

2019

ANNUAL REPORT



TRINSEO[™]

Materials. Powering Ideas.



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.

Corporate Message

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 everyday — products that are intrinsic to how we live our lives — across a wide range of end-markets, including automotive, consumer electronics, appliances, medical devices, 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.



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.

Worldwide Manufacturing Assets



Fast Facts

- \$3.8 Billion (USD) in revenue (2019)
- Approximately 2,700 employees in 25 countries

Global Footprint

- 17 Manufacturing sites
- 10 Research and development facilities

Letter from
the

CEO



When I joined Trinseo early in 2019, I was impressed with the Company's reputation for safety, its ability to generate cash and the strong balance sheet. With my first year at the company complete, I am even more excited about our prospects for the future. 2019 was a year in which Trinseo observed a continuation of the challenging macroeconomic conditions that were present at the end of 2018. Slower growth in China and global uncertainty stemming from trade conflicts and geopolitical events such as Brexit, caused headwinds most of the year - not only for Trinseo but for the chemicals industry as a whole. These economic hurdles led to a decrease in year-over-year profitability. However, despite these challenges, I'm proud of the actions we have taken to better position Trinseo to grow and provide steady results in future years.

One of the actions taken was implementing a Business Excellence process, which is a framework for optimizing business processes, driving productivity and improving efficiencies. As part of this, we established four Business Excellence committees which focus on: Commercial, Supply Chain, Operational, and Functional Excellence. The Business Excellence process is already yielding positive results, such as higher earnings in Polystyrene from greater focus on the customer portfolio and increased cash generation via inventory reductions from Supply Chain initiatives. Our successes in Business Excellence is the foundation for accelerating growth in applications that offer higher earnings margins and less cyclicality, such as Coatings, Adhesives, Sealants, and Elastomers (CASE) in Latex Binders, S-SBR in Synthetic Rubber for high-performance tires, and Engineered Materials in Performance Plastics.

We also reorganized our executive leadership team in 2019 to reflect a global functional structure. This new structure has increased organizational effectiveness through business process optimization. 2019 was also a pivotal year in advancing our systems independence from Dow, which we plan to largely achieve in the first half of 2020. The control of our systems and business processes is now a rich area of opportunity for productivity and optimization in the future.

Safety has always been one of the hallmarks of Trinseo and 2019 was no exception. Our safety goal is always zero incidents, so at the end of each year we recognize those locations with zero injuries, zero spills and zero process safety incidents with our Triple Zero Award. I'm happy to say that 24 of our manufacturing and R&D sites, which is more than half of our locations, achieved Triple Zero during 2019. With that kind of performance, it's unsurprising that we ranked in the top decile of our industry, with an OSHA-recordable rate of 0.11 globally, including contractors.

Our dedication to corporate social responsibility and sustainability, such as our work in developing recycled polystyrene in packaging, resulted in Newsweek naming Trinseo in its list of "Most Responsible Companies in America."

From a financial perspective, it's important to note that, even in a weaker economic environment, Trinseo continues to demonstrate positive cash flow. Last year, we generated \$322 million of cash from operating activities, which contributed to a Free Cash Flow¹ of \$212 million. We also returned cash to our shareholders via our dividend of \$66 million and by repurchasing 2.8 million Trinseo shares worth \$120 million.

One thing that is certain is that macroeconomic conditions will always change and that the landscape of our industry will change with it. The coronavirus covid-19 pandemic reminds us that much is outside our control. But with the foundation we have put in place of a functionally aligned company with a strong balance sheet and a focus on Business Excellence, I'm confident in our ability to provide solid earnings with strong cash generation while capitalizing on our growth opportunities in sustainability and solutions-oriented materials.



Frank Bozich
CEO & President
April 2020

¹ See pages 4-5 for a reconciliation of US GAAP to non-GAAP measures. For a definition of 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 44-47 of this Annual Report.

