receivables Company SPV LLC, Styron Receivables Funding Designated Activity Company, Trinseo Finance Luxembourg S.à r.l., Luxembourg, Zweigniederlassung Horgen, Regency Assets Designated Activity Company, HSBC Bank plc, Trinseo Holding S.à r.l., TMF Administration Services Limited and the Law Debenture Trust Corporation plc (incorporated herein by reference to Exhibit 10.4 to the Quarterly Report on Form 10-Q, File No. 001-36473, filed on November 9, 2018)
10.25	Form of Restoration and Elective Deferral Plan (incorporated herein by reference to Exhibit 10.35 to Amendment No. 2 to the Registration Statement on Form S-1, File No. 333-194561, filed May 5, 2014)
10.26	Performance Award (PA) Plan (incorporated herein by reference to Exhibit 10.36 to Amendment No. 2 to the Registration Statement on Form S-1, File No. 333-194561, filed May 5, 2014)
10.27	Form of 2014 Omnibus Incentive Plan (incorporated herein by reference to Exhibit 10.34 to Amendment No. 3 to the Registration Statement on Form S-1, File No. 333-194561, filed May 16, 2014)
10.28	Trinseo S.A. Cash Incentive Plan (incorporated herein by reference to Exhibit 10.35 to Amendment No. 3 to the Registration Statement on Form S-1, File No. 333-194561, filed May 16, 2014)
10.29	Form of Indemnification Agreement for Directors and Officers (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q, File No.001-36473, filed August 3, 2017)
10.30	Form of Director Offer Letter (incorporated herein by reference to Exhibit 10.27 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 1, 2018)
10.31	Form of Restricted Stock Unit Agreement for Directors (incorporated herein by reference to Exhibit 10.1 to the Quarterly Report on Form 10-Q, File No. 001-36473, filed May 3, 2017)

Exhibit No.	Description
10.32	Form of Restricted Stock Unit Award Agreement for Executives (incorporated herein by reference to Exhibit 10.5 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 3, 2018)
10.33	Form of Non-statutory Stock Option Award Agreement for Executives (incorporated herein by reference to Exhibit 10.6 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 3, 2018)
10.34	Form of Performance Award Stock Unit Agreement for Executives (incorporated herein by reference to Exhibit 10.7 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 3, 2018)
10.35	Form of Restricted Stock Unit Award Agreement for Employees (incorporated herein by reference to Exhibit 10.8 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 3, 2018)
10.36	Form of Non-statutory Stock Option Award Agreement for Employees (incorporated herein by reference to Exhibit 10.9 to the Quarterly Report filed on Form 10-Q, File No. 001-36473, filed May 3, 2018)
10.37	Form of Letter Agreement to Restricted Stock Unit Awardees regarding payment of dividend equivalents (incorporated herein by reference to Exhibit 10.38 to the Annual Report filed on Form 10-K, File No. 001-36473, filed March 1, 2017)
10.38	Form of Performance Award Stock Unit Agreement for Executives for 2018 Executive Retention Awards (incorporated herein by reference to Exhibit 10.2 to the Current Report filed on Form 8-K, File No. 001-36473, filed September 17, 2018)
21.1†	Subsidiaries of Trinseo S.A.
23.1†	Consent of Independent Registered Public Accounting Firm PricewaterhouseCoopers LLP
23.2†	Consent of Independent Registered Public Accounting Firm Deloitte & Touche LLP
31.1†	Certification of Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2†	Certification of Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1†	Certification of Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2†	Certification of Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS†	XBRL Instance Document
101.SCH†	XBRL Taxonomy Extension Schema Document
101.CAL†	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF†	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB†	XBRL Extension Label Linkbase Document

Exhibit No.	Description
101.PRE†	XBRL Taxonomy Extension Presentation Linkbase Document

* Application has been made to the SEC for confidential treatment of certain provisions of these exhibits. Omitted material for which confidential treatment has been requested has been filed separately with the SEC.

† Filed herewith.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: February 28, 2019

TRINSEO S.A.

By: /s/ Christopher D. Pappas
Name: Christopher D. Pappas
Title: President and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1934, this report has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
<u>/s/ Christopher D. Pappas</u> Christopher D. Pappas	President and Chief Executive Officer (Principal Executive Officer)	February 28, 2019
<u>/s/ Barry J. Niziolek</u> Barry J. Niziolek	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 28, 2019
<u>/s/ Ryan J. Leib</u> Ryan J. Leib	Vice President, Global Controller and Principal Accounting Officer (Principal Accounting Officer)	February 28, 2019
<u>/s/ Joseph Alvarado</u> Joseph Alvarado	Director	February 28, 2019
<u>/s/ Jeffrey J. Cote</u> Jeffrey J. Cote	Director	February 28, 2019
<u>/s/ Pierre-Marie De Leener</u> Pierre-Marie De Leener	Director	February 28, 2019
<u>/s/ K'Lynne Johnson</u> K'Lynne Johnson	Director	February 28, 2019
<u>/s/ Philip R. Martens</u> Philip R. Martens	Director	February 28, 2019
<u>/s/ Donald T. Misheff</u> Donald T. Misheff	Director	February 28, 2019

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Henri Steinmetz</u> Henri Steinmetz	Director	February 28, 2019
<u>/s/ Stephen M. Zide</u> Stephen M. Zide	Director	February 28, 2019

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* The audited financial statements of Americas Styrenics LLC as of December 31, 2018 and 2017 and for the years ended December 31, 2018, 2017, and 2016 have been included in this Annual Report in accordance with the requirements of Rule 3-09 of Regulation S-X.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Trinseo S.A.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Trinseo S.A. and its subsidiaries (the “Company”) as of December 31, 2018 and 2017, and the related consolidated statements of operations, comprehensive income (loss), shareholders’ equity 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”). We also have audited the Company’s internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control – Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, based on our audits and the report of other auditors, the consolidated financial statements referred to above 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. Also in our opinion, based on our audit, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

We did not audit the financial statements of Americas Styrenics LLC, a 50% equity investment of Trinseo S.A., which is reflected in the consolidated financial statements of Trinseo S.A. as an equity method investment of \$179.1 million and \$152.5 million as of December 31, 2018 and 2017, respectively, and income from equity investment of \$144.1 million, \$122.9 million and \$135.8 million for the years ended December 31, 2018, 2017 and 2016 respectively. Those statements were audited by other auditors whose report thereon has been furnished to us, and our opinion expressed herein, insofar as it relates to the amounts included for Americas Styrenics LLC, is based solely on the report of the other auditors.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Annual Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting 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 in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing

such other procedures as we considered necessary in the circumstances. We believe that our audits and the report of other auditors provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's 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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

/s/ PricewaterhouseCoopers LLP
Philadelphia, Pennsylvania
February 28, 2019

We have served as the Company's auditor since 2010.

TRINSEO S.A.
Consolidated Balance Sheets
(In millions, except per share data)

	December 31,	
	2018	2017
Assets		
Current assets		
Cash and cash equivalents	\$ 452.3	\$ 432.8
Accounts receivable, net of allowance	648.1	685.5
Inventories	510.4	510.4
Other current assets	20.5	17.5
Total current assets	<u>1,631.3</u>	<u>1,646.2</u>
Investments in unconsolidated affiliates	179.1	152.5
Property, plant and equipment, net	592.1	627.0
Other assets		
Goodwill	69.0	72.5
Other intangible assets, net	191.1	207.5
Deferred income tax assets	26.7	35.5
Deferred charges and other assets	37.5	30.8
Total other assets	<u>324.3</u>	<u>346.3</u>
Total assets	<u>\$ 2,726.8</u>	<u>\$ 2,772.0</u>
Liabilities and shareholders' equity		
Current liabilities		
Short-term borrowings and current portion of long-term debt	\$ 7.0	\$ 7.0
Accounts payable	354.2	436.8
Income taxes payable	16.0	35.9
Accrued expenses and other current liabilities	159.8	146.9
Total current liabilities	<u>537.0</u>	<u>626.6</u>
Noncurrent liabilities		
Long-term debt, net of unamortized deferred financing fees	1,160.8	1,165.0
Deferred income tax liabilities	45.4	49.2
Other noncurrent obligations	214.9	256.4
Total noncurrent liabilities	<u>1,421.1</u>	<u>1,470.6</u>
Commitments and contingencies (Note 15)		
Shareholders' equity		
Ordinary shares, \$0.01 nominal value, 50,000.0 shares authorized (December 31, 2018: 48.8 shares issued and 41.6 shares outstanding; December 31, 2017: 48.8 shares issued and 43.4 shares outstanding)	0.5	0.5
Additional paid-in-capital	575.4	578.8
Treasury shares, at cost (December 31, 2018: 7.2 shares; December 31, 2017: 5.4 shares)	(418.1)	(286.8)
Retained earnings	753.2	527.9
Accumulated other comprehensive loss	(142.3)	(145.6)
Total shareholders' equity	<u>768.7</u>	<u>674.8</u>
Total liabilities and shareholders' equity	<u>\$ 2,726.8</u>	<u>\$ 2,772.0</u>

The accompanying notes are an integral part of these consolidated financial statements.

TRINSEO S.A.
Consolidated Statements of Operations
(In millions, except per share data)

	Year Ended December 31,		
	2018	2017	2016
Net sales	\$ 4,622.8	\$ 4,448.1	\$ 3,716.6
Cost of sales	4,094.0	3,807.8	3,124.4
Gross profit	528.8	640.3	592.2
Selling, general and administrative expenses	258.5	239.0	238.7
Equity in earnings of unconsolidated affiliates	144.1	123.7	144.7
Operating income	414.4	525.0	498.2
Interest expense, net	46.4	70.1	75.0
Loss on extinguishment of long-term debt	0.2	65.3	—
Other expense (income), net	3.5	(21.5)	17.9
Income before income taxes	364.3	411.1	405.3
Provision for income taxes	71.8	82.8	87.0
Net income	\$ 292.5	\$ 328.3	\$ 318.3
Weighted average shares- basic	42.8	43.8	46.5
Net income per share- basic	\$ 6.83	\$ 7.49	\$ 6.84
Weighted average shares- diluted	43.7	45.0	47.5
Net income per share- diluted	\$ 6.70	\$ 7.30	\$ 6.70

The accompanying notes are an integral part of these consolidated financial statements.

TRINSEO S.A.
Consolidated Statements of Comprehensive Income (Loss)
(In millions)

	<u>Year Ended December 31,</u>		
	<u>2018</u>	<u>2017</u>	<u>2016</u>
Net income	\$ 292.5	\$ 328.3	\$ 318.3
Other comprehensive income (loss), net of tax:			
Cumulative translation adjustments	(17.3)	24.5	(9.8)
Net gain (loss) on cash flow hedges	15.0	(18.4)	6.7
Pension and other postretirement benefit plans:			
Prior service credit arising during period (net of tax of \$0.2, \$0, and \$0)	0.7	—	—
Net gain (loss) arising during period (net of tax of \$0.3, \$10.8, and \$(7.3))	1.8	31.8	(20.6)
Amounts reclassified from accumulated other comprehensive income (loss)	3.1	(13.3)	3.3
Total other comprehensive income (loss), net of tax	<u>3.3</u>	<u>24.6</u>	<u>(20.4)</u>
Comprehensive income	<u>\$ 295.8</u>	<u>\$ 352.9</u>	<u>\$ 297.9</u>

The accompanying notes are an integral part of these consolidated financial statements.

TRINSEO S.A.

Consolidated Statements of Shareholders' Equity
(In millions, except per share data)

	Shares		Shareholders' Equity					Total
	Ordinary Shares Outstanding	Treasury Shares	Ordinary Shares	Additional Paid-In Capital	Treasury Shares	Accumulated Other Comprehensive Income (Loss)	Retained Earnings (Accumulated Deficit)	
Balance at December 31, 2015	48.8	—	\$ 0.5	\$ 556.6	\$ —	\$ (149.8)	\$ (15.6)	\$ 391.7
Adoption of new accounting standard	—	—	—	0.9	—	—	(0.9)	—
Net income	—	—	—	—	—	—	318.3	318.3
Other comprehensive loss	—	—	—	—	—	(20.4)	—	(20.4)
Share-based compensation activity	—	—	—	16.2	1.0	—	—	17.2
Purchase of treasury shares	(4.5)	4.5	—	—	(218.5)	—	—	(218.5)
Dividends on ordinary shares (\$0.90 per share)	—	—	—	—	—	—	(40.6)	(40.6)
Balance at December 31, 2016	44.3	4.5	\$ 0.5	\$ 573.7	\$ (217.5)	\$ (170.2)	\$ 261.2	\$ 447.7
Net income	—	—	—	—	—	—	328.3	328.3
Other comprehensive income	—	—	—	—	—	24.6	—	24.6
Share-based compensation activity	0.5	(0.5)	—	5.1	17.5	—	—	22.6
Purchase of treasury shares	(1.4)	1.4	—	—	(86.8)	—	—	(86.8)
Dividends on ordinary shares (\$1.38 per share)	—	—	—	—	—	—	(61.6)	(61.6)
Balance at December 31, 2017	43.4	5.4	\$ 0.5	\$ 578.8	\$ (286.8)	\$ (145.6)	\$ 527.9	\$ 674.8
Net income	—	—	—	—	—	—	292.5	292.5
Other comprehensive income	—	—	—	—	—	3.3	—	3.3
Share-based compensation activity	0.4	(0.4)	—	(3.4)	13.7	—	—	10.3
Purchase of treasury shares	(2.2)	2.2	—	—	(145.0)	—	—	(145.0)
Dividends on ordinary shares (\$1.56 per share)	—	—	—	—	—	—	(67.2)	(67.2)
Balance at December 31, 2018	41.6	7.2	\$ 0.5	\$ 575.4	\$ (418.1)	\$ (142.3)	\$ 753.2	\$ 768.7

The accompanying notes are an integral part of these consolidated financial statements.

TRINSEO S.A.
Consolidated Statements of Cash Flows
(In millions)

	Year Ended December 31,		
	2018	2017	2016
Cash flows from operating activities			
Net income	\$ 292.5	\$ 328.3	\$ 318.3
Adjustments to reconcile net income to net cash provided by operating activities			
Depreciation and amortization	130.2	110.6	96.4
Amortization of deferred financing fees, issuance discount, and excluded	0.6	5.1	5.8
Deferred income tax	5.3	14.8	16.1
Share-based compensation expense	15.8	13.8	17.1
Earnings of unconsolidated affiliates, net of dividends	(26.6)	5.3	(13.4)
Unrealized net (gain) loss on foreign exchange forward contracts	(0.9)	2.6	3.2
Loss on extinguishment of long-term debt	0.2	65.3	—
(Gain) loss on sale of businesses and other assets	(1.0)	(10.5)	14.9
Impairment charges	1.9	4.3	15.1
Pension curtailment and settlement (gain) loss	0.6	(21.6)	—
Changes in assets and liabilities			
Accounts receivable	21.2	(51.8)	(96.4)
Inventories	(16.0)	(80.2)	(51.0)
Accounts payable and other current liabilities	(43.8)	9.3	57.1
Income taxes payable	(19.7)	9.9	3.8
Other assets, net	(4.4)	(4.5)	5.4
Other liabilities, net	10.6	(9.4)	11.3
Cash provided by operating activities	<u>366.5</u>	<u>391.3</u>	<u>403.7</u>
Cash flows from investing activities			
Capital expenditures	(121.4)	(147.4)	(123.9)
Cash paid to acquire a business, net of cash acquired	—	(82.3)	—
Proceeds from capital expenditures subsidy	1.0	—	—
Proceeds from the sale of businesses and other assets	1.7	46.2	2.0
Distributions from unconsolidated affiliates	—	0.9	4.8
Other investing cash outflows	—	—	(0.2)
Cash used in investing activities	<u>(118.7)</u>	<u>(182.6)</u>	<u>(117.3)</u>
Cash flows from financing activities			
Deferred financing fees	(0.6)	(21.5)	—
Short-term borrowings, net	(0.3)	(0.3)	(0.3)
Purchase of treasury shares	(142.9)	(88.9)	(215.1)
Dividends paid	(66.0)	(58.0)	(27.3)
Proceeds from exercise of option awards	2.8	9.3	0.2
Withholding taxes paid on restricted share units	(8.2)	(0.3)	(0.1)
Net proceeds from issuance of 2024 Term Loan B	696.5	700.0	—
Repayments of 2024 Term Loan B	(703.5)	(1.8)	—
Repayments of 2021 Term Loan B	—	(492.5)	(5.0)
Net proceeds from issuance of 2025 Senior Notes	—	500.0	—
Repayments of 2022 Senior Notes	—	(746.0)	—
Prepayment penalty on long-term debt	—	(53.0)	—
Cash used in financing activities	<u>(222.2)</u>	<u>(253.0)</u>	<u>(247.6)</u>
Effect of exchange rates on cash	(6.1)	12.0	(5.0)
Net change in cash and cash equivalents	19.5	(32.3)	33.8
Cash and cash equivalents—beginning of period	432.8	465.1	431.3
Cash and cash equivalents—end of period	<u>\$ 452.3</u>	<u>\$ 432.8</u>	<u>\$ 465.1</u>
Supplemental disclosure of cash flow information			
Cash paid for income taxes, net of refunds	\$ 85.2	\$ 75.0	\$ 66.6
Cash paid for interest, net of amounts capitalized	\$ 50.7	\$ 63.3	\$ 69.4
Accrual for property, plant and equipment	\$ 10.2	\$ 15.6	\$ 35.6

The accompanying notes are an integral part of these consolidated financial statements.

TRINSEO S.A.

Notes to Consolidated Financial Statements (Dollars in millions, unless otherwise stated)

NOTE 1—ORGANIZATION AND BUSINESS ACTIVITIES

Organization

On June 3, 2010, Bain Capital Everest Manager Holding SCA, an affiliate of Bain Capital (which is referred to as “the former Parent”), was formed through investment funds advised or managed by Bain Capital. Dow Europe Holding B.V. (together with The Dow Chemical Company, “Dow”) retained an indirect ownership interest in the former Parent. Trinseo S.A. (“Trinseo,” and together with its subsidiaries, the “Company”) was also formed on June 3, 2010, incorporated under the existing laws of the Grand Duchy of Luxembourg. At that time, all ordinary shares of Trinseo were owned by the former Parent. On June 17, 2010, Trinseo acquired 100% of the former Styron business from Dow (the “Acquisition”), at which time the Company commenced operations.

During the year ended December 31, 2016, the former Parent sold 37,269,567 ordinary shares of the Company in a series of secondary offerings to the market. As such, the former Parent no longer holds an ownership interest in the Company.

Business Activities

The Company is a leading global materials company engaged in the manufacturing and marketing of synthetic rubber, latex binders, and plastics, including various specialty and technologically differentiated products. The Company develops synthetic rubber, latex binders, and plastics products that are incorporated into a wide range of products throughout the world, including tires and other products for automotive applications, carpet and artificial turf backing, coated paper and packaging board, food packaging, appliances, medical devices, consumer electronics and construction applications, among others.

The Company’s operations are located in Europe, North America, and Asia Pacific, supplemented by Americas Styrenics, a styrenics joint venture with Chevron Phillips Chemical Company LP. Refer to Note 5 for further information regarding the Company’s investment in Americas Styrenics.

The Company has significant manufacturing and production operations around the world, which allow service to its global customer base. As of December 31, 2018, the Company’s production facilities included 30 manufacturing plants (which included a total of 75 production units) at 23 sites across 12 countries, including its joint venture. Additionally, as of December 31, 2018, the Company operated 10 research and development (“R&D”) facilities globally, including mini plants, development centers, and pilot coaters.

The Company’s Chief Executive Officer, who is the chief operating decision maker, manages the Company’s operations under six segments, Latex Binders, Synthetic Rubber, Performance Plastics, Polystyrene, Feedstocks, and Americas Styrenics. These segments were realigned effective January 1, 2018 from the Company’s prior segmentation. Refer to Note 19 for further information regarding the Company’s segments.

NOTE 2—BASIS OF PRESENTATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation and Principles of Consolidation

The accompanying consolidated financial statements as of December 31, 2018 and 2017 and for each of the three years in the period ended December 31, 2018 are prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”). The consolidated financial statements of the Company contain the accounts of all entities that are controlled and variable interest entities (“VIEs”) for which the Company is the primary beneficiary. A VIE is defined as a legal entity that has equity investors that do not have sufficient equity at risk for the entity to support its activities without additional subordinated financial support or, as a group, the holders of the equity at risk lack (i) the power to direct the entity’s activities or (ii) the obligation to absorb the expected losses or the right to receive the expected residual returns of the entity. A VIE is required to be consolidated by a company if that company is

the primary beneficiary. Refer to Note 11 for further discussion of the Company's Accounts Receivable Securitization Facility, which qualifies as a VIE and is consolidated within the Company's financial statements.

All intercompany balances and transactions are eliminated. Joint ventures over which the Company has the ability to exercise significant influence that are not consolidated are accounted for by the equity method.

Certain prior year amounts have been reclassified to conform to the current year presentation. These reclassifications did not have a material impact on the Company's financial position, results of operations, or cash flows. Refer to the discussion below under "*Recent Accounting Guidance*" as well as to Notes 9 and 19 for further information.

Use of Estimates in Financial Statement Preparation

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. Actual amounts could differ from these estimates.

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentrations of credit risk consist principally of cash equivalents and accounts receivable. The Company uses major financial institutions with high credit ratings to engage in transactions involving cash equivalents. The Company minimizes credit risk in its receivables by selling products to a diversified portfolio of customers in a variety of markets located throughout the world.

The Company performs ongoing evaluations of its customers' credit and generally does not require collateral. The Company maintains an allowance for doubtful accounts for losses resulting from the inability of specific customers to meet their financial obligations, representing its best estimate of probable credit losses in existing trade accounts receivable. A specific reserve for doubtful receivables is recorded against the amount due from these customers. For all other customers, the Company recognizes reserves for doubtful receivables based on historical experience.

Financial Instruments

The carrying amounts of the Company's financial instruments, including cash and cash equivalents, accounts receivable, accounts payable, and accrued and other current liabilities, approximate fair value due to their generally short maturities.

The estimated fair values of the Company's 2024 Term Loan B and 2025 Senior Notes and, when outstanding, borrowings under its 2022 Revolving Facility and Accounts Receivable Securitization Facility (all of which are defined in Note 11) are determined using Level 2 inputs within the fair value hierarchy. The carrying amounts of borrowings under the 2022 Revolving Facility and Accounts Receivable Securitization Facility approximate fair value as these borrowings bear interest based on prevailing variable market rates.

At times, the Company manages its exposure to changes in foreign currency exchange rates, where possible, by entering into foreign exchange forward contracts. Additionally, the Company manages its exposure to variability in interest payments associated with its variable rate debt by entering into interest rate swap agreements. When outstanding, all derivatives, whether designated in hedging relationships or not, are required to be recorded on the consolidated balance sheets at fair value. The fair value of the derivatives is determined from sources independent of the Company, including the financial institutions which are party to the derivative instruments. The fair value of derivatives also considers the credit default risk of the parties involved.

If the derivative is not designated for hedge accounting treatment, changes in the fair value of the underlying instrument and settlements are recognized in earnings. If the derivative is designated as a fair value hedge, changes in the fair value of the derivative and the hedged item are recognized in earnings. If the derivative is designated as a cash flow hedge, the effective portion of the change in the fair value of the derivative will be recorded in accumulated other comprehensive income or loss ("AOCI") and will be recognized in the consolidated statements of operations when the hedged item affects earnings or it becomes probable that the forecasted transaction will not occur. If the derivative is designated as a net investment hedge, to the extent it is deemed to be effective, the change in the fair value of the derivative will be recorded within the cumulative translation adjustment account as a component of AOCI and the

resulting gains or losses will be recognized in the consolidated statements of operations when the hedged net investment is either sold or substantially liquidated.