Executive Leadership Team



Frank A. Bozich
President and Chief Executive Officer



David Stasse
Executive Vice President and Chief Financial Officer



Angelo Chaclas
Senior Vice President and Chief Legal Officer



Alice Heezen
Senior Vice President, Human Resources



Rainer Schewe
Vice President, Supply Chain Services



Tim Thomas
Vice President, Manufacturing and Operational Excellence

Board of Directors



Stephen M. Zide
Chairman, Trinseo; Director, Sensata Technologies Holding PLC



Christopher D. Pappas
Director, FirstEnergy Corp.; Director, Univar, Inc.; Former President & CEO, Trinseo



Frank A. Bozich
President & CEO, Trinseo



Jeffrey J. Cote
Chief Executive Officer & President, Sensata Technologies Holding PLC



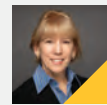
Pierre-Marie De Leener
Former Chairman, Braas Monier Building Group S.A.



Mark Tomkins
Director, ServiceMaster; Director, W.R. Grace & Co.



Donald T. Misheff
Director, TimkenSteel Corporation; Director, FirstEnergy Corp.



Sandra Beach Lin
Director, American Electric Power; Director, Interface Biologics; Director, PolyOne Corporation; Former President & CEO, Calisolar, Inc.



Philip R. Martens
Chairman, Graphic Packaging Holding Company; Former President & CEO, Novelis, Inc.



Joseph Alvarado
Director, Kennametal Inc.; Director, Arcosa; Director, PNC Financial Services Group; Former Chairman & CEO, Commercial Metals Company



K'Lynne Johnson
Director, FMC Corporation; Former Chairwoman, President & CEO, Elevance Renewable Sciences Inc.



Henri Steinmetz
Former CEO, Ceramtec Group; Former Executive Director & CEO, Ruetgers N.V.; Former President, Sulzer Metco

Financial Statements

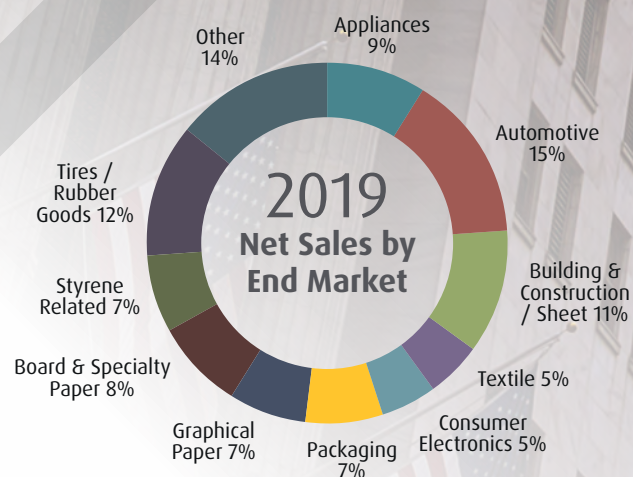
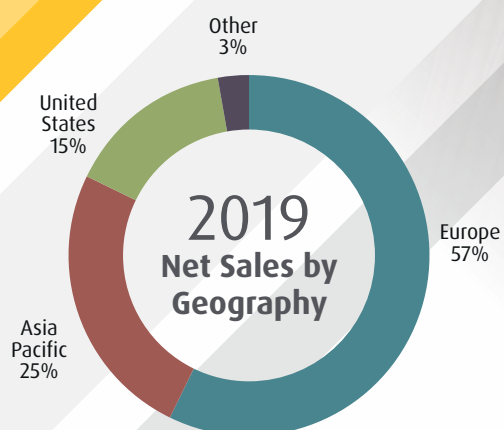
\$ (USD) Millions Unless Noted	2019	2018	2017
Sales Volume (kt)	2,288	2,382	2,408
Net Sales	3,776	4,623	4,448
Net Income	92	292	328
Wtd Avg Shares - diluted (MM)	41	44	45
EPS - diluted (\$)	2.26	6.70	7.30
Adj EBITDA ²	352	573	642
Adj Net Income ³	127	317	366
Adj EPS (\$) ³	3.13	7.25	8.13
Cash provided by operating activities	322	367	391
Free Cash Flow ⁴	212	245	244

¹ See page 5 of this presentation 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 44-45 of this Annual Report.