As of December 31, 2018 and 2017, the Company had certain foreign exchange forward contracts outstanding that were not designated for hedge accounting treatment and certain foreign exchange forward contracts and interest rate swap agreements that were designated as cash flow hedges. As of December 31, 2018 and 2017, the Company also had certain fixed-for-fixed cross currency swaps (“CCS”) outstanding, which swap U.S. dollar principal and interest payments on the Company’s 2025 Senior Notes for euro-denominated payments. The Company’s CCS have been designated as a hedge of its net investment in certain European subsidiaries. The CCS were initially designated as a hedge effective September 1, 2017 and were subsequently re-designated as a net investment hedge in conjunction with the Company’s adoption of the new hedge accounting guidance effective April 1, 2018, as described below in the section “Recent Accounting Guidance.”

Forward contracts, interest rate swaps, and cross currency swaps are entered into with a limited number of counterparties, each of which allows for net settlement of all contracts through a single payment in a single currency in the event of a default on or termination of any one contract. The Company records these derivative instruments on a net basis, by counterparty within the consolidated balance sheets.

The Company presents the cash receipts and payments from hedging activities in the same category as the cash flows from the items subject to hedging relationships. As the items subject to economic hedging relationships are the Company’s operating assets and liabilities, the related cash flows are classified within operating activities in the consolidated statements of cash flows.

Refer to Notes 12 and 13 for further information on the Company’s derivative instruments and their fair value measurements.

Foreign Currency Translation

For the majority of the Company’s subsidiaries, the local currency has been identified as the functional currency. For remaining subsidiaries, the U.S. dollar has been identified as the functional currency due to the significant influence of the U.S. dollar on their operations. Gains and losses resulting from the translation of various functional currencies into U.S. dollars are recorded within the cumulative translation adjustment account as a component of AOCI in the consolidated balance sheets. The Company translates asset and liability balances at exchange rates in effect at the end of the period and income and expense transactions at the average exchange rates in effect during the period. Gains and losses resulting from foreign currency transactions are recorded within “Other expense (income), net” in the consolidated statements of operations.

For the years ended December 31, 2018 and 2016, the Company recognized net foreign exchange transaction losses of \$15.8 million and \$5.5 million, respectively, while for the year ended December 31, 2017, the Company recognized net foreign exchange transaction gains of \$20.6 million. These amounts exclude the impacts of foreign exchange forward contracts discussed above.

Environmental Matters

Accruals for environmental matters are recorded when it is considered probable that a liability has been incurred and the amount of the liability can be reasonably estimated, based on current law and existing technologies. These accruals are adjusted periodically as assessment and remediation efforts progress, or as additional technical or legal information become available. Accruals for environmental liabilities are recorded within “Other noncurrent obligations” in the consolidated balance sheets at undiscounted amounts. As of December 31, 2018 and 2017, there were no accruals for environmental liabilities recorded.

Environmental costs are capitalized in recognition of legal asset retirement obligations resulting from the acquisition, construction or normal operation of a long-lived asset. Any costs related to environmental contamination treatment and clean-ups are charged to expense. Estimated future incremental operations, maintenance, and management costs directly related to remediation are accrued when such costs are probable and reasonably estimable.

Cash and Cash Equivalents

Cash and cash equivalents generally include time deposits or highly liquid investments with original maturities of three months or less and no material liquidity fee or redemption gate restrictions.

Inventories

Inventories are stated at the lower of cost or net realizable value (“NRV”), with cost being determined on the first-in, first-out (“FIFO”) method. NRV is calculated as the estimated selling price less reasonably predictable costs of completion, disposal, and transportation. The Company periodically reviews its inventory for excess or obsolete inventory, and will write-down the excess or obsolete inventory value to its NRV, if applicable.

Property, Plant and Equipment

Property, plant and equipment are carried at cost less accumulated depreciation and less impairment, if applicable, and are depreciated over their estimated useful lives using the straight-line method.

Expenditures for maintenance and repairs are recorded in the consolidated statements of operations as incurred. Expenditures that significantly increase asset value, extend useful asset lives or adapt property to a new or different use are capitalized. These expenditures include planned major maintenance activity, or turnaround activities, that increase the Company’s manufacturing plants’ output and improve production efficiency as compared to pre-turnaround operations. As of December 31, 2018 and 2017, \$15.1 million and \$11.6 million, respectively, of the Company’s net costs related to turnaround activities were capitalized within “Deferred charges and other assets” in the consolidated balance sheets, and are being amortized over the period until the next scheduled turnaround.

The Company periodically evaluates actual experience to determine whether events and circumstances have occurred that may warrant revision of the estimated useful lives of property, plant and equipment. Engineering and other costs directly related to the construction of property, plant and equipment are capitalized as construction in progress until construction is complete and such property, plant and equipment is ready and available to perform its specifically assigned function. Upon retirement or other disposal, the asset cost and related accumulated depreciation are removed from the accounts and the net amount, less any proceeds, is charged or credited to income. The Company also capitalizes interest as a component of the cost of capital assets constructed for its own use.

Impairment and Disposal of Long-Lived Assets

The Company evaluates long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset or asset group may not be recoverable. When undiscounted future cash flows are not expected to be sufficient to recover an asset’s carrying amount, the asset is written down to its fair value based on a discounted cash flow analysis utilizing market participant assumptions.

Long-lived assets to be disposed of by sale are classified as held-for-sale and are reported at the lower of carrying amount or fair value less cost to sell, and depreciation is ceased. Long-lived assets to be disposed of in a manner other than by sale are classified as held-and-used until they are disposed. Refer to Note 20 for information on the Company’s assets classified as held-for-sale as of December 31, 2018.

Goodwill and Other Intangible Assets

The Company records goodwill when the purchase price of a business acquisition exceeds the estimated fair value of net identified tangible and intangible assets acquired. Goodwill is tested for impairment at the reporting unit level annually, or more frequently when events or changes in circumstances indicate that the fair value of a reporting unit has more likely than not declined below its carrying value. The Company utilizes a market approach and an income approach (under the discounted cash flow method) to calculate the fair value of its reporting units. When supportable, the Company employs the qualitative assessment of goodwill impairment prescribed by Accounting Standards Codification 350. The annual impairment assessment is completed using a measurement date of October 1. No goodwill impairment losses were recorded in the years ended December 31, 2018, 2017, and 2016.

Finite-lived intangible assets, such as developed technology, customer relationships, manufacturing capacity rights, and computer software for internal use are amortized on a straight-line basis over their estimated useful life and

are reviewed for impairment or obsolescence if events or changes in circumstances indicate that their carrying amount may not be recoverable. If impaired, intangible assets are written down to fair value based on discounted cash flows. No intangible asset impairment losses were recorded in the years ended December 31, 2018, 2017, and 2016.

Acquired developed technology is recorded at fair value upon acquisition and is amortized using the straight-line method over the estimated useful life ranging from 9 years to 15 years. The Company determines amortization periods for developed technology based on its assessment of various factors impacting estimated useful lives and timing and extent of estimated cash flows of the acquired assets. This includes estimates of expected period of future economic benefit and competitive advantage related to existing processes and procedures at the date of acquisition. Significant changes to any of these factors may result in a reduction in the useful life of these assets.

Customer relationships are recorded at fair value upon acquisition and are amortized using the straight-line method over the estimated useful life of 19 years. The Company determines amortization periods for customer relationships based on its assessment of various factors impacting estimated useful lives and timing and extent of estimated cash flows of the acquired assets. This includes estimates of expected period of future economic benefit and customer retention rates. Significant changes to any of these factors may result in a reduction in the useful life of these assets.

Investments in Unconsolidated Affiliates

Investments in unconsolidated affiliates in which the Company has the ability to exercise significant influence (generally, 20% to 50%-owned companies) are accounted for using the equity method. Investments are evaluated for impairment whenever events or changes in circumstances indicate that the carrying amount of the investment may not be recoverable. An impairment loss is recorded whenever a decline in fair value of an investment in an unconsolidated affiliate below its carrying amount is determined to be other-than-temporary.

The Company uses the cumulative earnings approach for presenting distributions received from equity method investees in the consolidated statements of cash flows.

Deferred Financing Fees

Capitalized fees and costs incurred in connection with the Company's recognized debt liabilities are presented in the consolidated balance sheets as a direct reduction from the carrying value of those debt liabilities, consistent with debt discounts. Deferred financing fees related to the Company's revolving debt facilities are included within "Deferred charges and other assets" in the consolidated balance sheets.

Deferred financing fees on the Company's term loan and senior note financing arrangements are amortized using the effective interest method over the term of the respective agreement. Deferred financing fees on the Company's revolving facilities and the Accounts Receivable Securitization Facility are amortized using the straight-line method over the term of the respective facility. Amortization of deferred financing fees is recorded in "Interest expense, net" within the consolidated statements of operations.

Sales

As described below in the section "*Recent Accounting Guidance*," effective January 1, 2018, the Company adopted accounting guidance on the recognition of revenue from contracts with customers, which impacted the Company's accounting policies related to its recognition of sales and certain other revenues.

Sales are recognized at a point when control of the promised goods or services is transferred to the customer in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services when the Company's related performance obligation is satisfied under the terms of the contract. Standard terms of delivery are included in contracts of sale, order confirmation documents, and invoices. Sales and other taxes that the Company collects concurrent with sales-producing activities are excluded from "Net sales" and included as a component of "Cost of sales" in the consolidated statements of operations. Additionally, freight and any directly related costs of transporting finished products to customers are accounted for as fulfillment costs and are also included within "Cost of sales." The amount of net sales recognized varies with changes in returns, rebates, cash sales incentives, and other allowances offered to customers based on the Company's experience.

Cost of Sales

The Company classifies the costs of manufacturing and distributing its products as cost of sales. Manufacturing costs include raw materials, utilities, packaging, employee salary and benefits and fixed manufacturing costs associated with production. Fixed manufacturing costs include such items as plant site operating costs and overhead, production planning, depreciation and amortization, repairs and maintenance, environmental, and engineering costs. Distribution costs include shipping and handling costs. Freight and any directly related costs of transporting finished products to customers are also included within cost of sales. As discussed above, inventory costs are recorded within cost of sales utilizing the FIFO method.

Selling, General and Administrative Expenses

Selling, general and administrative (“SG&A”) expenses are generally charged to expense as incurred. SG&A expenses are the cost of services performed by the marketing and sales functions (including sales managers, field sellers, marketing research, marketing communications and promotion and advertising materials) and by administrative functions (including product management, R&D, business management, customer invoicing, human resources, information technology, legal and finance services, such as accounting and tax). Salary and benefit costs, including share-based compensation, for these sales personnel and administrative staff are included within SG&A expenses. R&D expenses include the cost of services performed by the R&D function, including technical service and development, process research including pilot plant operations, and product development. The Company also includes restructuring charges within SG&A expenses.

Total R&D costs included in SG&A expenses were \$56.0 million, \$54.3 million, and \$50.1 million for the years ended December 31, 2018, 2017, and 2016, respectively.

The Company expenses promotional and advertising costs as incurred to SG&A expenses. Total promotional and advertising expenses were \$1.6 million, \$1.5 million, and \$3.0 million for the years ended December 31, 2018, 2017, and 2016, respectively.

Restructuring charges included within SG&A expenses were \$9.3 million, \$8.0 million, and \$23.9 million for the years ended December 31, 2018, 2017, and 2016, respectively. Refer to Note 20 for further information.

Pension and Postretirement Benefits Plans

The Company has several defined benefit plans, under which participants earn a retirement benefit based upon a formula set forth in the plan. The Company also provides certain health care and life insurance benefits to retired employees in the United States. Prior to the divestiture of its latex binders and polycarbonate (“PC”) & compounding businesses in Brazil in 2016, as described in Note 4, the Company also provided health care and life insurance benefits to retired employees in Brazil. The U.S.-based plan provides health care benefits, including hospital, physicians’ services, drug and major medical expense coverage, and life insurance benefits.

Accounting for defined benefit pension plans and other postretirement benefit plans, and any curtailments and settlements thereof, requires various assumptions, including, but not limited to, discount rates, expected rates of return on plan assets and future compensation growth rates. The Company evaluates these assumptions at least once each year, or as facts and circumstances dictate, and makes changes as conditions warrant.

A settlement is a transaction that is an irrevocable action that relieves the employer (or the plan) of primary responsibility for a pension or postretirement benefit obligation, and that eliminates significant risks related to the obligation and the assets used to effect the settlement. When a settlement occurs, the Company does not record settlement gains or losses during interim periods when the cost of all settlements in a year is less than or equal to the sum of the service cost and interest cost components of net periodic benefit cost for the plan in that year.

Income Taxes

The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid. The provision for income taxes represents income taxes paid or payable for the current year plus the change in deferred taxes during the year. Deferred taxes result from differences between the

financial and tax basis of the Company's assets and liabilities and are adjusted for changes in tax rates and tax laws when changes are enacted. For each tax jurisdiction in which the Company operates, deferred tax assets and liabilities are offset against one another and are presented as a single noncurrent amount within the consolidated balance sheets.

Valuation allowances are recorded to reduce deferred tax assets when it is more likely than not that a tax benefit will not be realized. Provision is made for income taxes on unremitted earnings of subsidiaries and affiliates, unless such earnings are deemed to be indefinitely invested.

The Company recognizes the financial statement effects of uncertain income tax positions when it is more likely than not, based on the technical merits, that the position will be sustained upon examination. The Company accrues for other tax contingencies when it is probable that a liability to a taxing authority has been incurred and the amount of the contingency can be reasonably estimated. Interest accrued related to unrecognized tax and income tax related penalties are included in the provision for income taxes. The current portion of uncertain income taxes positions is recorded in "Income taxes payable," while the long-term portion is recorded in "Other noncurrent obligations" in the consolidated balance sheets.

Share-based Compensation

Refer to Note 17 for detailed discussion regarding the Company's share-based compensation award programs. In connection with the Company's initial public offering ("IPO"), the Company's board of directors approved the 2014 Omnibus Plan. Since that time, certain equity grants have been awarded, comprised of restricted share units ("RSUs"), options to purchase shares ("option awards"), and performance share units ("PSUs"). Share-based compensation expense recognized in the consolidated financial statements is based on awards that are ultimately expected to vest. The Company's policy election is to recognize forfeitures as incurred, rather than estimating forfeitures in advance.

Compensation costs for the RSUs are measured at the grant date based on the fair value of the award and are recognized ratably as expense over the applicable vesting term. The fair value of RSUs is equal to the fair market value of the Company's ordinary shares based on the closing price on the date of grant. Dividend equivalents accumulate on RSUs during the vesting period, are payable in cash, and do not accrue interest. Award holders have no right to receive the dividend equivalents unless and until the associated RSUs vest.

Compensation costs for the option awards are measured at the grant date based on the fair value of the award and is recognized as expense over the appropriate service period utilizing graded vesting. The fair value for option awards is computed using the Black-Scholes pricing model, which uses inputs and assumptions determined as of the date of grant.

Compensation costs for the PSUs are measured at the grant date based on the fair value of the award, which is computed using a Monte Carlo valuation model, and is recognized ratably as expense over the applicable vesting term. Dividend equivalents accumulate on PSUs during the vesting period, are payable in cash, and do not accrue interest. Award holders have no right to receive the dividend equivalents unless and until the associated PSUs vest.

Treasury Shares

The Company may, from time to time, repurchase its ordinary shares at prevailing market rates. Share repurchases are recorded at cost in "Treasury shares" within shareholders' equity in the consolidated balance sheets. It is the Company's policy that, as RSUs, PSUs, and option awards vest or are exercised, ordinary shares will be issued from the existing pool of treasury shares on a first-in-first-out basis. Refer to Note 17 for details of vesting for RSUs and PSUs as well as the exercises of option awards.

Recent Accounting Guidance

In May 2014, the Financial Accounting Standards Board ("FASB") and the International Accounting Standards Board ("IASB") jointly issued guidance ("Topic 606") which clarifies the principles for recognizing revenue and develops a common revenue standard for GAAP and International Financial Reporting Standards ("IFRS"). The core principle of the guidance, which the FASB issued certain clarifying updates for, is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The Company adopted Topic 606 effective January 1, 2018, electing to apply the modified retrospective approach only to contracts that were not completed as of the date of initial application at the individual contract level, rather than applying the portfolio approach.

Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while prior period amounts have not been adjusted and continue to be reported in accordance with historical accounting standards (“Topic 605”). As a result of the Company’s implementation procedures, the Company has determined that the cumulative effect to retained earnings from initially applying Topic 606 was immaterial and therefore, no adjustment was recorded. Furthermore, based on current contracts with customers, the Company does not expect the adoption of the new revenue standard to have a material impact to its financial statements on an ongoing basis. Refer to Note 3 for disclosure requirements in effect as a result of this adoption.

In February 2016, the FASB issued guidance related to leases that outlines a comprehensive lease accounting model and supersedes the current lease guidance. The new guidance requires lessees to recognize on the consolidated balance sheets lease liabilities and corresponding right-of-use assets for all leases with terms of greater than 12 months. It also changes the definition of a lease and expands the disclosure requirements of lease arrangements to help investors and other financial statement users better understand the amount, timing and uncertainty of cash flows arising from leases. Although early adoption is permitted, the Company will adopt this new guidance on the effective date for public companies of January 1, 2019. The Company has completed its risk assessment and scoping procedures for the adoption of this guidance through a number of procedures, including conducting surveys with relevant stakeholders in the business, evaluating its known lease population and data constraints, and is in the process of assessing new disclosure requirements and completing the implementation of a third-party software solution to facilitate compliance with accounting and reporting requirements. The Company continues to review existing agreements for potential lease arrangements and to enhance and update business processes and controls related to the new guidance for leases. Collectively, these activities are expected to facilitate the Company's ability to meet the new accounting and disclosure requirements upon adoption in the first quarter of 2019.

The new lease guidance requires a modified retrospective transition approach, applying the new standard to all leases existing at the date of initial adoption. The Company has elected to apply the transition requirements at the January 1, 2019, effective date rather than at the beginning of the earliest comparative period presented. This approach allows for a cumulative effect adjustment in the period of adoption, and prior periods will not be restated. In addition, the Company has elected the package of practical expedients permitted under the transition guidance, which does not require reassessment of prior conclusions related to contracts containing a lease, lease classification and initial direct lease costs. As an accounting policy election, the Company, as a lessee, will account for non-lease and lease components in a contract as a single lease component for all asset classes. Additionally, the Company has not elected to exclude short term leases (term of 12 months or less) from its balance sheet presentation. While its evaluation is still being finalized, the Company estimates an increase of lease-related assets and liabilities ranging from \$70.0 million to \$100.0 million in the consolidated balance sheets as of January 1, 2019. The impact to the Company's consolidated statements of operations and consolidated statements of cash flows is not expected to be material.

In March 2017, the FASB issued guidance that requires employers to present the service cost component of net periodic benefit cost in the same statement of operations line item as other employee compensation costs arising from services rendered during the period. The other components of net periodic benefit cost are to be presented outside of any subtotal of operating income. The Company adopted this guidance effective January 1, 2018 on a retrospective basis. As a result of this adoption, the Company reclassified \$13.7 million of net periodic benefit income for the year ended December 31, 2017 and \$7.4 million of net periodic benefit cost for the year ended December 31, 2016 from “Cost of sales” and “Selling, general and administrative expenses,” collectively, to “Other expense (income), net” within the consolidated statements of operations.

In August 2017, the FASB issued significant amendments to existing hedge accounting guidance. Among other things, this guidance intends to make more financial and nonfinancial hedging strategies eligible for hedge accounting, amends presentation and disclosure requirements, and changes how companies assess effectiveness. Specifically, the guidance eliminates the requirement to separately measure and record ineffectiveness for cash flow and net investment hedges. The Company adopted this guidance effective April 1, 2018. Based upon the Company’s hedging portfolio, this adoption did not result in any cumulative-effect adjustments to retained earnings. The amended presentation and disclosure guidance will be applied prospectively. Refer to Note 12 for further information regarding the impacts of this adoption as well as additional disclosures required by this standard.

In February 2018, the FASB issued guidance to address certain stranded income tax effects in AOCI resulting from the enactment of the U.S. “Tax Cuts and Jobs Act” signed into law on December 22, 2017. The amendment provides financial statement preparers with an option to reclassify stranded tax effects within AOCI, resulting from the reduction

of the U.S. federal corporate income tax rate, to retained earnings. The Company adopted this guidance effective October 1, 2018, applying the available accounting policy election to reclassify the stranded tax effects of the Tax Cuts and Jobs Act from AOCI to retained earnings in the period of adoption. As a result, the Company recorded a one-time reclassification of less than \$0.1 million of stranded tax amounts from “Accumulated other comprehensive loss” to “Retained earnings” in the consolidated balance sheet as of December 31, 2018.

In August 2018, the FASB issued guidance which modifies the disclosure requirements for employers that sponsor defined benefit pension plans or other postretirement plans. This amendment is effective for public companies for fiscal years ending after December 15, 2020. Early adoption is permitted, and the provisions of the amendment should be applied on a retrospective basis to all periods presented. The Company is currently assessing the impact of adopting this guidance on its consolidated financial statements.

In August 2018, the FASB issued guidance which aligns the requirements for capitalizing implementation costs incurred in a cloud computing hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software. This standard update is effective for public companies for interim and annual periods beginning after December 15, 2019, with early adoption permitted. Entities may choose to adopt the new guidance either retrospectively or prospectively to eligible costs incurred on or after the date first applied. The Company is currently assessing the impact of adopting this guidance on its consolidated financial statements.

NOTE 3—NET SALES

As discussed in Note 2, effective January 1, 2018, the Company adopted accounting guidance, Topic 606, issued by the FASB related to the recognition of revenue from contracts with customers. The Company’s accounting policy and practical expedient elections related to revenue recognition, including those elected as a result of the adoption of Topic 606, are summarized as follows.

Sales are recognized at a point when control of the promised goods or services is transferred to the customer in an amount that reflects the consideration the Company expects to be entitled to in exchange for those goods or services, and when the Company’s related performance obligation is satisfied under the terms of the contract. Standard terms of delivery are included in contracts of sale, order confirmation documents, and invoices. Sales and other taxes that the Company collects concurrent with sales-producing activities are excluded from “Net sales” and included as a component of “Cost of sales” in the consolidated statements of operations. Additionally, freight and any directly related costs of transporting finished products to customers are accounted for as fulfillment costs and are also included within “Cost of sales.” The amount of net sales recognized varies with changes in returns, rebates, cash sales incentives, and other allowances offered to customers based on the Company’s experience.

The Company has elected to apply the following practical expedients as allowed under Topic 606:

- The incremental costs of obtaining contracts are expensed as incurred if the amortization period of the assets that the Company otherwise would have recognized is one year or less, and are included within “Selling, general and administrative expenses” in the consolidated statements of operations.
- When the period between customer payment and transfer of goods/services is determined to be one year or less at contract inception, the promised amount of consideration under the contract is not adjusted for the effects of a significant financing component.
- In consideration of the disclosure requirements regarding the transaction price and expected period of recognition of remaining performance obligations that are unsatisfied as of the end of a reporting period, the Company has elected the following optional exemptions:
 - The Company will not disclose the aggregate amount of the transactions price allocated to remaining performance obligations for its contracts with an original expected duration of one year or less, which applies to the vast majority of the Company’s contracts with customers.
 - For contracts with customers containing variable consideration (via enforceable minimum volume requirements) and an original expected duration greater than one year, the Company will not disclose the transaction prices allocated to remaining performance obligations if the variable

consideration is allocated entirely to a wholly unsatisfied performance obligation. Under these contracts with customers, each unit of production generally represents a separate performance obligation, the pricing for which is based on current or forecasted raw material prices, often using formulas that utilize commodity indices. Therefore, future volumes are wholly unsatisfied and disclosure of the transaction price allocated to remaining performance obligations is not required. The variable consideration in these contracts is resolved typically at the issuance of a purchases order or as of the date of revenue recognition.

The following table provides disclosure of net sales to external customers by primary geographical market (based on the location where the sales originated), by segment for the years ended December 31, 2018, 2017, and 2016.

Year Ended	Latex Binders	Synthetic Rubber	Performance Plastics	Polystyrene	Feedstocks	Total
December 31, 2018						
United States	\$ 288.2	\$ —	\$ 326.4	\$ 0.2	\$ 12.5	\$ 627.3
Europe	459.4	572.5	931.2	607.8	211.7	2,782.6
Asia-Pacific	306.6	—	226.2	409.1	162.4	1,104.3
Rest of World	14.8	—	93.8	—	—	108.6
Total	<u>\$ 1,069.0</u>	<u>\$ 572.5</u>	<u>\$ 1,577.6</u>	<u>\$ 1,017.1</u>	<u>\$ 386.6</u>	<u>\$ 4,622.8</u>
December 31, 2017⁽¹⁾						
United States	\$ 290.9	\$ —	\$ 297.4	\$ 1.0	\$ 13.4	\$ 602.7
Europe	468.5	582.8	866.3	571.7	199.6	2,688.9
Asia-Pacific	320.6	—	167.4	368.7	194.7	1,051.4
Rest of World	17.1	—	88.0	—	—	105.1
Total	<u>\$ 1,097.1</u>	<u>\$ 582.8</u>	<u>\$ 1,419.1</u>	<u>\$ 941.4</u>	<u>\$ 407.7</u>	<u>\$ 4,448.1</u>
December 31, 2016⁽¹⁾						
United States	\$ 263.6	\$ —	\$ 262.5	\$ 1.3	\$ 11.0	\$ 538.4
Europe	388.3	450.7	731.5	490.4	168.6	2,229.5
Asia-Pacific	229.5	—	131.0	336.4	114.9	811.8
Rest of World	43.9	—	93.0	—	—	136.9
Total	<u>\$ 925.3</u>	<u>\$ 450.7</u>	<u>\$ 1,218.0</u>	<u>\$ 828.1</u>	<u>\$ 294.5</u>	<u>\$ 3,716.6</u>

(1) As the Company has adopted Topic 606 utilizing the modified retrospective approach, amounts for the years ended December 31, 2017 and 2016 above are disclosed as recognized under Topic 605.

For all material contracts with customers, control is transferred and sales are recognized at a point in time when the Company satisfies the performance obligations according to the terms of the contract, and when title and the risk of loss is passed to the customer. Title and risk of loss varies by region and customer and is determined based upon the purchase order received from the customer and the applicable contractual terms or jurisdictional standards. The Company receives cash equal to the invoice price for most product sales, subject to cash sales incentives with certain customers, with payment terms generally ranging from 10 to 90 days (with an approximate weighted-average of 56 days as of December 31, 2018), also varying by segment and region.

Certain of the Company's contracts with customers contain multiple performance obligations, most commonly due to the sale of multiple distinct products. The transaction price within these contracts is allocated between these separate and distinct products based on their stand-alone selling prices, as defined within the contract. The Company's products are typically sold at observable stand-alone sales values, which are used to determine the estimated stand-alone selling price. The stand-alone selling prices of the Company's products are generally based, in part, on the current or forecasted costs of key raw materials, but are often subject to a predetermined lag period for the pass through of these costs. As such, contracts with customers typically include provisions that allow for the changes in stand-alone selling prices to reflect the pass through of changes in raw material costs, often using pricing formulas that utilize commodity indices.

In cases where the Company's transaction price is considered variable at the point of revenue recognition, the 'most likely amount' method is used to estimate the effect of any related uncertainty. In formulating this estimate, the

Company considers all historical, current, and forecasted information that is reasonably available to identify a reasonable number of possible consideration amounts. Once the transaction price, including impacts of variable consideration, is estimated, revenue is recognized only to the extent that it is probable that a subsequent change in the estimate would not result in a significant revenue reversal. Furthermore, if the Company is not able to rely on observable stand-alone selling prices, the ‘expected cost plus a margin approach’ is utilized to estimate the stand-alone selling price of each performance obligation, primarily utilizing historical experience. During the year ended December 31, 2018, the impact of recognizing changes in selling prices related to prior periods was immaterial.

NOTE 4—ACQUISITIONS AND DIVESTITURES

The Acquisition

The Company accounted for the Acquisition (as discussed in Note 1) under the purchase method of accounting, whereby the purchase price paid, net of working capital adjustments, was allocated to the acquired assets and liabilities at fair value.

As part of the Acquisition, the Company has been indemnified for various tax matters, including income tax and value add taxes, as well as legal liabilities which have been incurred prior to the Acquisition. Conversely, certain tax matters which the Company has benefitted from are subject to reimbursement by Trinseo to Dow. These amounts have been estimated and provisional amounts have been recorded based on the information known during the measurement period; however, these amounts remain subject to change based on the completion of the Company’s annual statutory filings, tax authority review as well as a final resolution with Dow on amounts due to and due from the Company. Management believes the Company’s estimates and assumptions are reasonable under the circumstances; however, settlement negotiations or changes in estimates around pre-acquisition indemnifications could result in a material impact on the consolidated financial statements.

Acquisition of API Plastics

On July 10, 2017, the Company acquired 100% of the equity interest of API Applicazioni Plastiche Industriali S.p.A (“API Plastics”) a privately held company. The gross purchase price for the acquisition was \$90.6 million, inclusive of \$8.4 million of cash acquired, yielding a net purchase price of \$82.3 million, all of which was paid for in the year ended December 31, 2017. API Plastics, based in Mussolente, Italy, is a manufacturer of soft-touch polymers and bioplastics, such as thermoplastic elastomers (“TPEs”). TPEs can be molded over rigid plastics such as acrylonitrile-butadiene-styrene (“ABS”) and PC/ABS, which presents opportunities for complementary technology product offerings within the Performance Plastics segment. The acquisition was funded through existing cash on hand.

The Company allocated the purchase price of the acquisition to identifiable assets acquired and liabilities assumed based on their estimated fair values as of the acquisition date. The excess of the purchase price over the aggregate fair values was recorded as goodwill. The Company calculated the fair value of the assets acquired using the income and cost approaches (or a combination thereof). Fair values were determined based on Level 3 inputs including estimated future cash flows, discount rates, royalty rates, growth rates, sales projections, retention rates and terminal values, all of which require significant management judgment. During the third quarter of 2018, the Company finalized the purchase price allocation for API Plastics, which is summarized in the table below.

	July 10, 2017
Cash and cash equivalents	\$ 8.4
Accounts receivable	16.5
Inventories	10.3
Other current assets	0.8
Property, plant, and equipment	23.6
Other intangible assets ⁽¹⁾	
Customer relationships	14.0
Developed technology	11.5
Other amortizable intangible assets	3.8
Total fair value of assets acquired	\$ 88.9
Accounts payable	\$ 12.2
Income taxes payable	0.2
Accrued expenses and other current liabilities	1.4
Deferred income tax liabilities	11.5
Other noncurrent obligations	1.3
Total fair value of liabilities assumed	\$ 26.6
Net identifiable assets acquired	\$ 62.3
Goodwill⁽²⁾	28.3
Net assets acquired	\$ 90.6

- (1) The expected lives of the acquired intangible assets are 19 years for customer relationships, nine years for developed technology, and three years for other amortizable intangible assets.
- (2) Goodwill is supported by expected future cash flows of the acquired business, inclusive of projected future sales of API Plastics' products to existing Trinseo customers. The goodwill is allocated entirely to the Performance Plastics segment. None of the goodwill related to this acquisition is deductible for income tax purposes.

Divestiture of Brazil Business

During the second quarter of 2016, the Company signed a definitive agreement to sell Trinseo do Brasil Comercio de Produtos Quimicos Ltda. ("Trinseo Brazil"), its primary operating entity in Brazil which included both a latex binders and PC & Compounding business. Under the agreement of sale, which closed on October 1, 2016, Trinseo Brazil was sold to a single counterparty, for a selling price that is subject to certain contingent consideration payments, which could be paid by the buyer over a five-year period subsequent to the closing date, based on the results of the Trinseo Brazil latex binders business during that time. During the year ended December 31, 2018, the Company recognized \$1.0 million of consideration earned for the performance of the transferred latex binders business, of which \$0.5 million was received in cash.

As a result of this agreement, during the year ended December 31, 2016, the Company recorded impairment charges for the estimated loss on sale of \$15.1 million within "Other expense (income), net" in the consolidated statement of operations. The \$15.1 million charge primarily related to the unrecoverable net book value of property, plant and equipment along with certain working capital balances, and also included \$0.4 million of goodwill written off with the sale (entirely attributable to the Latex Binders segment). This charge was allocated as \$9.4 million, \$4.9 million, and \$0.7 million to the Performance Plastics segment, the Latex Binders segment, and Corporate, respectively. During the years ended December 31, 2017 and 2016, the Company received \$1.7 million and \$1.8 million, respectively, in proceeds from the sale of these businesses.

NOTE 5—INVESTMENTS IN UNCONSOLIDATED AFFILIATES

During the year ended December 31, 2018, the Company had one joint venture: Americas Styrenics, a styrene and polystyrene joint venture with Chevron Phillips Chemical Company LP. Previously, the Company also had a 50% share in Sumika Styron Polycarbonate Limited (“Sumika Styron Polycarbonate,” a PC joint venture with Sumitomo Chemical Company Limited), until the sale of the Company’s investment in the joint venture during the first quarter of 2017, as discussed further below. Investments held in unconsolidated affiliates are accounted for by the equity method. The results of Americas Styrenics are included within its own reporting segment. The results of Sumika Styron Polycarbonate were included within the Performance Plastics segment prior to the sale of this investment.

Equity in earnings from unconsolidated affiliates was \$144.1 million, \$123.7 million, and \$144.7 million for the years ended December 31, 2018, 2017, and 2016, respectively.

Both of the unconsolidated affiliates are privately held companies; therefore, quoted market prices for their stock are not available. The summarized financial information of the Company’s unconsolidated affiliates is shown below. This table includes summarized financial information for Sumika Styron Polycarbonate through the date of sale in January 2017.

	December 31,	
	2018	2017
Current assets	\$ 373.4	\$ 364.0
Noncurrent assets	236.2	236.2
Total assets	<u>\$ 609.6</u>	<u>\$ 600.2</u>
Current liabilities	\$ 167.2	\$ 184.3
Noncurrent liabilities	17.4	17.9
Total liabilities	<u>\$ 184.6</u>	<u>\$ 202.2</u>

	Year Ended December 31,		
	2018	2017	2016
Sales	\$ 1,825.7	\$ 1,798.1	\$ 1,649.4
Gross profit	\$ 310.2	\$ 244.3	\$ 319.2
Net income	\$ 260.2	\$ 196.3	\$ 249.2

Sales to unconsolidated affiliates for the years ended December 31, 2018, 2017, and 2016 were \$0.0 million, \$3.6 million, and \$4.2 million, respectively. Purchases from unconsolidated affiliates were \$91.5 million, \$78.8 million, and \$157.4 million for the years ended December 31, 2018, 2017, and 2016, respectively.

As of December 31, 2018 and 2017, respectively, \$0.1 million and \$0.1 million due from unconsolidated affiliates was included in “Accounts receivable, net of allowance” and \$5.4 million and \$4.7 million due to unconsolidated affiliates was included in “Accounts payable” in the consolidated balance sheets.

Americas Styrenics

As of December 31, 2018 and 2017, respectively, the Company’s investment in Americas Styrenics was \$179.1 million and \$152.5 million, which was \$33.3 million, and \$46.4 million less than the Company’s 50% share of Americas Styrenics’ underlying net assets. These amounts represent the difference between the book value of assets contributed to the joint venture at the time of formation (May 1, 2008) and the Company’s 50% share of the total recorded value of the joint venture’s assets and certain adjustments to conform with the Company’s accounting policies. This difference is being amortized over a weighted-average remaining useful life of the contributed assets of approximately 1.9 years as of December 31, 2018. The Company received dividends from Americas Styrenics of \$117.5 million, \$120.0 million, and \$130.0 million for the years ended December 31, 2018, 2017, and 2016, respectively.

Sumika Styron Polycarbonate

On January 31, 2017, the Company completed the sale of its 50% share in Sumika Styron Polycarbonate to Sumitomo Chemical Company Limited for total sales proceeds of \$42.1 million. As a result, the Company recorded a gain on sale of \$9.3 million during the year ended December 31, 2017, which was included within “Other expense (income), net” in the consolidated statement of operations and was allocated entirely to the Performance Plastics

segment. In addition, the parties have entered into a long-term agreement to continue sourcing PC resin from Sumika Styron Polycarbonate to the Company's Performance Plastics segment.

Due to the sale in January 2017, the Company no longer had an investment in Sumika Styron Polycarbonate as of December 31, 2017. The Company received dividends from Sumika Styron Polycarbonate of \$9.8 million and \$6.2 million for the years ended December 31, 2017 and 2016, respectively.

NOTE 6—ACCOUNTS RECEIVABLE

Accounts receivable consisted of the following:

	December 31,	
	2018	2017
Trade receivables	\$ 535.4	\$ 570.3
Non-income tax receivables	74.6	79.3
Other receivables	44.2	41.5
Less: allowance for doubtful accounts	(6.1)	(5.6)
Total	\$ 648.1	\$ 685.5

For the years ended December 31, 2018, 2017, and 2016, the Company recognized bad debt expense of \$0.6 million, \$1.5 million, and \$1.0 million, respectively.

NOTE 7—INVENTORIES

Inventories consisted of the following:

	December 31,	
	2018	2017
Finished goods	\$ 269.8	\$ 250.9
Raw materials and semi-finished goods	205.8	226.7
Supplies	34.8	32.8
Total	\$ 510.4	\$ 510.4

NOTE 8—PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consisted of the following:

	Estimated Useful Lives (Years)	December 31,	
		2018	2017
Land	N/A	\$ 26.0	\$ 40.8
Land and waterway improvements	5 - 20	18.4	16.4
Buildings	15 - 40	97.0	87.9
Machinery and equipment	3 - 10	912.9	874.5
Utility and supply lines	1 - 20	8.2	8.1
Leasehold interests	20 - 40	40.9	41.9
Other property	3 - 15	26.6	25.1
Construction in process	N/A	52.7	56.0
Property, plant and equipment		1,182.7	1,150.7
Less: accumulated depreciation		(590.6)	(523.7)
Property, plant and equipment, net		\$ 592.1	\$ 627.0

	Year Ended December 31,		
	2018	2017	2016
Depreciation expense	\$ 95.7	\$ 77.9	\$ 71.3
Capitalized interest	\$ 3.6	\$ 5.0	\$ 3.4

NOTE 9—GOODWILL AND INTANGIBLE ASSETS

Goodwill

The following table shows the annual changes in the carrying amount of goodwill, by segment, from December 31, 2016 through December 31, 2018:

	Latex Binders	Synthetic Rubber	Performance Plastics	Polystyrene	Feedstocks	Americas Styrenics	Total
Balance at December 31, 2016	\$ 14.8	\$ 10.6	\$ 8.4	\$ 4.2	\$ —	\$ —	\$ 38.0
Acquisitions/Divestitures (Note 4)	—	—	28.7	—	—	—	28.7
Foreign currency impact	1.7	1.1	2.5	0.5	—	—	5.8
Balance at December 31, 2017	\$ 16.5	\$ 11.7	\$ 39.6	\$ 4.7	\$ —	\$ —	\$ 72.5
Foreign currency impact	(0.6)	(0.4)	(2.3)	(0.2)	—	—	(3.5)
Balance at December 31, 2018	\$ 15.9	\$ 11.3	\$ 37.3	\$ 4.5	\$ —	\$ —	\$ 69.0

Goodwill impairment testing is performed annually as of October 1. In 2018, the Company performed its annual impairment test for goodwill and determined that the estimated fair value of each reporting unit was in excess of the carrying value indicating that none of the Company's goodwill was impaired. The Company concluded there were no goodwill impairments or triggering events for the years ended December 31, 2018, 2017, and 2016.

Other Intangible Assets

The following table provides information regarding the Company's other intangible assets as of December 31, 2018 and 2017:

	Estimated Useful Life (Years)	December 31, 2018			December 31, 2017		
		Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Developed technology	9 - 15	\$ 192.3	\$ (105.6)	\$ 86.7	\$ 201.6	\$ (96.1)	\$ 105.5
Customer Relationships	19	14.1	(1.1)	13.0	14.7	(0.4)	14.3
Manufacturing Capacity Rights	6	21.8	(16.8)	5.0	22.8	(13.9)	8.9
Software	5 - 10	101.9	(35.3)	66.6	89.5	(25.2)	64.3
Software in development	N/A	17.2	—	17.2	11.5	—	11.5
Other	3	3.9	(1.3)	2.6	3.4	(0.4)	3.0
Total		\$ 351.2	\$ (160.1)	\$ 191.1	\$ 343.5	\$ (136.0)	\$ 207.5

Amortization expense related to finite-lived intangible assets totaled \$29.7 million, \$27.0 million, and \$21.3 million, for the years ended December 31, 2018, 2017, and 2016, respectively.

The following table details the Company's estimated amortization expense for the next five years, excluding any amortization expense related to software currently in development:

Estimated Amortization Expense for the Next Five Years				
2019	2020	2021	2022	2023
\$ 30.5	\$ 27.3	\$ 24.6	\$ 23.7	\$ 22.8

NOTE 10—ACCOUNTS PAYABLE

Accounts payable consisted of the following:

	December 31,	
	2018	2017
Trade payables	\$ 319.9	\$ 387.3
Other payables	34.3	49.5
Total	<u>\$ 354.2</u>	<u>\$ 436.8</u>

NOTE 11—DEBT

Refer to discussion below for details and definitions of the Company's debt facilities. The Company was in compliance with all debt related covenants as of December 31, 2018 and 2017.

	Interest Rate as of December 31, 2018	Maturity Date	Carrying Amount	December 31, 2018	
				Unamortized Deferred Financing Fees ⁽¹⁾	Total Debt, Less Unamortized Deferred Financing Fees
Senior Credit Facility					
2022 Revolving Facility ⁽²⁾	Various	September 2022	\$ —	\$ —	\$ —
2024 Term Loan B	4.522%	September 2024	691.3	(16.2)	675.1
2025 Senior Notes	5.375%	September 2025	500.0	(8.4)	491.6
Accounts Receivable Securitization Facility ⁽³⁾	Various	September 2021	—	—	—
Other indebtedness	Various	Various	1.1	—	1.1
Total debt			<u>\$ 1,192.4</u>	<u>\$ (24.6)</u>	<u>\$ 1,167.8</u>
Less: current portion					(7.0)
Total long-term debt, net of unamortized deferred financing fees					<u>\$ 1,160.8</u>

	Interest Rate as of December 31, 2017	Maturity Date	Carrying Amount	December 31, 2017	
				Unamortized Deferred Financing Fees ⁽¹⁾	Total Debt, Less Unamortized Deferred Financing Fees
Senior Credit Facility					
2022 Revolving Facility ⁽²⁾	Various	September 2022	\$ —	\$ —	\$ —
2024 Term Loan B	4.069%	September 2024	698.3	(18.3)	680.0
2025 Senior Notes	5.375%	September 2025	500.0	(9.4)	490.6
Accounts Receivable Securitization Facility ⁽³⁾	Various	May 2019	—	—	—
Other indebtedness	Various	Various	1.4	—	1.4
Total debt			<u>\$ 1,199.7</u>	<u>\$ (27.7)</u>	<u>\$ 1,172.0</u>
Less: current portion					(7.0)
Total long-term debt, net of unamortized deferred financing fees					<u>\$ 1,165.0</u>

- (1) This caption does not include unamortized deferred financing fees of \$3.6 million and \$4.5 million as of December 31, 2018 and 2017, respectively, related to the Company's revolving facilities, which are included within "Deferred charges and other assets" on the consolidated balance sheets.
- (2) The Company had \$360.7 million (net of \$14.3 million outstanding letters of credit) of funds available for borrowing under this facility as of December 31, 2018. Additionally, the Company is required to pay a quarterly commitment fee in respect of any unused commitments under this facility equal to 0.375% per annum.
- (3) The facility has a borrowing capacity of \$150.0 million as of December 31, 2018. Additionally, as of December 31, 2018, the Company had accounts receivable available to support this facility in excess of its borrowing capacity, based on the pool of eligible accounts receivable. The Company incurs interest charges on the facility of 1.95% plus variable commercial paper rates on outstanding borrowings and 1.00% on undrawn commitments, both of which were reduced as a result of the amendment executed in December 2017.

Total interest expense, net recognized during the years ended December 31, 2018, 2017, and 2016, was \$46.4 million, \$70.1 million, and \$75.0 million, respectively, of which \$4.5 million, \$5.1 million, and \$5.8 million, respectively, represented amortization of deferred financing fees and debt discounts. Total accrued interest on outstanding debt as of December 31, 2018 and 2017 was \$4.4 million and \$9.3 million, respectively, excluding the impact of the CCS. Accrued interest is recorded within “Accrued expenses and other current liabilities” on the consolidated balance sheets.

2020 Senior Credit Facility

On May 5, 2015, Trinseo Materials Operating S.C.A. and Trinseo Materials Finance, Inc. (together, the “Issuers” or the “Borrowers”), both wholly-owned subsidiaries of the Company, entered into a senior secured credit agreement, which provided senior secured financing of up to \$825.0 million (the “2020 Senior Credit Facility”). The 2020 Senior Credit Facility provided for senior secured financing consisting of a (i) \$325.0 million revolving credit facility, with a \$25.0 million swingline subfacility and a \$35.0 million letter of credit subfacility (the “2020 Revolving Facility”) maturing in May 2020 and (ii) \$500.0 million senior secured term loan B facility maturing in November 2021 (the “2021 Term Loan B”).

In September 2017, upon completion of the refinancing transactions discussed below, the Company terminated the 2020 Senior Credit Facility. Prior to this termination, the Company had no outstanding borrowings under the 2020 Revolving Facility and had \$490.0 million outstanding under the 2021 Term Loan B, excluding the unamortized original issue discount. As a result of this termination, the Company recognized a \$0.8 million loss on extinguishment of long-term debt during the year ended December 31, 2017, comprised entirely of the write-off of a portion of the existing unamortized deferred financing fees and unamortized original issue discount related to the 2021 Term Loan B. The remaining unamortized deferred financing fees and unamortized original issue discount for both the 2020 Revolving Facility and 2021 Term Loan B remain capitalized and are being amortized along with new deferred financing fees over the life of the new facilities, as discussed in further detail below.

Senior Credit Facility

On September 6, 2017, the Issuers entered into a new senior secured credit agreement (the “Credit Agreement”), which provides senior secured financing of up to \$1,075.0 million (the “Senior Credit Facility”). The Senior Credit Facility provides for senior secured financing consisting of a (i) \$375.0 million revolving credit facility, with a \$25.0 million swingline subfacility and a \$35.0 million letter of credit subfacility maturing in September 2022 (the “2022 Revolving Facility”) and a (ii) \$700.0 million senior secured term loan B facility maturing in September 2024 (the “2024 Term Loan B”). Amounts under the 2022 Revolving Facility are available in U.S. dollars and euros.

Fees incurred in connection with the issuance of the 2024 Term Loan B were \$12.3 million. A portion of the 2024 Term Loan B met the criteria for modification accounting; thus, \$1.2 million of these fees were expensed and included within “Other expense (income), net” in the consolidated statement of operations. The remaining \$11.1 million of fees were capitalized and recorded within “Long-term debt, net of unamortized deferred financing fees” on the consolidated balance sheets. The capitalized fees are being amortized along with the remaining \$8.1 million of unamortized deferred financing fees from the 2021 Term Loan B (defined below) over the seven-year term of the 2024 Term Loan B using the effective interest method.