³ For a definition of Adjusted Net Income and Adjusted EPS, as well as description of the reconciling items and the usefulness and purpose of these measures, please see Trinseo's 2019 fourth quarter earnings release, furnished as Exhibit 99.1 of the Company's Form 8-K filed on February 6, 2020.

⁴ For a definition of Free Cash Flow, as well as description of the usefulness and purpose of these measures, please see page 47 of this Annual Report.



US GAAP to non-GAAP Reconciliation

(in \$millions, unless noted)	2019	2018	2017
Net Income	92.0	292.5	328.3
Interest expense, net	39.3	46.4	70.1
Provision for income taxes	12.6	71.8	82.8
Depreciation and amortization	136.0	130.2	110.6
EBITDA	279.9	540.9	591.8
Loss on extinguishment of long-term debt	-	0.2	65.3
Other items	55.4	22.8	(19.9)
Restructuring and other charges	18.1	8.2	6.0
Net gain on disposition of businesses and assets	(0.7)	(1.0)	(9.7)
Acquisition transaction and integration net costs (benefits)	(0.9)	0.6	4.7
Asset impairment charges or write-offs	-	1.5	4.3
Adjusted EBITDA	351.8	573.2	642.5
<u>Adjusted EBITDA to Adjusted Net Income</u>			
Adjusted EBITDA	351.8	573.2	642.5
Interest expense, net	39.3	46.4	70.1
Provision for income taxes - Adjusted	52.8	81.0	98.2
Depreciation and amortization - Adjusted	132.4	129.1	108.6
Adjusted Net Income	127.3	316.7	365.6
Wtd Avg Shares - Diluted (000)	40,710	43,666	44,973
Adjusted EPS - Diluted (\$)	3.13	7.25	8.13
<u>Adjustments by Statement of Operations Caption</u>			
Loss on extinguishment of long-term debt	-	0.2	65.3
Cost of sales	0.4	1.8	(16.0)
Selling, general and administrative expenses	74.7	30.8	9.9
Other income, net	(3.2)	(0.5)	(8.5)
Total EBITDA Adjustments	71.9	32.3	50.7
<u>Free Cash Flow Reconciliation</u>			
Cash provided by operating activities	322.5	366.5	391.3
Capital expenditures	(110.1)	(121.4)	(147.4)
Free Cash Flow	212.4	245.1	243.9

2019 Trinseo News Highlights

January

Trinseo Releases Impressive
EH&S Performance Results for
2018 with an OSHA
Recordable Injury Rate of 0.21



February

Trinseo Improves its 2018 CDP and
Supplier Engagement Ratings to a
"B-"; Ranks in the Top 25% of
Chemical Sector Companies



March

Frank A. Bozich Officially
Takes the Helm as President
and CEO of Trinseo



April

Styrenics Circular Solutions
Elects Trinseo's Global Business
Director for Polystyrene Nicolas
Joly as the Joint Industry
Initiative's First President



June

Trinseo Launches its New
Food Contact Grade ABS
Resins for Kitchenware and
Appliances at Chinaplas



May

Trinseo Indonesia Receives Best
Supplier Award 2018 from Panasonic for
the Fifth Consecutive Year



July

Trinseo Opens New Compounding
Plant at Hoek Site in the
Netherlands Providing an Extra Boost
to R&D and Sustainability Programs



August

Trinseo Named 2019
Michigan Governor's Service
Award Winner in the Corporate
Community Leader Category



September

Trinseo Leaders Sign Circular
Plastics Alliance Declaration in
Brussels with More than 100
Partners Within the Value Chain



October

Trinseo Completes Acquisition of
Latex Binders Assets and
Rheinmuenster Site
in Germany



November

Former CEO and Current Board Member
Christopher D. Pappas to Receive Prestigious
2020 SCI Chemical Industry Medal



December

Trinseo Named One of
America's Most Responsible
Companies by Newsweek;
Ranks Fifth in Materials Industry



Sustainability and CSR Highlights



Newsweek partnered with global data research firm Statista Inc. to publish its first ranking of America's Most Responsible Companies. The analysis was carried out in a 4-phase process, with a pool of more than 2,000 companies that were screened by different criteria. Trinseo was named #5 in the Materials industry and #80 overall.