Fees incurred in connection with the issuance of the 2022 Revolving Facility were \$0.8 million, which were capitalized and recorded within “Deferred charges and other assets” on the consolidated balance sheets, and are being amortized along with the remaining \$4.0 million of unamortized deferred financing fees from the 2020 Revolving Facility over the five-year term of the 2022 Revolving Facility using the straight-line method.

As of December 31, 2018, the 2024 Term Loan B bears an interest rate of the London Interbank Offered Rate (“LIBOR”) plus 2.00%, subject to a 0.00% LIBOR floor, which has been the effective rate since May 22, 2018, when the Issuers repriced the interest rate from the initial rate of LIBOR plus 2.50%, subject to a 0.00% LIBOR floor. The repricing did not affect any of the other terms of the 2024 Term Loan B; however, as a result of the repricing, the Company recognized a \$0.2 million loss on extinguishment of long-term debt during the year ended December 31, 2018, comprised entirely of the write-off of a portion of the existing unamortized deferred financing fees related to the 2024 Term Loan B. Fees incurred in connection with the repricing were \$1.1 million, of which \$0.5 million were expensed and included within “Other expense (income), net” in the consolidated statement of operations during the year ended

December 31, 2018 and the remaining \$0.6 million were capitalized and recorded within “Long-term debt, net of unamortized deferred financing fees” on the consolidated balance sheets. The capitalized fees associated with the repricing are being amortized along with the remaining unamortized deferred financing fees related to the 2024 Term Loan B over its original seven-year term.

The 2024 Term Loan B requires scheduled quarterly payments in amounts equal to 0.25% of the original principal amount of the 2024 Term Loan B, with the balance to be paid at maturity. As of December 31, 2018 and 2017, \$7.0 million of the scheduled future payments related to this facility were classified as current debt on the Company’s consolidated balance sheets.

Loans under the 2022 Revolving Facility, at the Borrowers’ option, may be maintained as (a) LIBOR loans, which bear interest at a rate per annum equal to LIBOR plus the applicable margin (as defined in the Credit Agreement), if applicable, or (b) base rate loans which bear interest at a rate per annum equal to the base rate plus the applicable margin (as defined in the Credit Agreement).

The Senior Credit Facility is collateralized by a security interest in substantially all of the assets of the Borrowers, and the guarantors thereunder, including Trinseo Materials S.à r.l., certain Luxembourg subsidiaries and certain foreign subsidiaries organized in the United States, The Netherlands, Hong Kong, Singapore, Ireland, Germany, and Switzerland.

The Senior Credit Facility requires the Borrowers and their restricted subsidiaries to comply with customary affirmative, negative, and financial covenants, including limitations on their abilities to incur liens; make certain loans and investments; incur additional debt (including guarantees or other contingent obligations); merge, consolidate liquidate or dissolve; transfer or sell assets; pay dividends and other distributions to shareholders or make certain other restricted payments; enter into transactions with affiliates; restrict any restricted subsidiary from paying dividends or making other distributions or agree to certain negative pledge clauses; materially alter the business they conduct; prepay certain other indebtedness; amend certain material documents; and change their fiscal year.

The 2022 Revolving Facility contains a financial covenant that requires compliance with a springing first lien net leverage ratio test. If the outstanding balance under the 2022 Revolving Facility exceeds 30% of the \$375.0 million borrowing capacity (excluding undrawn letters of credit up to \$10.0 million and cash collateralized letters of credit) at a quarter end, then the Borrowers’ first lien net leverage ratio may not exceed 2.00 to 1.00.

2022 Senior Notes

On May 5, 2015, the Issuers executed an indenture pursuant to which they issued \$300.0 million aggregate principal amount of 6.750% senior notes due May 1, 2022 (the “USD Notes”) and €375.0 million aggregate principal amount of 6.375% senior notes due May 1, 2022 (the “Euro Notes,” and together with the USD Notes, the “2022 Senior Notes”).

On September 7, 2017, using the net proceeds from the issuance of the 2024 Term Loan B discussed above, together with the net proceeds from the issuance of the 2025 Senior Notes (defined and discussed below), and available cash, the Company redeemed all outstanding borrowings under the 2022 Senior Notes, totaling \$746.0 million in USD-equivalent principal, together with a total combined call premium of \$53.0 million (with a redemption price of approximately 106.572% on the USD Notes and a redemption price of approximately 107.459% on the Euro Notes), and accrued and unpaid interest thereon of \$17.0 million.

As a result of this redemption, the Company recorded a loss on extinguishment of long-term debt of \$64.5 million during the year ended December 31, 2017, which was comprised of the \$53.0 million call premium and the write-off of \$11.5 million of unamortized deferred financing fees related to the 2022 Senior Notes.

2025 Senior Notes

On August 29, 2017, the Issuers executed an indenture (the “Indenture”) pursuant to which they issued \$500.0 million aggregate principal amount of 5.375% senior notes due 2025 (the “2025 Senior Notes”) in a 144A private transaction exempt from the registration requirements of the Securities Act of 1933, as amended. Interest on the 2025 Senior Notes is payable semi-annually on May 3 and November 3 of each year, commencing on May 3, 2018. The 2025 Senior Notes mature on September 1, 2025.

Fees and expenses incurred in connection with the issuance of the 2025 Senior Notes in 2017 were \$9.7 million, which were capitalized and recorded within “Long-term debt, net of unamortized deferred financing fees” on the consolidated balance sheets, and are being amortized over the eight-year term of the 2025 Senior Notes using the effective interest method.

At any time prior to September 1, 2020, the Issuers may redeem the 2025 Senior Notes in whole or in part, at their option, at a redemption price equal to 100% of the principal amount of such notes plus the relevant applicable premium as of, and accrued and unpaid interest to, but not including, the redemption date. At any time and from time to time after September 1, 2020, the Issuers may redeem the 2025 Senior Notes, in whole or in part, at a redemption price equal to the percentage of principal amount set forth below plus accrued and unpaid interest, if any, on the notes redeemed to, but not including, the redemption date:

12-month period commencing September 1 in Year	Percentage
2020	102.688 %
2021	101.792 %
2022	100.896 %
2023 and thereafter	100.000 %

At any time prior to September 1, 2020, the Issuers may redeem up to 40% of the aggregate principal amount of the 2025 Senior Notes at a redemption price equal to 105.375%, plus accrued and unpaid interest to, but not including, the redemption date, with the aggregate gross proceeds from certain equity offerings.

The 2025 Senior Notes are the Issuers’ senior unsecured obligations and rank equally in right of payment with all of the Issuers’ existing and future indebtedness that is not expressly subordinated in right of payment thereto. The 2025 Senior Notes will be senior in right of payment to any future indebtedness that is expressly subordinated in right of payment thereto and effectively junior to (a) the Issuers’ existing and future secured indebtedness, including the Company’s Accounts Receivable Securitization Facility (defined below) and the Issuers’ Senior Credit Facility, to the extent of the value of the collateral securing such indebtedness and (b) all existing and future liabilities of the Issuers’ non-guarantor subsidiaries.

The Indenture contains customary covenants that, among other things, limit the Issuers’ and certain of their subsidiaries’ ability to incur additional indebtedness and guarantee indebtedness; pay dividends on, redeem or repurchase capital shares; make investments; prepay certain indebtedness; create liens; enter into transactions with the Issuers’ affiliates; designate the Issuers’ subsidiaries as Unrestricted Subsidiaries (as defined in the Indenture); and consolidate, merge, or transfer all or substantially all of the Issuers’ assets. The covenants are subject to a number of exceptions and qualifications. Certain of these covenants will be suspended during any period of time that (1) the 2025 Senior Notes have investment grade ratings (as defined in the Indenture) and (2) no default has occurred and is continuing under the Indenture. In the event that the 2025 Senior Notes are downgraded to below an investment grade rating, the Issuers and certain subsidiaries will again be subject to the suspended covenants with respect to future events.

Accounts Receivable Securitization Facility

In 2010, Styron Receivable Funding Ltd. (“SRF”), a VIE in which the Company is the primary beneficiary, executed an agreement for an accounts receivable securitization facility (the “Accounts Receivable Securitization Facility”). As of December 31, 2018, the Accounts Receivable Securitization Facility permits borrowings by two of the Company’s subsidiaries, Trinseo Europe GmbH (“TE”) and Trinseo Export GmbH (“Trinseo Export”), up to a total of \$150.0 million and, pursuant to an amendment executed in September 2018, matures in September 2021.

Under the Accounts Receivable Securitization Facility, TE and Trinseo Export sell their accounts receivable to SRF. In turn, SRF may utilize these receivables as collateral to borrow from commercial paper conduits in exchange for cash. The Company has agreed to continue servicing the receivables for SRF. If utilized as collateral by SRF, the conduits have a first priority perfected security interest in such receivables and, as a result, the receivables will not be available to the creditors of the Company or its other subsidiaries.

NOTE 12—DERIVATIVE INSTRUMENTS

The Company's ongoing business operations expose it to various risks, including fluctuating foreign exchange rates and interest rate risk. To manage these risks, the Company periodically enters into derivative financial instruments, such as foreign exchange forward contracts and interest rate swap agreements. The Company does not hold or enter into financial instruments for trading or speculative purposes. All derivatives are recorded in the consolidated balance sheets at fair value. Refer to Note 13 for fair value disclosures related to these instruments.

As discussed in Note 2, the Company adopted new hedge accounting guidance effective April 1, 2018. The impacts of this adoption are discussed further below.

Foreign Exchange Forward Contracts

Certain subsidiaries have assets and liabilities denominated in currencies other than their respective functional currencies, which creates foreign exchange risk. The Company's principal strategy in managing its exposure to changes in foreign currency exchange rates is to naturally hedge the foreign currency-denominated liabilities on its consolidated balance sheets against corresponding assets of the same currency such that any changes in liabilities due to fluctuations in exchange rates are offset by changes in their corresponding foreign currency assets. In order to further reduce its exposure, the Company also uses foreign exchange forward contracts to economically hedge the impact of the variability in exchange rates on its assets and liabilities denominated in certain foreign currencies. These derivative contracts are not designated for hedge accounting treatment.

As of December 31, 2018, the Company had open foreign exchange forward contracts with a notional U.S. dollar equivalent absolute value of \$444.0 million. The following table displays the notional amounts of the most significant net foreign exchange hedge positions outstanding as of December 31, 2018:

Buy / (Sell)	December 31, 2018
Euro	\$ (253.7)
Chinese Yuan	\$ (70.0)
Swiss Franc	\$ 45.4
Indonesian Rupiah	\$ (14.0)
Mexican Peso	\$ (12.8)

Open foreign exchange forward contracts as of December 31, 2018 have maturities occurring over a period of two months.

Foreign Exchange Cash Flow Hedges

The Company also enters into forward contracts with the objective of managing the currency risk associated with forecasted U.S. dollar-denominated raw materials purchases by one of its subsidiaries whose functional currency is the euro. By entering into these forward contracts, which are designated as cash flow hedges, the Company buys a designated amount of U.S. dollars and sells euros at the prevailing market rate to mitigate the risk associated with the fluctuations in the euro-to-U.S. dollar foreign currency exchange rate. The qualifying hedge contracts are marked-to-market at each reporting date and any unrealized gains or losses are included in AOCI to the extent effective, and reclassified to cost of sales in the period during which the transaction affects earnings or it becomes probable that the forecasted transaction will not occur.

Open foreign exchange cash flow hedges as of December 31, 2018 have maturities occurring over a period of twelve months, and have a net notional U.S. dollar equivalent of \$142.8 million.

Interest Rate Swaps

On September 6, 2017, the Company issued the 2024 Term Loan B, which bears an interest rate of LIBOR plus 2.00%, subject to a 0.00% LIBOR floor. In order to reduce the variability in interest payments associated with the Company's variable rate debt, during the third quarter of 2017, the Company entered into certain interest rate swap agreements to convert a portion of these variable rate borrowings into a fixed rate obligation. These interest rate swap agreements are designated as cash flow hedges, and as such, the contracts are marked-to-market at each reporting date

and any unrealized gains or losses are included in AOCI to the extent effective, and reclassified to interest expense in the period during which the transaction affects earnings or it becomes probable that the forecasted transaction will not occur.

As of December 31, 2018, the Company had open interest rate swap agreements with a net notional U.S. dollar equivalent of \$200.0 million, which had an effective date of September 29, 2017 and mature over a period of five years. Under the terms of the swap agreements, the Company is required to pay the counterparties a stream of fixed interest payments at a rate of 1.81%, and in turn, receives variable interest payments based on one-month LIBOR (2.52% as of December 31, 2018) from the counterparties.

Net Investment Hedge

Through August 31, 2017, the Company had designated a portion (€280.0 million) of the original principal amount of the Company's previous €375.0 million Euro Notes as a hedge of the foreign currency exposure of the Issuers' net investment in certain European subsidiaries. Effective September 1, 2017, the Company de-designated the Euro Notes as a net investment hedge of the Issuers' net investment in certain European subsidiaries, as the Euro Notes were redeemed on September 7, 2017 (refer to Note 11 for further information). Through the date of de-designation, this hedge was deemed to be highly effective, and changes in the Euro Notes' carrying value resulting from fluctuations in the euro exchange rate were recorded as a cumulative foreign currency translation loss of \$24.1 million within AOCI as of December 31, 2017.

On August 29, 2017, the Issuers executed an indenture pursuant to which they issued the \$500.0 million 5.375% 2025 Senior Notes. Subsequently, on September 1, 2017, the Company entered into certain fixed-for-fixed CCS, swapping U.S. dollar principal and interest payments on the newly issued 2025 Senior Notes for euro-denominated payments. Under the terms of the CCS, the Company notionally exchanged \$500.0 million at an interest rate of 5.375% for €420.0 million at a weighted-average interest rate of 3.45% for approximately five years.

On September 1, 2017, the Company designated the full notional amount of the CCS (€420.0 million) as a hedge of the Issuers' net investment in certain European subsidiaries under the forward method, with all changes in the fair value of the CCS recorded as a component of AOCI, as the CCS were deemed to be highly effective hedges. A cumulative foreign currency translation loss of \$38.0 million was recorded within AOCI related to the CCS through March 31, 2018.

Effective April 1, 2018, in conjunction with the adoption of recently issued hedging accounting guidance (see Note 2 for further information), the Company elected as an accounting policy to re-designate the CCS as a net investment hedge (and any future similar hedges) under the spot method. As such, changes in the fair value of the CCS that are included in the assessment of effectiveness (changes due to spot foreign exchange rates) are recorded as cumulative foreign currency translation within AOCI, and will remain in AOCI until either the sale or substantially complete liquidation of the subsidiary. As of December 31, 2018, no gains or losses have been reclassified from AOCI into income related to the sale or substantially complete liquidation of the relevant subsidiaries. As an additional accounting policy election applied to similar hedges under this new standard, the initial value of any component excluded from the assessment of effectiveness is recognized in income using a systematic and rational method over the life of the hedging instrument. Any difference between the change in the fair value of the excluded component and amounts recognized in income under that systematic and rational method is recognized in AOCI. Prior to the adoption of the new hedging accounting guidance on April 1, 2018, no components were excluded from the assessment of effectiveness for any of the Company's existing net investment hedges.

As of April 1, 2018, the initial excluded component value related to the CCS was \$23.6 million, which is being amortized as a reduction of "Interest expense, net" in the consolidated statements of operations using the straight-line method over the remaining term of the CCS. Additionally, the periodic U.S. dollar and euro-denominated interest receipts and payments under the terms of the CCS are being accrued within "Interest expense, net" in the consolidated statements of operations.

Summary of Derivative Instruments

The following table presents the effect of the Company's derivative instruments, including those not designated for hedge accounting treatment, on the consolidated statements of operations for the years ended December 31, 2018, 2017, and 2016:

	Location and Amount of Gain (Loss) Recognized in Statements of Operations								
	Year Ended			Year Ended			Year Ended		
	December 31, 2018			December 31, 2017			December 31, 2016		
	Cost of sales	Interest expense, net	Other expense (income), net	Cost of sales	Interest expense, net	Other expense (income), net	Cost of sales	Interest expense, net	Other expense (income), net
Total amount of (income) expense line items presented in the statements of operations in which the effects of derivative instruments are recorded	\$ 4,094.0	\$ 46.4	\$ 3.5	\$ 3,807.8	\$ 70.1	\$ (21.5)	\$ 3,124.4	\$ 75.0	\$ 17.9
Effects of cash flow hedge instruments:									
Foreign exchange cash flow hedges									
Amount of gain (loss) reclassified from AOCI into income	\$ (6.0)	\$ —	\$ —	\$ (2.0)	\$ —	\$ —	\$ 2.8	\$ —	\$ —
Interest rate swaps									
Amount of gain (loss) reclassified from AOCI into income	\$ —	\$ 0.3	\$ —	\$ —	\$ (0.3)	\$ —	\$ —	\$ —	\$ —
Effects of net investment hedge instruments:									
Cross currency swaps (CCS)									
Amount of gain excluded from effectiveness testing	\$ —	\$ 11.8	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —	\$ —
Effects of derivatives not designated as hedge instruments:									
Foreign exchange forward contracts									
Amount of gain (loss) recognized in income	\$ —	\$ —	\$ 21.0	\$ —	\$ —	\$ (19.2)	\$ —	\$ —	\$ 3.7

The following table presents the effect of cash flow and net investment hedge accounting on AOCI for the years ended December 31, 2018, 2017, and 2016:

	Gain (Loss) Recognized in AOCI on Balance Sheet		
	Year Ended		
	December 31,		
	2018	2017	2016
Designated as Cash Flow Hedges			
Foreign exchange cash flow hedges	\$ 13.3	\$ (21.3)	\$ 6.7
Interest rate swaps	1.7	2.9	—
Total	\$ 15.0	\$ (18.4)	\$ 6.7
Designated as Net Investment Hedges			
Euro Notes	\$ —	\$ 38.6	\$ 14.1
Cross currency swaps (CCS)	23.7	(17.5)	—
Total	\$ 23.7	\$ 21.1	\$ 14.1

The Company recorded gains of \$21.0 million and \$3.7 million during the years ended December 31, 2018 and 2016, respectively, and losses of \$19.2 million during the year ended December 31, 2017 from settlements and changes in the fair value of outstanding forward contracts (not designated as hedges). The gains and losses from these forward contracts offset net foreign exchange transaction losses of \$15.8 million and \$5.5 million during the years ended December 31, 2018 and 2016, respectively, and gains of \$20.6 million during the year ended December 31, 2017, which resulted from the remeasurement of the Company's foreign currency denominated assets and liabilities. The cash settlements of these foreign exchange forward contracts are included within operating activities in the consolidated statements of cash flows.

The Company expects to reclassify in the next twelve months an approximate \$3.4 million net gain from AOCI into earnings related to the Company's outstanding foreign exchange cash flow hedges and interest rate swaps as of December 31, 2018 based on current foreign exchange rates.

The following tables summarize the net unrealized gains and losses and balance sheet classification of outstanding derivatives recorded in the consolidated balance sheets:

Balance Sheet Classification	December 31, 2018				
	Foreign Exchange Forward Contracts	Foreign Exchange Cash Flow Hedges	Interest Rate Swaps	Cross Currency Swaps	Total
Asset Derivatives:					
Accounts receivable, net of allowance	\$ 0.6	\$ 1.9	\$ 1.5	\$ 8.1	\$ 12.1
Deferred charges and other assets	—	—	3.2	—	3.2
Gross derivative asset position	0.6	1.9	4.7	8.1	15.3
<i>Less: Counterparty netting</i>	(0.5)	—	—	—	(0.5)
Net derivative asset position	\$ 0.1	\$ 1.9	\$ 4.7	\$ 8.1	\$ 14.8
Liability Derivatives:					
Accounts payable	\$ (2.1)	\$ —	\$ —	\$ —	\$ (2.1)
Other noncurrent obligations	—	—	—	(3.4)	(3.4)
Gross derivative liability position	(2.1)	—	—	(3.4)	(5.5)
<i>Less: Counterparty netting</i>	0.5	—	—	—	0.5
Net derivative liability position	\$ (1.6)	\$ —	\$ —	\$ (3.4)	\$ (5.0)
Total net derivative position	\$ (1.5)	\$ 1.9	\$ 4.7	\$ 4.7	\$ 9.8

Balance Sheet Classification	December 31, 2017				
	Foreign Exchange Forward Contracts	Foreign Exchange Cash Flow Hedges	Interest Rate Swaps	Cross Currency Swaps	Total
Asset Derivatives:					
Accounts receivable, net of allowance	\$ 0.7	\$ —	\$ —	\$ 10.8	\$ 11.5
Deferred charges and other assets	—	—	3.0	—	3.0
Gross derivative asset position	0.7	—	3.0	10.8	14.5
<i>Less: Counterparty netting</i>	(0.6)	—	—	—	(0.6)
Net derivative asset position	\$ 0.1	\$ —	\$ 3.0	\$ 10.8	\$ 13.9
Liability Derivatives:					
Accounts payable	\$ (3.1)	\$ (11.1)	\$ (0.1)	\$ —	\$ (14.3)
Other noncurrent obligations	—	—	—	(28.3)	(28.3)
Gross derivative liability position	(3.1)	(11.1)	(0.1)	(28.3)	(42.6)
<i>Less: Counterparty netting</i>	0.6	—	—	—	0.6
Net derivative liability position	\$ (2.5)	\$ (11.1)	\$ (0.1)	\$ (28.3)	\$ (42.0)
Total net derivative position	\$ (2.4)	\$ (11.1)	\$ 2.9	\$ (17.5)	\$ (28.1)

Forward contracts, interest rate swaps, and cross currency swaps are entered into with a limited number of counterparties, each of which allows for net settlement of all contracts through a single payment in a single currency in the event of a default on or termination of any one contract. As such, in accordance with the Company's accounting policy, these derivative instruments are recorded on a net basis by counterparty within the consolidated balance sheets.

Refer to Notes 13 and 21 for further information regarding the fair value of the Company's derivative instruments and the related changes in AOCI.

NOTE 13—FAIR VALUE MEASUREMENTS

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Assets and liabilities measured at fair value are classified using the following hierarchy, which is based upon the transparency of inputs to the valuation as of the measurement date.

Level 1—Valuation is based upon quoted prices (unadjusted) for identical assets or liabilities in active markets.

Level 2—Valuation is based upon quoted prices for similar assets and liabilities in active markets, or other inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.

Level 3—Valuation is based upon other unobservable inputs that are significant to the fair value measurement.

The following tables summarize the basis used to measure certain assets and liabilities at fair value on a recurring basis in the consolidated balance sheets at December 31, 2018 and 2017:

Assets (Liabilities) at Fair Value	December 31, 2018			
	Quoted Prices in Active Markets for Identical Items	Significant Other Observable Inputs	Significant Unobservable Inputs	Total
	(Level 1)	(Level 2)	(Level 3)	
Foreign exchange forward contracts—Assets	\$ —	\$ 0.1	\$ —	\$ 0.1
Foreign exchange forward contracts—(Liabilities)	—	(1.6)	—	(1.6)
Foreign exchange cash flow hedges—Assets	—	1.9	—	1.9
Interest rate swaps—Assets	—	4.7	—	4.7
Cross currency swaps—Assets	—	8.1	—	8.1
Cross currency swaps—(Liabilities)	—	(3.4)	—	(3.4)
Total fair value	\$ —	\$ 9.8	\$ —	\$ 9.8

Assets (Liabilities) at Fair Value	December 31, 2017			
	Quoted Prices in Active Markets for Identical Items	Significant Other Observable Inputs	Significant Unobservable Inputs	Total
	(Level 1)	(Level 2)	(Level 3)	
Foreign exchange forward contracts—Assets	\$ —	\$ 0.1	\$ —	\$ 0.1
Foreign exchange forward contracts—(Liabilities)	—	(2.5)	—	(2.5)
Foreign exchange cash flow hedges—(Liabilities)	—	(11.1)	—	(11.1)
Interest rate swaps—Assets	—	3.0	—	3.0
Interest rate swaps—(Liabilities)	—	(0.1)	—	(0.1)
Cross currency swaps—Assets	—	10.8	—	10.8
Cross currency swaps—(Liabilities)	—	(28.3)	—	(28.3)
Total fair value	\$ —	\$ (28.1)	\$ —	\$ (28.1)

The Company uses an income approach to value its derivative instruments, utilizing discounted cash flow techniques, considering the terms of the contract and observable market information available as of the reporting date, such as interest rate yield curves and currency spot and forward rates. Significant inputs to the valuation for these derivative instruments are obtained from broker quotations or from listed or over-the-counter market data, and are classified as Level 2 in the fair value hierarchy.

Fair Value of Debt Instruments

The following table presents the estimated fair value of the Company's outstanding debt not carried at fair value as of December 31, 2018 and 2017:

	December 31,	
	2018	2017
2025 Senior Notes	\$ 438.3	\$ 518.8
2024 Term Loan B	658.9	705.7
Total fair value	<u>\$ 1,097.2</u>	<u>\$ 1,224.5</u>

The fair value of the Company's debt facilities above (each Level 2 securities) is determined using over-the-counter market quotes and benchmark yields received from independent vendors.

There were no other significant financial instruments outstanding as of December 31, 2018 and 2017.

NOTE 14—INCOME TAXES

Income before income taxes earned within and outside the United States is shown below:

	Year Ended December 31,		
	2018	2017	2016
United States	\$ 147.0	\$ 138.0	\$ 137.2
Outside of the United States	217.3	273.1	268.1
Income before income taxes	<u>\$ 364.3</u>	<u>\$ 411.1</u>	<u>\$ 405.3</u>

The provision for income taxes is composed of:

	Year Ended December 31, 2018			Year Ended December 31, 2017			Year Ended December 31, 2016		
	Current	Deferred	Total	Current	Deferred	Total	Current	Deferred	Total
U.S. federal	\$ 22.8	\$ 5.9	\$ 28.7	\$ 33.5	\$ 6.9	\$ 40.4	\$ 24.8	\$ 15.6	\$ 40.4
U.S. state and other	4.1	1.0	5.1	4.8	—	4.8	4.0	1.4	5.4
Non-U.S.	39.6	(1.6)	38.0	29.7	7.9	37.6	42.1	(0.9)	41.2
Total	<u>\$ 66.5</u>	<u>\$ 5.3</u>	<u>\$ 71.8</u>	<u>\$ 68.0</u>	<u>\$ 14.8</u>	<u>\$ 82.8</u>	<u>\$ 70.9</u>	<u>\$ 16.1</u>	<u>\$ 87.0</u>

The effective tax rate on pre-tax income differs from the U.S. statutory rate due to the following:

	Year Ended December 31,		
	2018	2017	2016
Taxes at U.S. statutory rate ⁽¹⁾	\$ 76.5	\$ 143.9	\$ 141.9
State and local income taxes	4.3	3.4	3.9
Non U.S. statutory rates, including credits	(40.1)	(98.6)	(77.8)
U.S. tax effect of foreign earnings and dividends	(2.8)	(1.6)	(1.7)
Unremitted earnings	2.2	6.6	3.8
Change in valuation allowances	29.9	34.0	6.2
Uncertain tax positions	1.3	(10.7)	(1.8)
Withholding taxes	3.7	2.9	2.4
U.S. manufacturing deduction	—	(3.6)	(2.9)
Share-based compensation	(1.9)	(1.1)	2.1
Non-deductible interest	2.2	2.9	2.5
Non-deductible other expenses	1.5	1.2	6.0
Impact on foreign currency exchange	(0.2)	0.4	2.1
Provision to return adjustments	(3.1)	(0.3)	(0.6)
Other—net ⁽²⁾	(1.7)	3.4	0.9
Total provision for income taxes	\$ 71.8	\$ 82.8	\$ 87.0
Effective tax rate	20 %	20 %	21 %

- (1) The U.S. statutory rate has been used as management believes it is more meaningful to the Company. The U.S. statutory rate was 21%, 35%, and 35%, respectively, for the years ended December 31, 2018, 2017, and 2016.
- (2) Included in “Other-net” for the year ended December 31, 2017 is \$3.1 million of one-time income tax expense related to the revaluation of the Company’s U.S. federal deferred tax assets and liabilities at the new U.S. federal corporate income tax rate of 21% in accordance with the enactment of the “Tax Cuts and Jobs Act” signed into law on December 22, 2017.

Deferred income taxes reflect temporary differences between the valuation of assets and liabilities for financial and tax reporting:

	December 31,			
	2018		2017	
	Deferred Tax Assets	Deferred Tax Liabilities	Deferred Tax Assets	Deferred Tax Liabilities
Tax loss and credit carryforwards	\$ 157.8	\$ —	\$ 137.3	\$ —
Unremitted earnings	—	19.4	—	17.2
Unconsolidated affiliates	—	5.9	—	0.1
Other accruals and reserves	0.7	—	2.2	—
Property, plant and equipment	—	26.1	—	34.4
Goodwill and other intangible assets	—	0.9	—	1.2
Deferred financing fees	7.7	—	12.9	—
Employee benefits	35.0	—	36.4	—
	201.2	52.3	188.8	52.9
Valuation allowance	(167.6)	—	(149.6)	—
Total	\$ 33.6	\$ 52.3	\$ 39.2	\$ 52.9

As of December 31, 2018 and 2017, all undistributed earnings of foreign subsidiaries and affiliates are expected to be repatriated.

Operating loss carryforwards amounted to \$601.7 million in 2018 and \$535.6 million in 2017. As of December 31, 2018, \$32.5 million of the operating loss carryforwards were subject to expiration in 2019 through 2023, and \$569.2

million of the operating loss carryforwards expire in years beyond 2023 or have an indefinite carryforward period. The Company had valuation allowances which were related to the realization of recorded tax benefits on tax loss carryforwards, as well as other net deferred tax assets, primarily from subsidiaries in Luxembourg and China, of \$167.6 million as of December 31, 2018 and \$149.6 million as of December 31, 2017.

For the years presented, a reconciliation of the beginning and ending amount of the unrecognized tax benefits is as follows:

Balance as of December 31, 2015	\$ 20.1
Increases related to current year tax positions	0.1
Increases related to prior year tax positions	4.0
Decreases related to prior year tax positions	(6.0)
Settlement of uncertain tax positions	(1.1)
Decreases due to expiration of statutes of limitations	(1.0)
Balance as of December 31, 2016	\$ 16.1
Increases related to current year tax positions	—
Increases related to prior year tax positions	0.9
Decreases related to prior year tax positions	(8.0)
Settlement of uncertain tax positions	(0.7)
Decreases due to expiration of statutes of limitations	(1.3)
Balance as of December 31, 2017	\$ 7.0
Increases related to current year tax positions	—
Increases related to prior year tax positions	0.5
Decreases related to prior year tax positions	(0.3)
Settlement of uncertain tax positions	—
Decrease due to expiration of statutes of limitations	(0.9)
Balance as of December 31, 2018	\$ 6.3

In regard to unrecognized tax benefits, the Company recognized expense related to interest and penalties of \$0.2 million and \$0.6 million during the years ended December 31, 2018 and 2016, respectively, whereas the Company recognized a benefit related to interest and penalties of \$2.4 million during the year ended December 31, 2017. Interest and penalties related to unrecognized tax benefits was included as a component of income tax expense in the consolidated statements of operations. As of December 31, 2018 and 2017, the Company had \$1.0 million and \$0.9 million, respectively, accrued for interest and penalties. To the extent that the unrecognized tax benefits are recognized in the future, \$4.4 million will impact the Company's effective tax rate.

As of December 31, 2018, the Company anticipates that it is reasonably possible that less than \$1.0 million of unrecognized tax benefits, including the impact relating to accrued interest and penalties, could be realized within the next twelve months due to the expiration of the statute of limitations in certain jurisdictions.

During the year ended December 31, 2017, the Company recorded a previously unrecognized tax benefit in the amount of \$8.5 million, including interest and penalties, upon completion of the 2010 through 2013 audit with the German taxing authority.

Tax years that remain subject to examination for the Company's major tax jurisdictions are shown below.

Major Tax Jurisdictions	Earliest Open Year
United States: Federal income tax	2014
Germany	2014
Switzerland	2014
Netherlands	2017
Luxembourg	2011
China	2008
Hong Kong	2006
Indonesia	2011
Italy	2010

NOTE 15—COMMITMENTS AND CONTINGENCIES

Leased Property

The Company routinely leases premises for use as sales and administrative offices, warehouses and tanks for product storage, railcars, motor vehicles, and other equipment under operating leases. Rental expense for these leases was \$18.5 million, \$16.2 million, and \$16.0 million during the years ended December 31, 2018, 2017, and 2016, respectively.

Future minimum rental payments under operating leases with remaining non-cancelable terms in excess of one year are as follows:

Annual Commitment						
2019	2020	2021	2022	2023	Thereafter	Total
\$ 17.5	\$ 14.4	\$ 9.0	\$ 10.6	\$ 5.4	\$ 16.0	\$ 72.9

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, based on current law, existing technologies and other information. As of December 31, 2018 and 2017, the Company had no accrued obligations for environmental remediation and restoration costs. Pursuant to the terms of the Acquisition, the pre-closing environmental conditions were retained by Dow and the Company has been indemnified by Dow from and against all environmental liabilities incurred or relating to the predecessor periods. There are several properties which the Company now owns on which Dow has been conducting investigation, monitoring, or remediation to address historical contamination. Those properties include Allyn's Point, Connecticut, Dalton, Georgia, and Livorno, Italy. There are other properties with historical contamination that are owned by Dow that the Company leases for its operations, including its facilities in Midland, Michigan, Schkopau, Germany, and Terneuzen, The Netherlands. No environmental claims have been asserted or threatened against the Company, and the Company is not a potentially responsible party at any Superfund sites.

Inherent uncertainties exist in the Company's potential environmental liabilities primarily due to unknown conditions, whether future claims may fall outside the scope of the indemnity, changing governmental regulations and legal standards regarding liability, and evolving technologies for handling site remediation and restoration. In connection with the Company's existing indemnification, the possibility is considered remote that environmental remediation costs will have a material adverse impact on the consolidated financial statements.

Purchase Commitments

In the normal course of business, the Company has certain raw material purchase contracts where it is required to purchase certain minimum volumes at current market prices. These commitments range from one to three years. The following table presents the fixed and determinable portion (based on current pricing indexes) of the minimum obligation under the Company's purchase commitments as of December 31, 2018:

Annual Commitment						
2019	2020	2021	2022	2023	Thereafter	Total
\$ 1,292.2	\$ 825.9	\$ 12.4	\$ —	\$ —	\$ —	\$ 2,130.5

In certain raw material purchase contracts, the Company has the right to purchase less than the required minimums and pay a liquidated damages fee, or, in case of a permanent plant shutdown, to terminate the contracts. In such cases, these obligations would be less than the obligations shown in the table above.

The Company has service agreements with Dow, some of which contain fixed annual fees. Refer to Note 18 for further information.

Litigation Matters

From time to time, the Company may be subject to various legal claims and proceedings incidental to the normal conduct of business, relating to such matters as product liability, antitrust/competition, past waste disposal practices and

release of chemicals into the environment. While it is impossible at this time to determine with certainty the ultimate outcome of these routine claims, the Company does not believe that the ultimate resolution of these claims will have a material adverse effect on the Company's results of operations, financial condition or cash flow.

Legal costs, including those legal costs expected to be incurred in connection with a loss contingency, are expensed as incurred.

European Commission Request for Information

On June 6, 2018, Trinseo Europe GmbH, a subsidiary of the Company, received a Request for Information in the form of a letter from the European Commission Directorate General for Competition (the "European Commission") related to styrene monomer commercial activity in the European Economic Area. In addition, the Company commenced an internal investigation into the matter and has discovered instances of inappropriate activity. The Company is fully cooperating with the European Commission and has delivered all requested documents responsive to its information request.

Notwithstanding the delivery of the Company's response to the European Commission, this matter remains open with the European Commission. Based on its findings, the European Commission may decide to: (i) require further information; (ii) conduct unannounced raids of the Company's premises; (iii) adopt decisions imposing fines, interim measures to halt immediately any anti-competitive behavior, orders for the Company to cease anti-competitive activities, and/or certain behavioral or structural commitments from the Company; or (iv) take no further action. As a result of the above factors, the Company is unable to predict the ultimate outcome of this matter or estimate the range of reasonably possible losses that could be incurred. However, any potential losses incurred could be material to the Company's results of operations, balance sheet, and cash flows for the period in which they are resolved or become probable and reasonably estimable.

NOTE 16—PENSION PLANS AND OTHER POSTRETIREMENT BENEFITS

Defined Benefit Pension Plans

Many of the Company's employees are participants in various defined benefit pension plans which are administered and sponsored by the Company and are primarily in Germany, Switzerland, The Netherlands, Belgium, China, Indonesia, Taiwan, and Japan.

Company employees who were not previously associated with the acquired pension and postretirement plans are not eligible for enrollment in a number of these plans. Pension benefits are typically based on length of service and the employee's final average compensation.

Other Postretirement Benefits

The Company provides certain health care and life insurance benefits to Dow-heritage employees in the United States when they retire. Prior to the 2016 divestiture of the Company's latex binders and PC & Compounding businesses in Brazil (refer to Note 4 for more information), the Company also provided health care and life insurance benefits to retired employees in Brazil.

In the U.S., the plan provides for health care benefits, including hospital, physicians' services, drug and major medical expense coverage. In general, the plan applies to employees hired by Dow before January 1, 2008 and transferred to the Company in connection with the Acquisition, and who are at least 50 years old with 10 years of service. The plan allows for spouse coverage as well. If an employee was hired on or before January 1, 1993, the coverage extends past age 65. For employees hired after January 1, 1993 but before January 1, 2008, coverage ends at age 65. The Company reserves the right to modify the provisions of the plan at any time, including the right to terminate, and does not guarantee the continuation of the plan or its provisions.

Prior to the divestiture of operations in Brazil in 2016, the Company provided an insured medical benefit to all employees and eligible dependents under Brazil's healthcare legislation, which grants the right to employees (and their beneficiaries) who have contributed towards the medical plan to extend medical coverage upon retirement or in case of involuntary dismissal. The extended medical plan must include the same level of coverage and other conditions offered to active employees, whereas former employees must assume 100% of the premium cost.

Assumptions

The weighted-average assumptions used to determine pension plan obligations and net periodic benefit costs are provided below:

	<u>Pension Plan Obligations</u>			<u>Net Periodic Benefit Costs</u>		
	<u>December 31,</u>			<u>December 31,</u>		
	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>
Discount rate for projected benefit obligation	1.86 %	1.79 %	1.65 %	1.80 %	1.65 %	2.06 %
Discount rate for service cost	N/A	N/A	N/A	1.72 %	1.64 %	2.06 %
Discount rate for interest cost	N/A	N/A	N/A	1.53 %	1.42 %	2.06 %
Rate of increase in future compensation levels	2.80 %	2.81 %	2.61 %	2.83 %	2.61 %	2.68 %
Expected long-term rate of return on plan assets	N/A	N/A	N/A	1.54 %	1.44 %	1.79 %

The weighted-average assumptions used to determine other postretirement benefit (“OPEB”) obligations and net periodic benefit costs are provided below:

	<u>OPEB Obligations</u>			<u>Net Periodic Benefit Costs</u>		
	<u>December 31,</u>			<u>December 31,</u>		
	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>
Discount rate for accumulated postretirement benefit obligation	4.38 %	3.68 %	4.16 %	3.68 %	4.16 %	6.51 %
Discount rate for service cost	N/A	N/A	N/A	3.70 %	4.18 %	6.51 %
Discount rate for interest cost	N/A	N/A	N/A	3.46 %	3.81 %	6.51 %
Initial health care cost trend rate	6.70 %	6.70 %	6.70 %	6.70 %	6.70 %	8.19 %
Ultimate health care cost trend rate	5.00 %	5.00 %	5.00 %	5.00 %	5.00 %	5.26 %
Year ultimate trend rate to be reached	2024	2023	2022	2023	2022	2023

The Company determines the discount rate used to measure plan liabilities as of the December 31 measurement date for the pension and postretirement benefit plans. The discount rate reflects the current rate at which the associated liabilities could be effectively settled at the end of the year. The Company sets its rate to reflect the yield of a portfolio of high quality, fixed-income debt instruments that would produce cash flows sufficient in timing and amount to settle projected future benefits. The Company uses a full yield curve approach in the estimation of the future service and interest cost components of net periodic benefit cost for its defined benefit pension and other postretirement benefit plans by applying the specific spot rates along the yield curve used in the determination of the benefit obligation to the relevant projected cash flows.

The expected long-term rate of return on plan assets is determined by performing a detailed analysis of key economic and market factors impacting historical returns for each asset class and formulating a projected return based on factors in the current environment. Factors considered include, but are not limited to, inflation, real economic growth, interest rate yield, interest rate spreads, and other valuation measures and market metrics. The expected long-term rate of return for each asset class is then weighted based on the strategic asset allocation approved by the governing body for each plan. The historical experience with the pension fund asset performance is also considered.

A 1% change in the assumed health care cost trend rate would have had a nominal effect on both service and interest costs, but would have resulted in an approximate \$0.3 million impact to the projected benefit obligation.

The net periodic benefit costs for the pension and other postretirement benefit plans for the years ended December 31, 2018, 2017, and 2016 were as follows:

	<u>Defined Benefit Pension Plans</u>			<u>Other Postretirement Benefit Plans</u>		
	<u>December 31,</u>			<u>December 31,</u>		
	<u>2018</u>	<u>2017</u>	<u>2016</u>	<u>2018</u>	<u>2017</u>	<u>2016</u>
Net periodic benefit cost⁽¹⁾						
Service cost	\$ 12.3	\$ 20.5	\$ 16.5	\$ 0.2	\$ 0.2	\$ 0.2
Interest cost	4.9	4.9	5.5	0.2	0.3	0.4
Expected return on plan assets	(2.1)	(1.7)	(2.0)	—	—	—
Amortization of prior service cost (credit)	(1.1)	(2.0)	(1.9)	0.1	0.1	0.1
Amortization of net (gain) loss	4.1	5.6	4.4	—	(0.1)	(0.2)
Settlement and curtailment (gain) loss	0.6	(21.9) ⁽²⁾	—	—	—	—
Net periodic benefit cost	<u>\$ 18.7</u>	<u>\$ 5.4</u>	<u>\$ 22.5</u>	<u>\$ 0.5</u>	<u>\$ 0.5</u>	<u>\$ 0.5</u>
Amounts recognized in other comprehensive income (loss)						
Net (gain) loss	\$ (0.6)	\$ (42.6)	\$ 24.8	\$ (1.3)	\$ (0.1)	\$ 1.9
Amortization of prior service (cost) credit	1.1	2.0	1.9	(0.1)	(0.1)	(0.1)
Amortization of net gain (loss)	(4.1)	(5.6)	(4.4)	—	0.1	0.2
Settlement and curtailment gain (loss)	(0.6)	21.9 ⁽²⁾	—	—	—	—
Prior service credit	(0.5)	—	—	(0.4)	—	—
Acquisitions/divestitures	—	—	0.2 ⁽³⁾	—	—	(1.1) ⁽³⁾
Total recognized in other comprehensive income (loss)	(4.7)	(24.3)	22.5	(1.8)	(0.1)	0.9
Net periodic benefit cost	<u>18.7</u>	<u>5.4</u>	<u>22.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>
Total recognized in net periodic benefit cost and other comprehensive income (loss)	<u>\$ 14.0</u>	<u>\$ (18.9)</u>	<u>\$ 45.0</u>	<u>\$ (1.3)</u>	<u>\$ 0.4</u>	<u>\$ 1.4</u>

- (1) In accordance with recently issued accounting standards, service cost related to the Company's defined benefit pension plans and other postretirement plans is included within "Cost of sales" and "Selling, general and administrative expenses," whereas all other components of net periodic benefit cost are included within "Other expense (income), net" in the consolidated statements of operations. Refer to Note 2 for further information.
- (2) Approximately \$21.6 million of this amount related to a curtailment gain on certain of the Company's pension plans in Europe recorded during the year ended December 31, 2017, which was recorded within "Other expense (income), net" in the consolidated statements of operations. This curtailment was triggered by a plan amendment under which participants will not receive incremental benefits under the existing plan for service provided subsequent to December 31, 2017. Previous participants in the curtailed pension plan became eligible to participate in a new multi-employer plan starting on January 1, 2018.
- (3) These amounts related to the Company's divestiture of its Brazilian business during 2016. As of December 31, 2016, the Company had no residual AOCI balances recorded related to the Brazilian pension and postretirement medical plans.

The changes in the pension benefit obligations and the fair value of plan assets and the funded status of all significant plans for the years ended December 31, 2018 and 2017 were as follows:

	Defined Benefit Pension Plans		Other Postretirement Benefit Plans	
	December 31,		December 31,	
	2018	2017	2018	2017
Change in projected benefit obligations				
Benefit obligation at beginning of period	\$ 321.7	\$ 303.3	\$ 7.1	\$ 6.7
Service cost	12.3	20.5	0.2	0.2
Interest cost	4.9	4.9	0.2	0.3
Plan participants' contributions	1.8	2.5	—	—
Actuarial changes in assumptions and experience	(0.4)	(8.2)	(1.3)	(0.1)
Benefits paid from fund	(0.7)	(1.4)	—	—
Benefit payments by employer	(2.3)	(1.9)	—	—
Plan amendments	(0.5)	—	(0.4)	—
Curtailments	—	(32.6)	—	—
Settlements	(3.8)	(5.2)	—	—
Other	1.6	3.0	—	—
Currency impact	(12.7)	36.8	—	—
Benefit obligation at end of period	\$ 321.9	\$ 321.7	\$ 5.8	\$ 7.1
Change in plan assets				
Fair value of plan assets at beginning of period	\$ 140.1	\$ 114.2	\$ —	\$ —
Actual return on plan assets	2.4	3.6	—	—
Settlements	(3.8)	(5.2)	—	—
Employer contributions	5.9	15.3	—	—
Plan participants' contributions	1.8	2.5	—	—
Benefits paid	(3.0)	(3.3)	—	—
Currency impact	(4.9)	13.0	—	—
Fair value of plan assets at end of period	138.5	140.1	—	—
Funded status at end of period	\$ (183.4)	\$ (181.6)	\$ (5.8)	\$ (7.1)

The net amounts recognized in the consolidated balance sheets as of December 31, 2018 and 2017 were as follows:

	Defined Benefit Pension Plans		Other Postretirement Benefit Plans	
	December 31,		December 31,	
	2018	2017	2018	2017
Net amounts recognized in the balance sheets as of December 31				
Current liabilities	\$ (2.7)	\$ (2.2)	\$ —	\$ (0.1)
Noncurrent liabilities	(180.7)	(179.4)	(5.8)	(7.0)
Net amounts recognized in the balance sheet	\$ (183.4)	\$ (181.6)	\$ (5.8)	\$ (7.1)
Accumulated benefit obligation at the end of the period	\$ 293.7	\$ 290.9	\$ 5.8	\$ 7.1
Pretax amounts recognized in AOCI as of December 31				
Net prior service cost (credit)	\$ (4.8)	\$ (5.4)	\$ (0.2)	\$ 0.3
Net loss (gain)	60.5	65.8	(2.1)	(0.9)
Total at end of period	\$ 55.7	\$ 60.4	\$ (2.3)	\$ (0.6)

Approximately \$3.1 million and \$1.1 million of net loss and net prior service credit, respectively, for the defined benefit pension plans and \$0.4 million and less than \$0.1 million of net gain and net prior service credit, respectively, for other postretirement benefit plans will be amortized from AOCI to net periodic benefit cost in 2019.