Operation Clean Sweep (OCS) is an international program designed to prevent resin pellet, flake, and powder loss and help keep this material out of the marine environment. The OCS initiative is operated by the American Chemistry Council (ACC).

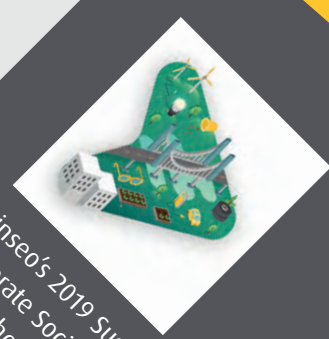


Styrenics Circular Solutions (SCS), a joint industry initiative to increase the circularity of styrenics. Trinseo is a founding member of SCS and Global Business Director for Polystyrene. Nicolas Joly was elected President in April 2019.



The EcoVadis Corporate Social Responsibility (CSR) Rating is regarded as the world's most trusted business sustainability rating agency assessing more than 60,000 companies in 198 industries and 155 countries. Trinseo was awarded a Silver Medal from the EcoVadis CSR Rating assessment.

Trinseo Volunteer Days is an annual monthlong community service initiative that brings together hundreds of employees from around the world to support their communities. In 2019, there were 814 volunteers from 24 locations contributing a record 3,545 hours of service.



Trinseo's 2019 Sustainability and Corporate Social Responsibility (CSR) Report showcases how the Company is meeting or exceeding the highest standards of safety and environmental performance, while developing innovative solutions that benefit our world. It was prepared in accordance with the Global Reporting Initiative (GRI) Standards Core Option.

**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, 2019

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>Trading Symbol</u>	<u>Name of Each Exchange on Which Registered</u>
Ordinary Shares, par value \$0.01 per share	TSE	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 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"/>	Emerging growth company	<input type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting 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 24, 2020, there were 38,320,508 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, 2019 was approximately \$1,691,486,980.

Documents Incorporated by Reference

Portions of the registrant's definitive proxy statement for the 2019 annual general meeting of shareholders to be filed with the Securities and Exchange Commission pursuant to Regulation 14A of the Securities Exchange Act of 1934 are incorporated by reference into Part III of this report.

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,” “estimate,” “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;
- escalations in global trade conflicts, including the imposition of tariffs;
- conditions in the global economy and capital markets;
- our migration from services and technologies provided by The Dow Chemical Company and the impact of migration on our ongoing operations;
- 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;
- the stability of our joint ventures;
- our continued reliance on our relationship with The Dow Chemical Company for certain services and supply of raw materials;
- regulatory and statutory changes applicable to our raw materials and products;
- 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;
- our ability to successfully generate cost savings through restructuring and business excellence initiatives;
- 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. Accordingly, forward-looking statements should not be relied upon as a prediction of 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” and in other portions of 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. Should unknown risks or uncertainties materialize or underlying assumptions prove inaccurate, actual results could differ materially from past results and/or those anticipated, estimated or projected. 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, 2019

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. Beginning in 2020, the Company expects future distributions to be paid from allocation of statutory profits, which trigger certain Luxembourg holding tax requirements. See Item 5, “Luxembourg Tax Considerations.”