The estimated future benefit payments, reflecting expected future service, as appropriate, are presented in the following table:

	2019	2020	2021	2022	2023	2024 through 2028	Total
Defined benefit pension plans	\$ 5.2	\$ 5.3	\$ 5.7	\$ 6.8	\$ 9.1	\$ 51.5	\$ 83.6
Other postretirement benefit plans	—	0.1	0.1	0.2	0.3	2.5	3.2
Total	\$ 5.2	\$ 5.4	\$ 5.8	\$ 7.0	\$ 9.4	\$ 54.0	\$ 86.8

The Company estimates it will make cash contributions, including benefit payments for unfunded plans, of \$6.1 million in 2019 to the defined benefit pension plans.

The following information relates to pension plans with projected and accumulated benefit obligations in excess of the fair value of plan assets as of December 31, 2018 and 2017:

Projected Benefit Obligation Exceeds the Fair Value of Plan Assets	December 31,	
	2018	2017
Projected benefit obligations	\$ 239.7	\$ 237.3
Fair value of plan assets	\$ 56.3	\$ 55.8
Accumulated Benefit Obligation Exceeds the Fair Value of Plan Assets	December 31,	
	2018	2017
Accumulated benefit obligations	\$ 210.8	\$ 206.4
Fair value of plan assets	\$ 50.3	\$ 50.0

Plan Assets

As of December 31, 2018 and 2017, plan assets totaled \$138.5 million and \$140.1 million, respectively, consisting of investments in insurance contracts. Investments in the pension plan insurance were valued utilizing unobservable inputs, which are contractually determined based on cash surrender values, returns, fees, and the present value of the future cash flows of the contracts.

Insurance contracts are classified as Level 3 investments. Changes in the fair value of these Level 3 investments during the years ended December 31, 2018 and 2017 are included in the “Change in plan assets” table above.

Concentration of Risk

The Company mitigates the credit risk of investments by establishing guidelines with investment managers that limit investment in any single issue or issuer to an amount that is not material to the portfolio being managed. These guidelines are monitored for compliance both by the Company and external managers. Credit risk related to derivative activity is mitigated by utilizing multiple counterparties and through collateral support agreements.

Supplemental Employee Retirement Plan

The Company established a non-qualified supplemental employee retirement plan in 2010. The net benefit costs recognized for this plan during the years ended December 31, 2018, 2017, and 2016 were \$0.8 million, \$1.1 million, and \$1.1 million, respectively. Benefit obligations under this plan were \$15.5 million and \$15.3 million as of December 31, 2018 and 2017, respectively. As of December 31, 2018 and 2017, the amounts of net loss included in AOCI were \$0.3 million and \$0.9 million, respectively, with \$0.5 million and \$0.9 million amortized from AOCI into net periodic benefit costs during the years ended December 31, 2018 and 2017, respectively. Approximately \$0.3 million is expected to be amortized from AOCI into net periodic benefit cost in 2019.

Based on the Company’s current estimates, the estimated future benefit payments under this plan, reflecting expected future service, as appropriate, are presented in the following table:

	2019	2020	2021	2022	2023	Thereafter	Total
Supplemental employee retirement plan	\$ 16.0	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 16.0

Defined Contribution Plans

The Company also offers defined contribution plans to eligible employees in the U.S. and in other countries, including Hong Kong, Korea, The Netherlands, Indonesia, and the United Kingdom. The defined contribution plans are comprised of a non-discretionary elective matching contribution component as well as a discretionary non-elective contribution component. Employees participate in the non-discretionary component by contributing a portion of their eligible compensation to the plan, which is partially matched by the Company. Non-elective contributions are made at the discretion of the Company and are based on a combination of eligible employee compensation and performance award targets. During the years ended December 31, 2018, 2017, and 2016, the Company contributed \$7.9 million, \$8.4 million, and \$8.6 million, respectively, to the defined contribution plans.

Multiemployer Plans

The Company also has a multiemployer plan in The Netherlands for a closed population of employees. The Company's contributions to the plan are generally determined as a percentage of the participants' salaries. During the year ended December 31, 2018, the Company recorded expense of \$4.5 million related to the plan and made contributions of \$3.8 million to the plan.

NOTE 17—SHARE-BASED COMPENSATION

Summary of Share-based Compensation Expense

Share-based compensation expense, which is recorded within "Selling, general and administrative expenses" in the consolidated statements of operations, was as follows for the years ended December 31, 2018, 2017, and 2016. Share amounts in the tables below are in whole numbers, unless otherwise indicated.

	Year Ended December 31,			As of December 31, 2018		
	2018	2017	2016	Unrecognized Compensation Cost	Weighted Average Years	
<i>2014 Omnibus Plan Awards</i>						
RSUs	\$ 8.8	\$ 8.6	\$ 5.3	\$ 10.0	1.8	
Option Awards	4.4	4.1	5.6	1.2	1.3	
PSUs	2.6	1.1	—	5.8	2.1	
<i>Restricted Share Awards Issued by the former Parent</i>						
Time-based Restricted Share Awards	—	—	1.7	—	—	
Modified Time-based Restricted Share Awards	—	—	4.5	—	—	
Total share-based compensation expense	<u>\$ 15.8</u>	<u>\$ 13.8</u>	<u>\$ 17.1</u>			

2014 Omnibus Plan

In connection with the IPO, the Company's board of directors approved the 2014 Omnibus Plan, adopted on May 28, 2014, under which 4.5 million ordinary shares is the maximum number that may be delivered upon satisfaction of awards granted. Following the IPO, all equity-based awards granted by the Company have been granted under the 2014 Omnibus Plan, which provides for awards of share options, share appreciation rights, restricted shares, unrestricted shares, share units, performance awards, cash awards and other awards convertible into or otherwise based on ordinary shares of the Company. Since the IPO, the board of directors of the Company has approved equity award grants for certain directors, executives, and employees, including RSUs, option awards, and PSUs.

Restricted Share Units

The RSUs granted to executives and employees vest in full on the third anniversary of the date of grant, generally subject to the employee remaining continuously employed by the Company through the vesting date. RSUs granted to directors of the Company vest in full on the first anniversary of the date of grant. Upon a termination of employment due

to an employee's death or retirement or a termination of employment by the Company without cause in connection with a restructuring or redundancy or due to the employee's disability prior to the vesting date, the RSUs will vest in full or in part, depending on the type of termination. In the event employment is terminated for cause, all unvested RSUs will be forfeited. When RSUs vest, shares are issued from the existing pool of treasury shares.

Compensation cost for RSUs is measured at grant date based on the fair value of the award and is recognized ratably as expense over the applicable vesting term. The fair value of RSUs is equal to the fair market value of the Company's ordinary shares based on the closing price on the date of grant. Prior to November 2016, dividend and dividend equivalents did not accumulate on unvested RSUs. In November 2016, the board of directors approved an amendment to all outstanding RSUs, entitling each award holder to an amount equal to any cash dividend paid by the Company upon one ordinary share for each RSU held by the award holder ("dividend equivalents"). The dividend equivalents earned on the RSUs only include dividends paid after this amendment and the award holders have no right to receive the dividend equivalents unless and until the associated RSUs vest. The dividend equivalents are payable in cash and do not accrue interest. The impact of this amendment is immaterial to the consolidated financial statements.

The following table summarizes the activity for RSUs during the year ended December 31, 2018:

Restricted Share Units	Shares	Weighted-Average Grant Date Fair Value per Share
Unvested, December 31, 2017	743,840	\$ 29.50
Granted	131,240	79.18
Vested	(367,121)	20.26
Forfeited	(15,810)	55.24
Unvested, December 31, 2018	<u>492,149</u>	<u>\$ 48.82</u>

The following table summarizes the weighted-average grant date fair value per share of RSUs granted during the years ended December 31, 2018, 2017, and 2016 as well as the total fair value of awards vested during those periods:

	Restricted Share Units	
	Weighted-Average Grant Date Fair Value per Share of Grants during Period	Total Fair Value of Awards Vested during Period
Year Ended December 31, 2018	\$ 79.18	\$ 7.4
Year Ended December 31, 2017	\$ 70.85	\$ 1.3
Year Ended December 31, 2016	\$ 28.39	\$ 0.5

Option Awards

The option awards, which contain an exercise term of nine years from the date of grant, vest in three equal annual installments beginning on the first anniversary of the date of grant, generally subject to the employee remaining continuously employed on the applicable vesting date. Upon a termination of employment due to the employee's death or retirement or a termination of employment by the Company without cause in connection with a restructuring or redundancy or due to the employee's disability prior to a vesting date, the option awards will vest in full or will continue to vest on the original vesting schedule, depending on the type of termination. In the event employment is terminated for cause, all vested and unvested option awards will be forfeited. When option awards are exercised, shares are issued from the existing pool of treasury shares.

Compensation cost for option awards is measured at the grant date based on the fair value of the award and is recognized as expense over the appropriate service period utilizing graded vesting. The following table summarizes the activity for option awards during the year ended December 31, 2018:

<u>Option Awards</u>	<u>Shares</u>	<u>Weighted-Average Exercise Price per share</u>	<u>Weighted-Average Contractual Term (years)</u>	<u>Aggregate Intrinsic Value</u>
Outstanding as of December 31, 2017	854,094	\$ 35.27		
Granted	202,963	81.20		
Exercised	(120,481)	23.32		
Forfeited	(2,238)	65.77		
Outstanding as of December 31, 2018	934,338	\$ 46.72	6.6	\$ 11.2
Exercisable as of December 31, 2018	419,489	\$ 31.02	5.9	\$ 7.8
Expected to vest as of December 31, 2018	514,849	\$ 59.50	7.2	\$ 3.4

During the years ended December 31, 2018, 2017, and 2016, the total intrinsic value of option awards exercised was \$6.7 million, \$21.4 million, and \$0.4 million, respectively. The fair value for option awards is computed using the Black-Scholes pricing model, whose inputs and assumptions are determined as of the date of grant. Determining the fair value of the option awards requires considerable judgment, including estimating the expected term of said awards and the expected volatility of the price of the Company's ordinary shares.

Since the Company's equity interests were privately held prior to the IPO in June 2014, there is limited publicly traded history of the Company's ordinary shares. Until such time that the Company can determine expected volatility based solely on the publicly traded history of its ordinary shares, expected volatility used in the Black-Scholes model for option awards granted is based on a combination of the Company's historical volatility and similar companies' shares that are publicly traded. The expected term of option awards represents the period of time that option awards granted are expected to be outstanding. For all grants of option awards presented herein, the simplified method was used to calculate the expected term, given the Company's limited historical exercise data. The risk-free interest rate for the periods within the expected term of option awards is based on the U.S. Treasury yield curve in effect at the time of grant. The dividend yield is estimated based on historical and expected dividend activity.

The following are the weighted-average assumptions used within the Black-Scholes pricing model for grants during the years ended December 31, 2018, 2017, and 2016:

	<u>Year Ended December 31,</u>		
	<u>2018</u>	<u>2017</u>	<u>2016</u>
Expected term (in years)	5.50	5.50	5.50
Expected volatility	32.00 %	35.00 %	40.00 %
Risk-free interest rate	2.71 %	2.19 %	1.42 %
Dividend yield	2.00 %	2.00 %	0.60 %

Utilizing the above assumptions, the weighted-average grant date fair value per option award granted in the years ended December 31, 2018, 2017, and 2016 was \$22.29, \$20.61, and \$10.10, respectively.

Performance Share Units

PSUs, which are granted to executives, cliff vest on the third anniversary of the date of grant, generally subject to the executive remaining continuously employed by the Company through the vesting date and achieving certain performance conditions. The number of the PSUs that vest upon completion of the service period can range from 0% to 200% of the original grant, subject to certain limitations, contingent upon the Company's total shareholder return during the performance period relative to a pre-defined set of industry peer companies. Upon a termination of employment due to the executive's death or retirement, or termination in connection with a change in control or other factors prior to the vesting date, the PSUs will vest in full or in part, depending on the type of termination and the achievement of the performance conditions. Dividend equivalents accumulate on PSUs during the vesting period, are payable in cash, and do not accrue interest. When PSUs vest, shares will be issued from the existing pool of treasury shares.

The following table summarizes the activity for PSUs during the year ended December 31, 2018:

Performance Share Units	Shares	Weighted-Average Grant Date Fair Value per Share
Unvested, December 31, 2017	50,937	\$ 75.74
Granted	70,301	86.78
Vested	—	—
Forfeited	(4,876)	83.21
Unvested, December 31, 2018	<u>116,362</u>	<u>\$ 82.10</u>

The fair value for PSU awards is computed using a Monte Carlo valuation model, whose inputs and assumptions are determined as of the date of grant. Determining the fair value of the PSU awards requires considerable judgment, including estimating the expected volatility of the price of the Company's ordinary shares, the correlation between the Company's share price and that of its peer companies, and the expected rate of interest. The expected volatility for each grant is determined based on the historical volatility of the Company's ordinary shares. The expected term of PSU awards represents the length of the performance period. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of grant for a duration equivalent to the performance period. The share price is the closing price of the Company's ordinary shares on the grant date.

The following are the weighted-average assumptions used within the Monte Carlo valuation model for grants during the years ended December 31, 2018 and 2017:

	Year Ended December 31,	
	2018	2017
Expected term (in years)	3.00	3.00
Expected volatility	35.03 %	39.00 %
Risk-free interest rate	2.55 %	1.56 %
Share Price	\$ 79.42	\$ 71.45

Utilizing the above assumptions, the total grant date fair value for PSU awards granted in the years ended December 31, 2018 and 2017 was \$6.1 million and \$3.9 million, respectively.

Restricted Share Awards issued by the former Parent

On June 17, 2010, the former Parent authorized the issuance of up to 750,000 of its shares in restricted share awards to certain key members of management. Any related compensation associated with these awards has since been allocated to the Company from the former Parent. Since the adoption of the 2014 Omnibus Plan in May 2014, discussed further above, restricted share awards are no longer issued by the former Parent on behalf of the Company.

During the year ended December 31, 2016, the former Parent completed the sale of its ordinary shares of the Company through secondary offerings, and as a result, no longer holds an ownership interest in the Company. Given that the former Parent sold its interest in the substantive assets of the Company, under the terms of the related securityholder agreements, vesting of all outstanding restricted share awards was fully accelerated into the year ended December 31, 2016. There will be no additional grants or expense related to these awards in future periods.

Time-based Restricted Share Awards

Prior to the full acceleration of vesting in 2016 noted above, the time-based restricted share awards issued by the former Parent contained a service-based condition that required continued employment with the Company. Generally, these awards were to vest over three to five years of service, with a portion (20% to 40%) cliff vesting after the first one or two years, and the remaining portion vesting ratably over the subsequent service period. Compensation cost for the time-based restricted share awards was measured at the grant date based on the fair value of the award and was recognized as expense over the appropriate service period utilizing graded vesting.

The total fair value of time-based restricted share awards vested during the year ended December 31, 2016 was \$4.7 million and there were no grants of time-based restricted share awards by the former Parent during the year ended December 31, 2016 as a result of the adoption of the 2014 Omnibus Plan.

Modified Time-based Restricted Share Awards

Prior to June 2014, the former Parent had issued performance-based restricted share awards that contained provisions wherein vesting was subject to the full satisfaction of both time and performance vesting criterion. On June 10, 2014, prior to the completion of the Company's IPO, the former Parent entered into agreements to modify the outstanding performance-based restricted share awards to remove the performance-based vesting condition associated with such awards related to the achievement of certain investment returns (while maintaining the requirement for a change in control or IPO). This modification also changed the time-based vesting requirement associated with such awards to provide that any shares which would have satisfied the time-based vesting condition previously applicable on or prior to June 30, 2017 to instead vest on June 30, 2017, subject to the holder remaining continuously employed by the Company through such date. Any such awards that were subject to a time-based vesting condition beyond June 30, 2017 remained subject to those previous conditions. Henceforth, these awards have been described as modified time-based restricted share awards.

With the completion of the Company's IPO in June 2014, the remaining performance condition associated with these modified time-based restricted share awards was achieved. As a result, the Company began recognizing compensation expense on these awards, which was measured at the modification date based on their fair value. Prior to the full acceleration of vesting in 2016 noted above, compensation expense on these awards was being recognized over the appropriate service period utilizing graded vesting.

The total fair value of modified time-based restricted share awards vested during the year ended December 31, 2016 was \$8.5 million and there were no grants of modified time-based restricted share awards by the former Parent during the year ended December 31, 2016 as a result of the adoption of the 2014 Omnibus Plan.

NOTE 18—RELATED PARTY AND DOW TRANSACTIONS

Related Party Transactions

During the year ended December 31, 2016, the former Parent sold 37,269,567 ordinary shares pursuant to the Company's shelf registration statement filed with the SEC. As such, the former Parent no longer holds an ownership interest in the Company. In connection with these offerings, the Company incurred advisory, accounting, legal and printing expenses on behalf of the former Parent of \$2.5 million during the year ended December 31, 2016. These expenses were included within "Selling, general and administrative expenses" in the consolidated statement of operations.

Dow Transactions

The Company has entered into certain agreements with Dow, including the Second Amended and Restated Master Outsourcing Services Agreement, which was modified on June 1, 2013 ("SAR MOSA"), site and operating services agreements, and supply agreements.

The SAR MOSA provides for ongoing worldwide services from Dow in areas such as information technology, enterprise resource planning, finance, environmental health and safety, training, customer service, marketing and sales support, supply chain and certain sourcing and transactional procurement services. This agreement is effective through December 31, 2020, with automatic two-year renewals, barring six-months' notice of non-renewal provided by either party. The Company has the ability to terminate all or a portion of the services under the SAR MOSA, subject to payment of termination charges, with certain 'highly integrated' services following a separate process for evaluation and termination. Either party may terminate for cause or for material breach which is not cured. Dow has the right to terminate the agreement in the event of failure by the Company to pay for the services or in the event of a change of control, as defined in the agreement. During 2018, the Company began efforts to insource, and in some cases outsource to other vendors, certain information technology, procurement, supply chain, and enterprise resource planning services and systems currently provided by Dow. During 2018, the Company incurred \$26.1 million in costs related to its

transition of these services away from Dow and expects to incur further significant costs related to transitioning additional services away from Dow. As of December 31, 2018, the Company's estimated remaining minimum contractual obligations under the SAR MOSA are approximately \$11.3 million.

In addition, the Company entered into various site service agreements with Dow, as amended June 1, 2013 (the "Second Amended and Restated Site Services Agreements," or "SAR SSAs"). Under the SAR SSAs, general site services are provided at specific facilities co-located with Dow including utilities, site administration, environmental health and safety, site maintenance and supply chain. Conversely, the Company entered into similar agreements with Dow, where at Company-owned sites, it provides such services to Dow. These agreements generally have 25-year terms from the date amended, with options to renew. These agreements may be terminated at any time by agreement of the parties, or, by either party, for cause, including a bankruptcy, liquidation or similar proceeding by the other party, or under certain circumstances for a material breach which is not cured. In addition, the Company may terminate for convenience any services that Dow has agreed to provide that are identified in any site services agreement as "terminable" with 12-months' prior notice to Dow, dependent upon whether the service is highly integrated into Dow operations. Highly integrated services are agreed to be nonterminable. With respect to "nonterminable" services that Dow has agreed to provide to the Company, such as electricity and steam, the Company generally cannot terminate such services prior to the termination date unless the Company experiences a production unit shut down for which Dow is provided with 15-months' prior notice, or upon payment of a shutdown fee. Upon expiration or termination, the Company would be obligated to pay a monthly fee to Dow, which obligation extends for a period of 45 (in the case of expiration) to 60 months (in the case of termination) following the respective event of each site services agreement. The agreements under which Dow receives services from the Company may be terminated under the same circumstances and conditions.

The following tables detail expenses incurred during the years ended December 31, 2018, 2017, and 2016 under the SAR MOSA and SAR SSAs by financial statement line item:

Financial Statement Line Item	Year Ended December 31, 2018		
	SAR MOSA	SAR SSAs	Total
Cost of sales	\$ 39.1	\$ 206.9	\$ 246.0
Selling, general, and administrative expenses	8.5	3.9	12.4
Total	\$ 47.6	\$ 210.8	\$ 258.4

Financial Statement Line Item	Year Ended December 31, 2017		
	SAR MOSA	SAR SSAs	Total
Cost of sales	\$ 39.8	\$ 179.2	\$ 219.0
Selling, general, and administrative expenses	9.3	4.1	13.4
Total	\$ 49.1	\$ 183.3	\$ 232.4

Financial Statement Line Item	Year Ended December 31, 2016		
	SAR MOSA	SAR SSAs	Total
Cost of sales	\$ 41.7	\$ 169.9	\$ 211.6
Selling, general, and administrative expenses	5.6	4.9	10.5
Total	\$ 47.3	\$ 174.8	\$ 222.1

The Company has transactions in the normal course of business with Dow and its affiliates. For the years ended December 31, 2018, 2017, and 2016, sales to Dow and its affiliated companies were approximately \$248.4 million, \$235.2 million, and \$203.5 million, respectively. For the years ended December 31, 2018, 2017, and 2016, purchases from Dow and its affiliated companies were approximately \$1,410.6 million, \$1,357.2 million, and \$1,090.4 million, respectively.

NOTE 19—SEGMENTS

Through December 31, 2017, the Company operated under two divisions: Performance Materials and Basic Plastics & Feedstocks. The Performance Materials division included the following reporting segments: Latex Binders,

Synthetic Rubber, and Performance Plastics. The Basic Plastics & Feedstocks division included the following reporting segments: Basic Plastics, Feedstocks, and Americas Styrenics.

Effective January 1, 2018, the Company realigned its reporting segments to reflect the new model under which the business is being managed and results are being reviewed by the Chief Executive Officer, who is the Company's chief operating decision maker. Under this new segmentation, the Company no longer has divisions, but continues to report operating results for six segments, four of which remain unchanged from the Company's prior segmentation: Latex Binders, Synthetic Rubber, Feedstocks, and Americas Styrenics. The results of the Company's Polystyrene business, which were previously included within the Basic Plastics segment, are now reported as a stand-alone segment. Performance Plastics, which previously consisted of compounds, blends, and ABS products sold to the automotive market, now includes the remaining portion of the Company's ABS business, as well as the results of the Company's styrene-acrylonitrile ("SAN") and PC businesses. This segmentation change provides enhanced clarity to investors by concentrating the Company's more specialized plastics into a single reporting segment, while also reducing complexity as PC and ABS are the primary inputs into the downstream production of the Company's compounds and blends. The information in the tables below has been retroactively adjusted to reflect the changes in reporting segments.

The Latex Binders segment produces styrene-butadiene latex ("SB latex") and other latex polymers and binders, primarily for coated paper and packaging board, carpet and artificial turf backings, as well as a number of performance latex binders applications, such as adhesive, building and construction and the technical textile paper market. The Synthetic Rubber segment produces synthetic rubber products used predominantly in high-performance tires, impact modifiers and technical rubber products, such as conveyer belts, hoses, seals and gaskets. The Performance Plastics segment produces highly engineered compounds and blends, and also includes the Company's ABS, SAN, and PC businesses. The Performance Plastics segment also included the results of the Company's previously 50%-owned joint venture, Sumika Styron Polycarbonate, until the Company sold its share in the entity in January 2017 (refer to Note 5 for further information). Polystyrene is a stand-alone reporting segment, and includes a variety of general purpose polystyrenes ("GPPS") and polystyrene that has been modified with polybutadiene rubber to increase its impact resistant properties ("HIPS"). The Feedstocks segment includes the Company's production and procurement of styrene monomer outside of North America, which is used as a key raw material in many of the Company's products, such as polystyrene, SB latex, ABS resins, and solution styrene-butadiene rubber ("SSBR"). Lastly, the Americas Styrenics segment consists solely of the operations of the Company's 50%-owned joint venture, Americas Styrenics, a producer of both styrene monomer and polystyrene in North America.

Asset and intersegment sales information by reporting segment is not reviewed or included with the Company's reporting to the chief operating decision maker. Therefore, this information has not been disclosed below.

Year Ended	Latex Binders	Synthetic Rubber	Performance Plastics	Polystyrene	Feedstocks	Americas Styrenics	Corporate Unallocated	Total
December 31, 2018								
Sales to external customers	\$ 1,069.0	\$ 572.5	\$ 1,577.6	\$ 1,017.1	\$ 386.6	\$ —	\$ —	\$ 4,622.8
Equity in earnings of unconsolidated affiliates	—	—	—	—	—	144.1	—	144.1
Adjusted EBITDA ⁽¹⁾	110.4	77.0	188.9	33.7	107.1	144.1	—	—
Investment in unconsolidated affiliates	—	—	—	—	—	179.1	—	179.1
Depreciation and amortization	24.9	43.9	28.7	11.6	12.1	—	9.0	130.2
Capital expenditures ⁽²⁾	17.2	26.8	55.1	3.4	13.2	—	5.7	121.4
December 31, 2017								
Sales to external customers	\$ 1,097.1	\$ 582.8	\$ 1,419.1	\$ 941.4	\$ 407.7	\$ —	\$ —	\$ 4,448.1
Equity in earnings of unconsolidated affiliates	—	—	0.8	—	—	122.9	—	123.7
Adjusted EBITDA ⁽¹⁾	138.5	83.3	230.9	48.2	110.5	122.9	—	—
Investment in unconsolidated affiliates	—	—	—	—	—	152.5	—	152.5
Depreciation and amortization	23.6	35.7	20.0	9.8	12.6	—	8.9	110.6
December 31, 2016								
Sales to external customers	\$ 925.3	\$ 450.7	\$ 1,218.0	\$ 828.1	\$ 294.5	\$ —	\$ —	\$ 3,716.6
Equity in earnings of unconsolidated affiliates	—	—	8.9	—	—	135.8	—	144.7
Adjusted EBITDA ⁽¹⁾	94.3	110.9	232.2	52.3	80.2	135.8	—	—
Investment in unconsolidated affiliates	—	—	41.7	—	—	149.7	—	191.4
Depreciation and amortization	23.8	34.7	12.2	9.6	10.6	—	5.5	96.4

- (1) The Company's primary measure of segment operating performance is Adjusted EBITDA, which is defined as income from continuing operations before interest expense, net; provision for income taxes; depreciation and amortization expense; loss on extinguishment of long-term debt; asset impairment charges; gains or losses on the dispositions of businesses and assets; restructuring; acquisition related costs and other items. Segment Adjusted EBITDA is a key metric that is used by management to evaluate business performance in comparison to budgets, forecasts, and prior year financial results, providing a measure that management believes reflects core operating performance by removing the impact of transactions and events that would not be considered a part of core operations. Other companies in the industry may define Segment Adjusted EBITDA differently than the Company, and as a result, it may be difficult to use Segment Adjusted EBITDA, or similarly-named financial measures, that other companies may use to compare the performance of those companies to the Company's segment performance.
- (2) In 2018, capital expenditure information began being reviewed and included with the Company's reporting to the chief operating decision maker, thus it has been presented above by reportable segment for the year ended December 31, 2018.

The reconciliation of income before income taxes to Segment Adjusted EBITDA is as follows:

	Year Ended December 31,		
	2018	2017	2016
Income before income taxes	\$ 364.3	\$ 411.1	\$ 405.3
Interest expense, net	46.4	70.1	75.0
Depreciation and amortization	130.2	110.6	96.4
Corporate Unallocated ⁽³⁾	88.0	91.8	94.8
Adjusted EBITDA Addbacks ⁽⁴⁾	32.3	50.7	34.2
Segment Adjusted EBITDA	\$ 661.2	\$ 734.3	\$ 705.7

- (3) Corporate unallocated includes corporate overhead costs and certain other income and expenses.
- (4) Adjusted EBITDA addbacks for the years ended December 31, 2018, 2017, and 2016 are as follows:

	Year Ended December 31,		
	2018	2017	2016
Loss on extinguishment of long-term debt (Note 11)	\$ 0.2	\$ 65.3	\$ —
Net (gain) loss on disposition of businesses and assets (Note 4)	(1.0)	(9.7)	15.1
Restructuring and other charges (Note 20)	8.2	6.0	23.5
Acquisition transaction and integration costs (Note 4)	0.6	4.7	—
Asset impairment charges or write-offs ^(a)	1.5	4.3	—
Other items ^(b)	22.8	(19.9)	(4.4)
Total Adjusted EBITDA Addbacks	\$ 32.3	\$ 50.7	\$ 34.2

- (a) Asset impairment charges for the years ended December 31, 2018 and 2017 primarily relate to the impairment of certain corporate long-lived assets and certain long-lived assets in the Performance Plastics segment, respectively.
- (b) Other items for the year ended December 31, 2018 primarily relate to advisory and professional fees incurred in conjunction with the Company's initiative to transition business services from Dow, including certain administrative services such as accounts payable, logistics, and IT services, as well as fees incurred in conjunction with the Company's 2024 Term Loan B repricing completed in the second quarter of 2018. Other items for the year ended December 31, 2017 primarily related to a curtailment gain recorded on certain of the Company's pension plans in Europe (refer to Note 16 for further information), offset by fees incurred in conjunction with the Company's debt refinancing which was completed during the third quarter of 2017. For the year ended December 31, 2016, other items included other income of \$6.9 million from the effective settlement of certain value-added tax positions, offset by \$2.5 million of fees incurred in conjunction with the Company's secondary offerings completed during the year. For the year ended December 31, 2016, other items represent costs related to the process of changing the Company's corporate name from Styron to Trinseo.

Geographic Information

As of December 31, 2018, the Company operates 30 manufacturing plants (which include a total of 75 production units) at 23 sites in 12 countries, inclusive of its joint venture. It also operates 10 R&D facilities globally, including mini plants, development centers and pilot coaters. Sales are attributed to geographic areas based on the location where sales originated; long-lived assets are attributed to geographic areas based on asset location. The Company is incorporated under the existing laws of the Grand Duchy of Luxembourg, as discussed in Note 1, which therefore represents its country of domicile. The Company has no existing long-lived assets or sales generated from this country.

	As of and for the Year Ended		
	December 31,		
	2018	2017	2016
<u>United States</u>			
Sales to external customers	\$ 627.3	\$ 602.7	\$ 538.4
Long-lived assets	38.6	43.2	49.2
<u>Europe</u>			
Sales to external customers	\$ 2,782.6	\$ 2,688.9	\$ 2,229.5
Long-lived assets	424.8	449.3	338.7
<u>Asia-Pacific</u>			
Sales to external customers	\$ 1,104.3	\$ 1,051.4	\$ 811.8
Long-lived assets	128.7	134.4	121.9
<u>Rest of World</u>			
Sales to external customers	\$ 108.6	\$ 105.1	\$ 136.9
Long-lived assets	—	0.1	0.2
<u>Total</u>			
Sales to external customers ⁽¹⁾	\$ 4,622.8	\$ 4,448.1	\$ 3,716.6
Long-lived assets ⁽²⁾	592.1	627.0	510.0

- (1) Sales to external customers in China represented approximately 6%, 7%, and 8% of the total for the years ended December 31, 2018, 2017, and 2016, respectively. Sales to external customers in Germany represented approximately 9%, 10%, and 11% of the total for the years ended December 31, 2018, 2017, and 2016, respectively. Sales to external customers in Hong Kong represented approximately 13%, 13%, and 10% of the total for the years ended December 31, 2018, 2017, and 2016, respectively.
- (2) Long-lived assets consist of property, plant and equipment, net. Long-lived assets in China represented approximately 13%, 13%, and 14% of the total as of December 31, 2018, 2017, and 2016, respectively. Long-lived assets in Germany represented approximately 43%, 45%, and 42% of the total as of December 31, 2018, 2017, and 2016, respectively. Long-lived assets in The Netherlands represented approximately 19%, 15%, and 14% of the total as of December 31, 2018, 2017, and 2016, respectively.

NOTE 20—RESTRUCTURING

Refer to the narrative below for discussion of the Company’s restructuring activities included in the tables below. Restructuring charges are included within “Selling, general and administrative expenses” in the consolidated statements of operations. The following table provides detail of the Company’s restructuring charges for the years ended December 31, 2018, 2017, and 2016:

	Year Ended December 31,			Cumulative Life-to-date Charges	Segment
	2018	2017	2016		
<i>Synthetic Rubber Restructuring</i>					
Employee termination benefits	\$ 5.5	\$ —	\$ —	\$ 5.5	
Synthetic Rubber Subtotal	\$ 5.5	\$ —	\$ —	\$ 5.5	Synthetic Rubber
<i>Terneuzen Compounding Restructuring</i>					
Asset impairment/accelerated depreciation	\$ 1.1	\$ 2.0	\$ —	\$ 3.1	
Employee termination benefits	0.5	0.5	—	1.0	
Contract terminations	(0.3)	0.6	—	0.3	
Decommissioning and other	0.6	0.2	0.6	1.4	
Terneuzen Subtotal	\$ 1.9	\$ 3.3	\$ 0.6	\$ 5.8	Performance Plastics
<i>Livorno Plant Restructuring</i>					
Asset impairment/accelerated depreciation ⁽¹⁾	\$ 0.4	\$ —	\$ 14.3	\$ 14.7	
Employee termination benefits	—	0.8	4.6	5.4	
Contract terminations	—	—	0.3	0.3	
Decommissioning and other	0.7	2.3	0.7	3.7	
Livorno Subtotal	\$ 1.1	\$ 3.1	\$ 19.9	\$ 24.1	Latex Binders
<i>Allyn's Point Restructuring</i>					
Asset impairment/accelerated depreciation	\$ —	\$ —	\$ 0.6	\$ 7.3	
Employee termination benefits	—	—	0.4	0.8	
Contract terminations	—	—	—	—	
Decommissioning and other	0.8	0.4	1.7	2.9	
Allyn's Point Subtotal	\$ 0.8	\$ 0.4	\$ 2.7	\$ 11.0	Latex Binders
Other Restructurings	—	1.2	0.7	—	Various
Total Restructuring Charges	\$ 9.3	\$ 8.0	\$ 23.9		

- (1) In connection with the Livorno plant restructuring announced in August 2016, described in more detail below, the Company assessed the long-lived assets at the facility for impairment during the year ended December 31, 2016. Based on this assessment, the Company recorded an impairment loss on these assets of \$13.7 million for the year ended December 31, 2016.

The following tables provides a rollforward of the liability balances associated with the Company’s restructuring activities as of December 31, 2018 and 2017. Employee termination benefit and contract termination charges are recorded within “Accrued expenses and other current liabilities” in the consolidated balance sheets. No individual restructuring activity had a material liability balance as of December 31, 2018 or 2017.

	Balance at		Expenses	Deductions ⁽¹⁾	Balance at	
	December 31, 2017				December 31, 2018	
Employee termination benefits	\$ 1.4	\$ 6.0	\$ (1.0)	\$ 6.4		
Contract terminations	0.6	(0.3)	—	0.3		
Decommissioning and other	—	2.1	(2.1)	—		
Total	\$ 2.0	\$ 7.8	\$ (3.1)	\$ 6.7		

	Balance at December 31, 2016	Expenses	Deductions ⁽¹⁾	Balance at December 31, 2017
Employee termination benefits	\$ 5.0	\$ 2.9	\$ (6.5)	\$ 1.4
Contract terminations	0.3	0.6	(0.3)	0.6
Decommissioning and other	—	3.2	(3.2)	—
Total	<u>\$ 5.3</u>	<u>\$ 6.7</u>	<u>\$ (10.0)</u>	<u>\$ 2.0</u>

(1) Includes primarily payments made against the existing accrual, as well as immaterial impacts of foreign currency remeasurement.

Synthetic Rubber Restructuring

In December 2018, the Company announced a reduction in force within its Synthetic Rubber segment in order to more closely align the cost structure of the Synthetic Rubber segment with the current tire market environment. The Company, however, remains committed to providing innovative technologies and solutions to serve the performance tire market. As a result of this restructuring action, during the fourth quarter of 2018, the Company incurred employee termination benefit charges of \$5.5 million, the majority of which are expected to be paid during the first half of 2019.

Terneuzen Compounding Restructuring

In March 2017, the Company announced plans to upgrade its production capability for compounded resins with the construction of a new state-of-the art compounding facility to replace its existing compounding facility in Terneuzen, The Netherlands. As of December 31, 2018, the new facility is substantially complete and operational, with ongoing customer qualifications continuing into early 2019. Substantive production at the existing facility is expected to cease during the first half of 2019, followed by decommissioning activities in 2019 and 2020. The Company expects to incur estimated decommissioning and other charges of approximately \$0.6 million throughout 2019, the majority of which are expected to be paid throughout 2019.

Livorno Plant Restructuring

In August 2016, the Company announced its plan to cease manufacturing activities at its latex binders manufacturing facility in Livorno, Italy. This was a result of declining demand for graphical paper and is expected to provide improved asset utilization, as well as cost reductions within the Company's European latex binders business. Production at the facility ceased in October 2016, followed by decommissioning activities which began in the fourth quarter of 2016. In June 2018, the Company entered into a preliminary agreement to sell the land where the former facility is located, subject to certain activities being completed prior to closing. The sale is considered probable to close within one year following the balance sheet date; therefore, as of December 31, 2018, the \$12.0 million of land is recorded as held-for-sale within "Other current assets" and a deferred tax liability associated with that land of \$2.9 million is recorded as held-for-sale within "Accrued expenses and other current liabilities" on the Company's consolidated balance sheets.

In conjunction with the execution of this agreement, the Company received \$1.3 million of the purchase price as a prepayment, which is recorded within "Accrued expenses and other current liabilities" on the consolidated balance sheet as of December 31, 2018. The Company expects to incur a limited amount of additional decommissioning costs associated with this plant shutdown through the closing date of the sale, which will be expensed as incurred.

Allyn's Point Plant Shutdown

In September 2015, the Company approved the plan to close its Allyn's Point latex binders manufacturing facility in Gales Ferry, Connecticut. This restructuring plan was a strategic business decision to improve the results of the overall Latex Binders segment due to continuing declines in the coated paper industry in North America. Production at the facility ceased at the end of 2015, followed by decommissioning activities which began in 2016. The Company expects to incur a limited amount of decommissioning costs associated with this plant shutdown in 2019, which will be expensed as incurred.

NOTE 21—ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

The components of accumulated other comprehensive income (loss), net of income taxes, consisted of:

Years Ended December 31, 2018, 2017, and 2016	Cumulative Translation Adjustments	Pension & Other Postretirement Benefit Plans, Net	Cash Flow Hedges, Net	Total
Balance at December 31, 2015	\$ (109.2)	\$ (46.2)	\$ 5.6	\$ (149.8)
Other comprehensive income (loss)	(9.8)	(20.6)	9.5	(20.9)
Amounts reclassified from AOCI to net income ⁽²⁾	—	3.3	(2.8)	0.5
Balance at December 31, 2016	\$ (119.0)	\$ (63.5)	\$ 12.3	\$ (170.2)
Other comprehensive income (loss)	24.5	31.8	(20.7)	35.6
Amounts reclassified from AOCI to net income ⁽²⁾	—	(13.3)	2.3	(11.0)
Balance at December 31, 2017	\$ (94.5)	\$ (45.0)	\$ (6.1)	\$ (145.6)
Other comprehensive income (loss) ⁽¹⁾	(17.3)	2.5	9.3	(5.5)
Amounts reclassified from AOCI to net income ⁽²⁾	—	3.1	5.7	8.8
Balance at December 31, 2018	\$ (111.8)	\$ (39.4)	\$ 8.9	\$ (142.3)

- (1) Amount includes less than \$0.1 million of stranded tax amounts reclassified from AOCI to Retained earnings in connection with the adoption of new accounting guidance. Refer to Note 2 for further information.
- (2) The following is a summary of amounts reclassified from AOCI to net income for the years ended December 31, 2018, 2017, and 2016:

AOCI Components	Amount Reclassified from AOCI			Statement of Operations Classification
	Year Ended December 31,			
	2018	2017	2016	
Cash flow hedging items				
Foreign exchange cash flow hedges	\$ 6.0	\$ 2.0	\$ (2.8)	Cost of sales
Interest rate swaps	(0.3)	0.3	—	Interest expense, net
Total before tax	5.7	2.3	(2.8)	
Tax effect	—	—	—	Provision for income taxes
Total, net of tax	\$ 5.7	\$ 2.3	\$ (2.8)	
Amortization of pension and other postretirement benefit plan items				
Curtailment and settlement (gain) loss	\$ 0.6	\$ (21.9)	\$ —	(a)
Prior service credit	(1.0)	(1.9)	(1.8)	(b)
Net actuarial loss	4.6	6.4	5.2	(b)
Acquisitions/divestitures	—	—	1.0	(c)
Total before tax	4.2	(17.4)	4.4	
Tax effect	(1.1)	4.1	(1.1)	Provision for income taxes
Total, net of tax	\$ 3.1	\$ (13.3)	\$ 3.3	

- (a) The amount for the year ended December 31, 2017 primarily relates to the curtailment of certain of the Company's pension plans in Europe. Refer to Note 16 for further information.
- (b) These AOCI components are included in the computation of net periodic benefit costs. Refer to Note 16 for further information.
- (c) This amount relates to the Company's divestiture of its Brazilian business during 2016. As of December 31, 2016, the Company had no residual AOCI balances recorded related to the Brazilian pension and postretirement medical plans.

NOTE 22—EARNINGS PER SHARE

Basic earnings per ordinary share (“basic EPS”) is computed by dividing net income available to ordinary shareholders by the weighted-average number of the Company’s ordinary shares outstanding for the applicable period. Diluted earnings per ordinary share (“diluted EPS”) is calculated using net income available to ordinary shareholders divided by diluted weighted-average ordinary shares outstanding during each period, which includes unvested RSUs, option awards, and PSUs. Diluted EPS considers the impact of potentially dilutive securities except in periods in which there is a loss because the inclusion of the potential ordinary shares would have an anti-dilutive effect.

The following table presents basic EPS and diluted EPS for the years ended December 31, 2018, 2017, and 2016.

(in millions, except per share data)	Year Ended December 31,		
	2018	2017	2016
Earnings:			
Net income	\$ 292.5	\$ 328.3	\$ 318.3
Shares:			
Weighted average ordinary shares outstanding	42.8	43.8	46.5
Dilutive effect of RSUs, option awards, and PSUs ⁽¹⁾	0.9	1.2	1.0
Diluted weighted average ordinary shares outstanding	43.7	45.0	47.5
Income per share:			
Income per share—basic	\$ 6.83	\$ 7.49	\$ 6.84
Income per share—diluted	\$ 6.70	\$ 7.30	\$ 6.70

- (1) Refer to Note 17 for discussion of RSUs, option awards, and PSUs granted to certain Company directors and employees. The number of anti-dilutive shares that have been excluded in the computation of diluted earnings per share were 0.4 million, 0.2 million, and zero for the years ended December 31, 2018, 2017, and 2016, respectively.

NOTE 23—SELECTED QUARTERLY FINANCIAL DATA (Unaudited)

(in millions, except per share data)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2018				
Net sales	\$ 1,121.6	\$ 1,236.6	\$ 1,199.7	\$ 1,065.0
Gross profit	175.2	162.7	131.6	59.3
Equity in earnings of unconsolidated affiliates	45.5	33.2	34.5	30.8
Operating income	156.3	134.2	106.1	17.7
Income before income taxes	145.2	118.7	93.9	6.4
Net income (loss)	120.3	98.3	74.7	(0.9)
Net income (loss) per share- basic	\$ 2.77	\$ 2.28	\$ 1.75	\$ (0.02)
Net income (loss) per share- diluted	\$ 2.71	\$ 2.24	\$ 1.72	\$ (0.02)
2017				
Net sales	\$ 1,104.5	\$ 1,145.2	\$ 1,096.6	\$ 1,101.8
Gross profit	199.0	126.5	148.5	166.3
Equity in earnings of unconsolidated affiliates	19.3	29.9	43.8	30.7
Operating income	158.7	101.7	127.3	137.3 ⁽³⁾
Income before income taxes	146.6 ⁽¹⁾	79.0	41.5 ⁽²⁾	144.0 ⁽³⁾
Net income	117.3 ⁽¹⁾	60.2	33.2 ⁽²⁾	117.6 ⁽³⁾⁽⁴⁾
Net income per share- basic	\$ 2.66 ⁽¹⁾	\$ 1.37	\$ 0.76 ⁽²⁾	\$ 2.69 ⁽³⁾⁽⁴⁾
Net income per share- diluted	\$ 2.59 ⁽¹⁾	\$ 1.34	\$ 0.74 ⁽²⁾	\$ 2.63 ⁽³⁾⁽⁴⁾

(1) Includes a gain on sale of \$9.3 million related to the sale of Sumika Styron Polycarbonate during the first quarter of 2017. Refer to Note 5 for further information.

(2) Includes a \$65.3 million loss on extinguishment of debt related to the third quarter of 2017 debt refinancing. Refer to Note 11 for further information.

(3) Includes a \$21.6 million gain related to the curtailment of certain of the Company's pension plans in Europe. Refer to Note 16 for further information.

(4) Includes an \$8.5 million benefit related to the recording of a previously unrecognized tax benefit, including interest and penalties, during the fourth quarter of 2017. Refer to Note 14 for further information.

TRINSEO S.A.
SCHEDULE II—FINANCIAL STATEMENT SCHEDULE
VALUATION AND QUALIFYING ACCOUNTS
(In Millions)

	<u>Balance at Beginning of the Period</u>	<u>Charged to Cost and Expense</u>	<u>Deduction from Reserves</u>	<u>Currency Translation Adjustments</u>	<u>Balance at End of the Period</u>
<u>Allowance for doubtful accounts:</u>					
Year ended December 31, 2018	\$ 5.6	\$ 0.6	\$ (0.4) ^(a)	\$ 0.3	\$ 6.1
Year ended December 31, 2017	3.1	1.5	(0.1) ^(a)	1.1	5.6
Year ended December 31, 2016	2.4	1.0	(0.1) ^(a)	(0.2)	3.1
<u>Tax valuation allowances:</u>					
Year ended December 31, 2018	\$ 149.6	\$ 19.5	\$ (0.9)	\$ (0.6)	\$ 167.6
Year ended December 31, 2017	112.6	35.6	—	1.4	149.6
Year ended December 31, 2016	85.1	27.7	—	(0.2)	112.6

(a) Amounts written off, net of recoveries.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Members and Board of Directors of
Americas Styrenics LLC
The Woodlands, Texas

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Americas Styrenics LLC and its subsidiaries (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of comprehensive income, members' equity, and cash flows for each of the three years in the period ended December 31, 2018, and the related notes (collectively referred to as the "financial statements"). In our opinion, the 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.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's 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 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 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 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ DELOITTE & TOUCHE LLP

Houston, Texas
February 13, 2019

We have served as the Company's auditor since 2008.