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

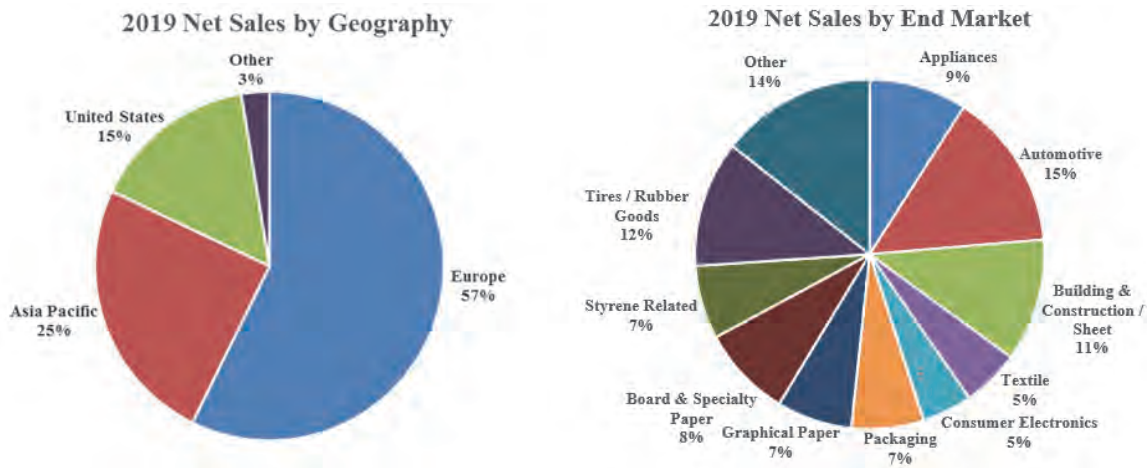
BUSINESS

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 manufacturing 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, 2019, our production facilities included 32 manufacturing plants (which included a total of 77 production units) at 24 sites across 12 countries, including the Company's joint venture. Additionally, as of December 31, 2019, we operated 10 research and development ("R&D") facilities globally, including technology and innovation development centers, 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 addition, in 2019 we implemented a Business Excellence program which is focused on business process optimization and increasing our operational efficiency and effectiveness.

Additionally, starting in 2019, we have increased our focus on efforts and investments in several product offerings serving the following applications, which are less cyclical and offer significantly higher growth and margin potential: coatings, adhesives, sealants, and elastomers ("CASE") applications within the Latex Binders segment; engineered materials ("Engineered Materials") applications within the Performance Plastics segment, which includes consumer electronics, medical, and thermoplastic elastomers ("TPEs") applications; and solution styrene butadiene rubber ("SSBR") within the Synthetic Rubber segment.

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 2019, this included distributing a quarterly dividend to shareholders of \$0.40 per share, and using \$119.7 million in cash to repurchase approximately 2.8 million ordinary shares, about 7% 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 funding of targeted growth initiatives, and the repurchase of our ordinary shares. 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 – 2019 Highlights*.

Business Segments

The Company operates under six reporting segments: Latex Binders, Synthetic Rubber, Performance Plastics, Polystyrene, Feedstocks, and Americas Styrenics. Our reporting segments reflect the 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.

Refer to Note 19 in the consolidated financial statements for information regarding sales, Adjusted EBITDA, the performance metric used by management to evaluate our segments' performance, and capital expenditures by segment, 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, based on third party data. In 2019, approximately 43% of our Latex Binders segment's sales were generated in Europe, 29% were generated in the United States, and the majority of the remaining net sales were generated in Asia. Additionally, this segment includes the results of our styrene-acrylate latex ("SA latex") production facilities and related infrastructure in Rheinmünster, Germany, which we acquired in October 2019.

Products and End Uses

We hold the #1 position for supplying SB latex for the coated paper market globally, based on capacity data. 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 SB 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 continue to implement new chemistries for paper coating and carpet backing applications.

We also offer a broad range of performance latex binders products, including SB latex, SA latex, and vinylidene chloride latex for the CASE applications. Net sales to CASE applications made up approximately 12% of total Latex Binders net sales in 2019, with margins of more than two times the average of products serving all applications within the segment.