AMERICAS STYRENICS LLC**CONSOLIDATED BALANCE SHEETS
AS OF DECEMBER 31, 2018 AND 2017
(In millions of dollars)**

	2018	2017
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 31.3	\$ 66.2
Trade receivables (net of allowance of \$2.4 in 2018 and \$3.1 in 2017)	165.4	146.4
Related company receivables	5.5	6.3
Inventories	155.0	134.1
Other current assets	16.2	11.0
Total current assets	<u>373.4</u>	<u>364.0</u>
NET PROPERTY, PLANT AND EQUIPMENT	<u>227.4</u>	<u>224.1</u>
OTHER ASSETS:		
Deferred income taxes	1.3	0.8
Other assets	7.5	11.3
Total other assets	<u>8.8</u>	<u>12.1</u>
TOTAL	<u>\$ 609.6</u>	<u>\$ 600.2</u>
LIABILITIES AND MEMBERS' EQUITY		
CURRENT LIABILITIES:		
Trade payables	\$ 106.0	\$ 111.6
Related company payables	29.0	36.3
Other payables	9.3	17.3
Income taxes payable	7.0	6.3
Accrued liabilities	15.9	12.8
Total current liabilities	<u>167.2</u>	<u>184.3</u>
POSTRETIREMENT BENEFIT LIABILITY	<u>15.4</u>	<u>16.3</u>
OTHER LONG-TERM LIABILITIES	<u>2.0</u>	<u>1.6</u>
Total liabilities	<u>184.6</u>	<u>202.2</u>
COMMITMENTS AND CONTINGENCIES (Note 7)		
MEMBERS' EQUITY:		
Members' equity	425.8	400.6
Accumulated other comprehensive loss	(0.8)	(2.6)
Total members' equity	<u>425.0</u>	<u>398.0</u>
TOTAL	<u>\$ 609.6</u>	<u>\$ 600.2</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016
(In millions of dollars)**

	2018	2017	2016
Net sales	\$ 1,825.7	\$ 1,783.6	\$ 1,483.1
Cost of sales	1,515.5	1,542.8	1,204.3
Gross margin	310.2	240.8	278.8
Technical service and development	2.7	2.4	2.4
Selling and marketing	8.9	7.5	8.9
Administrative	29.4	27.6	30.3
Foreign exchange loss	1.2	0.4	0.6
Other operating expense - net	0.5	0.6	0.3
Operating income	267.5	202.3	236.3
Interest income	0.2	0.2	0.2
Other expense - net	(1.3)	(1.3)	(1.4)
Income before income taxes	266.4	201.2	235.1
Income tax expense	(6.2)	(6.8)	(6.3)
Net income	260.2	194.4	228.8
Other comprehensive loss:			
Net actuarial gain	1.1	1.0	0.7
Reclassification of actuarial loss to income	—	—	0.1
Reclassification of prior-service cost to income	0.7	0.7	0.7
Net other comprehensive income — defined benefit plans	1.8	1.7	1.5
Total comprehensive income	<u>\$ 262.0</u>	<u>\$ 196.1</u>	<u>\$ 230.3</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC

**CONSOLIDATED STATEMENTS OF MEMBERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016
(In millions of dollars)**

	Members' Equity	Accumulated Other Comprehensive Loss	Total
BALANCE—January 1, 2016	\$ 477.4	\$ (5.8)	\$ 471.6
Distribution to Members	(260.0)	—	(260.0)
Defined benefit plans—other comprehensive income	—	1.5	1.5
Net income	228.8	—	228.8
BALANCE—December 31, 2016	446.2	(4.3)	441.9
Distribution to Members	(240.0)	—	(240.0)
Defined benefit plans—other comprehensive income	—	1.7	1.7
Net income	194.4	—	194.4
BALANCE—December 31, 2017	400.6	(2.6)	398.0
Distribution to Members	(235.0)	—	(235.0)
Defined benefit plans—other comprehensive income	—	1.8	1.8
Net income	260.2	—	260.2
BALANCE—December 31, 2018	<u>\$ 425.8</u>	<u>\$ (0.8)</u>	<u>\$ 425.0</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC

CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016
(In millions of dollars)

	<u>2018</u>	<u>2017</u>	<u>2016</u>
OPERATING ACTIVITIES:			
Net income	\$ 260.2	\$ 194.4	\$ 228.8
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	43.0	42.4	41.0
Net gain on disposal of assets	0.2	0.1	—
Deferred income taxes	(0.5)	1.0	1.0
Allowance for doubtful accounts	(0.7)	0.4	(1.2)
Changes in assets and liabilities that provided (used) cash:			
Trade receivables	(18.3)	(26.8)	9.3
Related company receivables	0.8	5.0	(3.1)
Inventories	(20.8)	12.6	(12.3)
Trade payables	(5.6)	42.5	(8.1)
Related company payables	(7.3)	(0.2)	4.9
Other assets and liabilities	(14.3)	0.9	5.1
Net cash provided by operating activities	<u>236.7</u>	<u>272.3</u>	<u>265.4</u>
INVESTING ACTIVITIES:			
Capital expenditures	(36.8)	(29.2)	(22.5)
Disposal of assets	0.2	0.2	0.1
Net cash used in investing activities	<u>(36.6)</u>	<u>(29.0)</u>	<u>(22.4)</u>
FINANCING ACTIVITY—Distribution to Members			
Cash used in financing activity	<u>(235.0)</u>	<u>(240.0)</u>	<u>(260.0)</u>
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS			
	(34.9)	3.3	(17.0)
CASH AND CASH EQUIVALENTS—Beginning of year			
	66.2	62.9	79.9
CASH AND CASH EQUIVALENTS—End of year			
	<u>\$ 31.3</u>	<u>\$ 66.2</u>	<u>\$ 62.9</u>
SUPPLEMENTAL CASH FLOW INFORMATION:			
Noncash investing activity—capital expenditures payable	\$ 10.6	\$ 4.3	\$ 2.1
Cash paid for income taxes	<u>\$ 4.0</u>	<u>\$ 4.5</u>	<u>\$ 4.7</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
AS OF DECEMBER 31, 2018 AND 2017, AND
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016
(Amounts in millions of dollars)

1. THE COMPANY

Americas Styrenics LLC is a joint venture between Chevron Phillips Chemical Company LP (“CPChem”) and Trinseo LLC. CPChem and Trinseo LLC are referred to herein as the “Members.” The Members share equally in the profits and losses of the Company.

2. NATURE OF OPERATIONS AND SIGNIFICANT ACCOUNTING POLICIES

Principles of Consolidation—The consolidated financial statements include the accounts of the Company and its subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation. The Company’s subsidiaries and partnership interests are as follows: Americas Styrenics Colombia Ltda, Americas Styrenics de Mexico, de R.L. de C.V., Americas Styrenics Canada Inc., and Americas Styrenics Industria e Comercio de Poliestireno Ltda (Brazil).

Nature of Operations—The Company was formed as a joint venture and focuses on styrenics (styrene and polystyrene) production, sales, and distribution in North America and South America.

Cash and Cash Equivalents—Included in cash and cash equivalents, from time to time, are short-term interest-bearing investments on deposit with financial institutions. There was \$0.2 and \$17.6 of interest-bearing investments at December 31, 2018 and 2017, respectively.

Trade Receivables—The Company’s United States’ customers are primarily in the packaging industry, but also consist of other chemical and plastics manufacturers. The Company’s foreign customers reside primarily in Argentina, Brazil, Chile, Colombia, and Mexico. The Company evaluates the creditworthiness of customers and in certain circumstances, may require letters of credit to support product sales. The Company maintains an allowance for doubtful accounts based on anticipated collection of its accounts receivable.

Inventories—Inventories at December 31, 2018 and 2017, were as follows:

	2018	2017
Finished goods	\$ 57.4	\$ 55.4
Work in process	53.5	35.8
Raw materials	24.7	30.7
Supplies	19.4	12.2
Total inventories	<u>\$ 155.0</u>	<u>\$ 134.1</u>

Inventories are stated at the lower of cost or net realizable value. Finished products and work-in-process inventories include material, labor, and manufacturing overhead costs. US inventories are accounted for on a last-in, first-out (LIFO) basis. The reserves reducing inventories from a first-in, first-out (FIFO) basis to a LIFO basis amounted to \$26.5 at December 31, 2018, and \$67.2 at December 31, 2017. In 2017, the liquidation of certain of the Company’s LIFO inventory layers increased operating income by \$6.3. Foreign inventories are accounted for on a FIFO basis.

Property, Plant, and Equipment—Upon formation of the Company, property, plant, and equipment were recorded at the net book value of the original contributing members (CPChem and The Dow Chemical Company, or “Dow”). Current additions of property, plant, and equipment are recorded at cost. The Company provides for depreciation using the straight-line method at rates based on the estimated service lives of the various classes of assets (3–45 years). Expenditures for repairs and maintenance, including major maintenance commonly known as

turnarounds, are expensed as incurred. Components of property, plant, and equipment at December 31, 2018 and 2017, are as follows:

	<u>2018</u>	<u>2017</u>
Land and waterway improvements	\$ 12.7	\$ 12.7
Buildings	32.3	32.2
Transportation and construction equipment	64.5	64.6
Machinery and other equipment	888.7	880.4
Utilities and supply lines/other property	14.1	14.4
Construction in progress	42.8	19.5
Total property, plant, and equipment	<u>1,055.1</u>	<u>1,023.8</u>
Less accumulated depreciation	<u>(827.7)</u>	<u>(799.7)</u>
Net property, plant, and equipment	<u>\$ 227.4</u>	<u>\$ 224.1</u>

Income Taxes—The Company is treated as a flow-through partnership for U.S. federal income tax purposes and for most state income tax purposes. As such, the Company itself is not liable for U.S. federal income taxes. The Company files a U.S. partnership return which reflects each Member’s share of income or loss. The Members are responsible for reporting and paying any tax on their respective income tax returns. The Company is directly liable for certain state income and franchise taxes, foreign withholding, and foreign direct or indirect taxes.

The Company has foreign subsidiaries in Canada, Colombia, and Mexico. All foreign entities except the Canadian subsidiary have elected to be treated as disregarded foreign branches of the Company for U.S. purposes. As such, the income or loss of the respective disregarded entities will be included in the U.S. federal partnership return. The foreign subsidiaries are responsible for all applicable taxes on foreign operations, and these taxes have been provided for in the consolidated financial statements.

Accounting standards establish a “more-likely-than-not” recognition threshold that must be met before a tax benefit can be recognized in the financial statements. If a tax deduction is taken on a tax return, but does not meet the more-likely-than-not recognition threshold, an increase in income tax liability, above what is payable on the tax return, is required to be recorded. An uncertain tax position may also result in an asset which means that, after settlement, taxable income could be less than what was reported on the original tax return. The Company has not recorded any liabilities for uncertain tax positions.

Impairment of Long-Lived Assets—The Company evaluates the carrying value of long-lived assets to be held and used, including intangible assets, when events or circumstances warrant such a review. The carrying value of a long-lived asset to be held and used is considered impaired when the anticipated, separately identifiable undiscounted cash flows from such an asset are less than the carrying value of the asset. In that event, a loss is recognized based on the amount by which the carrying value exceeds the fair value of the long-lived asset. Fair value is determined primarily using the anticipated cash flows discounted at a rate commensurate with the risk involved. No impairment was recorded in 2018, 2017, or 2016.

Asset Retirement Obligation—The Company assesses whether it has legal obligations associated with the retirement of tangible long-lived assets that result from the acquisition, construction, or development and/or the normal operation of a long-lived asset, including any legal obligations that require disposal of a replaced part that is a component of a tangible long-lived asset. At December 31, 2018 and 2017, the Company had no significant asset retirement obligations.

Insurance —The Company maintains insurance for automobile risks, general liability, including products, directors, officers, workers’ compensation, and property. This insurance is placed with highly rated insurance carriers. The limits and deductibles are consistent for a company of this size and structure.

Foreign Currency—The functional currency for the Company’s foreign operations is the U.S. dollar, resulting in no currency translation adjustments. Foreign currency gains and losses are reflected in operations.

Use of Estimates—The preparation of the consolidated financial statements in conformity with accounting principles generally accepted in the United States of America (U.S. GAAP) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Fair Value of Financial Instruments— The carrying amounts reported in the balance sheets of cash and cash equivalents, accounts receivable and accounts payable approximate fair value because of the immediate or short-term maturity of these financial instruments.

Revenue Recognition—The Company recognizes revenue when there is evidence of a sales agreement, the delivery of goods has occurred, the sales price is fixed or determinable, and the collectability of revenue is reasonably assured. Revenue includes the selling price of the product and all related delivery charges paid by the customer. Freight costs and any directly related associated costs of transporting finished product to customers are recorded as “cost of sales.” Revenue is reduced at the time of sale for estimated customer-related incentives (mostly volume-related incentives).

Subsequent Events— The Company has evaluated subsequent events through February 13, 2019, the date the financial statements were available to be issued.

3. RECENT ACCOUNTING GUIDANCE

Accounting Pronouncements Adopted During 2018

In March 2017, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2017-07, *Compensation—Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost*. The amendments in this ASU require that an employer report the service cost component of net periodic pension cost and net periodic postretirement benefit cost in the same line items as other compensation costs arising from services rendered by the pertinent employees during the period. The other components of net benefit cost are required to be presented in the statements of comprehensive income separately from the service cost component and outside of income from operations. The amendments in this ASU also allow only the service cost component to be eligible for capitalization when applicable (for example, as a cost of internally manufactured inventory or a self-constructed asset). The amendments in this ASU are effective for fiscal years beginning after December 15, 2017. The amendments in this ASU should be applied retrospectively for the presentation of the service cost component and the other components of net periodic pension cost and net periodic postretirement benefit cost in the income statement and prospectively, on and after the effective date, for the capitalization of the service cost component of net periodic pension cost and net periodic postretirement benefit cost in assets. We adopted the amendments in this ASU effective January 1, 2018, which resulted in the Company reclassifying \$1.3 and \$1.4 of net periodic benefit cost related to non-service cost components for the years ended December 31, 2017 and 2016, respectively from “Cost of sales” and “Selling, general and administrative expenses,” collectively, to “Other expense - net” within the consolidated statements of operations.

Accounting Pronouncements Pending Adoption in Future Periods

In 2016, the FASB issued ASUs which amended ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*. ASU 2014-09, as amended, provides a comprehensive new revenue recognition model that requires revenue to be recognized in a manner that depicts the transfer of goods or services to a customer at an amount that reflects the consideration expected to be received in exchange for those goods or services. ASU 2014-09, as amended, is effective for fiscal years beginning after December 15, 2018 and permits early adoption by nonpublic entities. The ASU, as amended, permits retrospective application using either of the following methodologies: (i) restatement of each prior reporting period presented or (ii) recognition of a cumulative-effect adjustment as of the date of initial application. We are complete with our analysis of the impact of the ASU and other than additional required disclosures, we do not expect the adoption of the amendments in the ASU to have a significant impact on

our consolidated financial statements. The standard will be adopted in our fiscal year 2019, and we have elected the modified retrospective approach as the transition method.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)*. This ASU will increase transparency and comparability among entities by recognizing lease assets and lease liabilities on the balance sheet and disclosing key information about leasing arrangements. This ASU will require lessees to recognize in the statement of financial position a liability to make lease payments (the lease liability) and a right-of-use asset representing their right to use the underlying asset for the lease term. ASU No. 2016-02 is effective for fiscal years beginning after December 15, 2019. Early adoption is permitted. Reporting entities are required to recognize and measure leases under these amendments at the beginning of the earliest period presented using a modified retrospective approach. The Company is currently evaluating the impact of adopting ASU No. 2016-02.

In August 2018, the FASB issued ASU No. 2018-14, *Compensation—Retirement Benefits—Defined Benefit Plans—General (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Defined Benefit Plans*. The amendments in this ASU modify certain disclosure requirements for employers that sponsor other postretirement plans by removing disclosures that no longer are considered cost beneficial, clarifying the specific requirements of disclosures and adding disclosure requirements identified as relevant. The amendments in this ASU are effective for fiscal years ending after December 15, 2020 and should be applied on a retrospective basis to all periods presented. Early adoption is permitted. We do not expect the adoption of the amendments in this ASU to have a significant impact on our consolidated financial statements.

In August 2018, the FASB issued ASU No. 2018-15, *Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*. The amendments in this ASU align the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal-use software license). The amendments in this ASU are effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. Early adoption is permitted in any interim period after the issuance of this ASU. We do not expect the adoption of the amendments in this ASU to have a significant impact on our consolidated financial statements.

4. REVOLVING CREDIT FACILITY

The Company’s unsecured \$50.0 revolving credit facility with Comerica Bank terminates in August 2020. Interest on amounts drawn under the facility equal, at the Company’s option, a margin over either the prime rate or the London InterBank Offered Rate-based rate (plus 125 basis points as of December 31, 2018) as defined in the credit agreement. There were no outstanding borrowings at December 31, 2018 or 2017.

5. INCOME TAXES

The components of income before taxes for the years ended December 31, 2018, 2017, and 2016, are as follows:

	2018	2017	2016
Domestic	\$ 254.9	\$ 188.2	\$ 215.0
Foreign	11.5	13.0	20.1
Total income before taxes	<u>\$ 266.4</u>	<u>\$ 201.2</u>	<u>\$ 235.1</u>

The components of income tax expense for the years ended December 31, 2018, 2017, and 2016, are as follows:

	2018	2017	2016
State—current	\$ 0.2	\$ 0.2	\$ 0.2
Foreign—current	6.2	5.6	5.1
Foreign—deferred	(0.2)	1.0	1.0
Total income tax expense	<u>\$ 6.2</u>	<u>\$ 6.8</u>	<u>\$ 6.3</u>

The components of deferred income tax assets and liabilities at December 31, 2018 and 2017, are as follows:

	2018		2017	
	Deferred Tax Assets	Deferred Tax Liabilities	Deferred Tax Assets	Deferred Tax Liabilities
Inventory	\$ 1.1	\$ —	\$ 0.7	\$ —
Fixed assets	—	(0.4)	—	—
Other temporary differences	0.2	—	0.1	—
Total Deferred tax	<u>\$ 1.3</u>	<u>\$ (0.4)</u>	<u>\$ 0.8</u>	<u>\$ —</u>

Undistributed earnings of foreign subsidiaries are not deemed to be permanently reinvested. Currently, undistributed earnings exist in the Canadian, Colombian, and Mexican subsidiaries. Future repatriation of earnings will not be subject to tax by the Company (but rather its Members); however, foreign withholding taxes may apply.

6. EMPLOYEE BENEFIT PLANS

The Company provides reimbursement of medical and dental costs to retired employees. The Company's plan, the Retiree Reimbursement Account (RRA), is an unfunded plan and is calculated at the time of the employee's retirement based on years of credited service. The Company has the ability to change the benefits at any time. All employees are eligible, except for former Dow employees who choose to participate in The Dow Chemical Company Retiree Medical Care Program upon retirement. The Company uses a December 31 measurement date for the RRA.

At each of December 31, 2018 and 2017, the RRA had benefit obligations in the amount of \$16.4 and \$17.2, respectively. The Company contributed and paid benefits in the amount of \$0.8 in 2018, \$0.7 in 2017, and \$0.5 in 2016.

At December 31, 2018 and 2017, amounts recognized in the consolidated balance sheets consist of:

	2018	2017
Current liabilities	\$ (1.0)	\$ (0.9)
Noncurrent liabilities	(15.4)	(16.3)
Total	<u>\$ (16.4)</u>	<u>\$ (17.2)</u>

At December 31, 2018 and 2017, amounts recognized in accumulated other comprehensive loss were as follows:

	2018	2017
Net actuarial (gain) loss	\$ (0.5)	\$ 0.6
Prior service cost	1.3	2.0
Total	<u>\$ 0.8</u>	<u>\$ 2.6</u>

In 2019, \$0.7 of estimated prior service cost will be amortized from accumulated other comprehensive loss into net periodic benefit cost.

Net periodic benefit cost and components of other amounts recognized in other comprehensive (income) loss were as follows:

	<u>2018</u>	<u>2017</u>	<u>2016</u>
Service Cost	\$ 0.5	\$ 0.5	\$ 0.6
Interest Cost	0.6	0.6	0.7
Amortization of prior service cost	0.7	0.7	0.7
Net periodic postretirement benefit cost	<u>\$ 1.8</u>	<u>\$ 1.8</u>	<u>\$ 2.0</u>
Other changes in benefit obligations recognized in other comprehensive loss:			
Net actuarial gain	(1.1)	(1.0)	(0.7)
Recognized actuarial loss	—	—	(0.1)
Recognized prior-service cost	(0.7)	(0.7)	(0.7)
Total recognized in other comprehensive income	<u>(1.8)</u>	<u>(1.7)</u>	<u>(1.5)</u>
Total recognized in net periodic benefit cost and other comprehensive loss	<u>\$ —</u>	<u>\$ 0.1</u>	<u>\$ 0.5</u>

Actuarial assumptions used to determine benefit obligations and net periodic benefit cost were as follows:

	<u>2018</u>	<u>2017</u>	<u>2016</u>
Discount rate used to determine net periodic benefit cost	3.49 %	3.82 %	3.76 %
Discount rate used to determine benefit obligation at December 31	4.28 %	3.49 %	N/A
	<u>2018</u>	<u>2017</u>	<u>2016</u>
Health Care Cost Assumptions			
Initial health care cost trend rate	7.30 %	7.65 %	8.00 %
Ultimate health care cost trend rate	4.50 %	4.50 %	4.50 %
Year ultimate reached	2027	2027	2027

Estimated health care cost trend rates can have a significant effect on the amounts reported for the RRA.

The Company expects to contribute approximately \$1.0 to its RRA plan in 2019.

At December 31, 2018, the estimated future benefit payments, reflecting expected future service, as appropriate, are expected to be paid as follows:

2019	\$ 1.1
2020	1.2
2021	1.4
2022	1.6
2023	1.8
2024 through 2028	9.2
Total	<u>\$ 16.3</u>

The Company also has a defined contribution employee savings plan and made discretionary contributions of \$3.8 in 2018, \$3.7 in 2017, and \$3.5 in 2016.

7. COMMITMENTS AND CONTINGENCIES

Commitments

The Company and its subsidiaries maintain outside service agreements and lease buildings, ground and easements, rail cars, and other vehicles under noncancelable operating leases, which expire on varying dates between 2019 and 2028.

Total future minimum annual rentals in effect at December 31, 2018, for noncancelable operating leases are as follows:

Years Ending December 31	
2019	\$ 10.7
2020	7.4
2021	5.8
2022	3.6
2023	2.6
2024 and thereafter	7.4
Total	<u>\$ 37.5</u>

Expense for total rental and long-term commitments was \$13.6, \$12.2, and \$9.3, for the years ended December 31, 2018, 2017, and 2016, respectively.

The Company has entered into long-term sales commitments and purchase agreements with several of its key suppliers, including its Members (see Note 8). The commitment contracts are for one- to three-year periods. Because the pricing and supply fluctuates with the commodity market, a definitive dollar value cannot be determined.

In addition, the Company has purchase commitments of \$15.8 mainly related to certain feedstock, utility, and third party service costs. The Company does not consider purchase orders to be firm commitments. If the Company chooses to cancel a purchase order, it may be obligated to reimburse the vendor for unrecoverable outlays incurred prior to cancellation under certain circumstances.

Contingencies

The Company is a party to various legal proceedings and claims incidental to the normal conduct of its business. Management believes that the ultimate disposition of these matters will not have a material adverse effect on the Company's consolidated balance sheets or statements of comprehensive income.

Pursuant to the contribution agreement, all preexisting environmental matters have been outlined for each site and any contingencies are the responsibility of the original contributing members. All subsequent obligations are the liability of the Company. No environmental reserve was recorded as of December 31, 2018 and 2017.

8. RELATED-PARTY TRANSACTIONS

The Company entered into various supply and purchase agreements with the Members and their affiliated companies. These agreements include sales and purchases of energy, raw materials, and services. A summary of transactions for the years ended December 31, 2018, 2017, and 2016, is as follows:

	<u>2018</u>	<u>2017</u>	<u>2016</u>
Net sales	\$ 101.4	\$ 82.9	\$ 134.4
Purchases	423.8	386.1	384.0

Balances receivable and payable to the Members are presented in the consolidated balance sheets as related company receivables and payables.



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