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 formulations and product development expertise. Our R&D team and Technical Services and Development ("TS&D") team are able to use our paper fabrication and testing labs, carpet technology centers located near carpet producers, and product development and process research centers to assist customers in designing new products and enhancing their manufacturing processes. 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 2019, 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 54% of Western Europe's SSBR capacity available for sale. While substantially all of our net sales were generated in Europe in 2019, approximately 19% of these net sales were exported to Asia, 14% 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 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 91% of our net sales from this segment in 2019 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. Sales of advanced SSBR grades as a percentage of our total Synthetic Rubber segment have continually increased since 2013, and we expect our synthetic rubber product mix to continue to shift to more advanced SSBR grades in order to meet this shift in product demand. In 2019, SSBR represented approximately 65% of total segment net sales. SSBR margins are typically two to three times those of commodity grade synthetic rubber.

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 approximately 5% in 2020, 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 European Union (“EU”) regulations which set minimum requirements and are being phased in through 2021. 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 2019, ESBR represented approximately 27% of total segment net sales.

Ni-PBR and Nd-PBR. We operate a dual-use facility at our Schkopau, Germany location to allow for the production of both nickel polybutadiene rubber (“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 2019, Ni-PBR and Nd-PBR represented in aggregate approximately 8% 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., Versalis S.p.A, LG Chem, 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 2019, our top three customers in this segment accounted for 59% 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 make up approximately 47% of the total SSBR market by 2025 in comparison to approximately 38% in 2019, based on third-party estimates. 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.

While the prices of raw materials used in the production of products in this segment can fluctuate, approximately three quarters of net sales in 2019 in this segment were related to contracts that included 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 acrylonitrile-butadiene-styrene ("ABS"), styrene-acrylonitrile ("SAN"), and polycarbonate ("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 our production of soft-touch polymers and bioplastics, such as TPEs. In 2019, approximately 54% of our Performance Plastics segment's net sales were generated in Europe, approximately 22% were generated in the United States, and approximately 17% 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 TPEs.

Copolymers. Our copolymers products consist of ABS and SAN. In 2019, copolymers represented approximately 46% 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 also operate an ABS production line at our manufacturing plant in Zhangjiagang, China, which provides additional regional production capabilities in order to meet customer needs for ABS in the Asia Pacific automotive, appliance, electronics, lighting and consumer goods markets. 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.

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. Our PC products are manufactured in Stade, Germany and are sold into various markets as well as consumed internally for our compounding products. In 2019, PC represented approximately 12% 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, medical, 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. 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.

Compounding. Our compounding products consist of PC/ABS compounds, PC blends, PC and polypropylene blends, and TPE. In 2019, compounding products represented approximately 41% of total segment net sales.

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 industry 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.

Since 2017, we have added TPEs and other soft polymers to our product offerings for several industries including automotive and footwear. On October 7, 2019, we announced our plans to build a TPE pilot facility in Hsinchu, Taiwan to better serve our customers in the automotive, consumer electronics, footwear and medical markets, and to complement our existing TPE manufacturing facility in Italy.

Within the Performance Plastics segment, we have increased efforts and investments on product offerings serving Engineered Materials applications, which include consumer electronics, medical, and TPE applications. In 2019, margins for product offerings to Engineered Materials applications were more than two times the average of products serving all

applications within the Performance Plastics segment, and net sales to these applications made up approximately 17% of the Performance Plastics 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 Plastics segment will be impacted by a number of factors, including consumer preference for lighter weight and impact-resistant products, 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, based on third-party estimates.

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. In 2019, approximately 55% of net sales from our Polystyrene segment were generated in Europe and 45% 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., 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 value beyond 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, 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 of styrene monomer in Europe. The Feedstocks segment supplied 15% of the styrene monomer capacity out of Europe in 2019.

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 85% in 2019 and we believe operating rates will decrease over the next several years due to new capacity, primarily in China, which could result in lower global styrene margins. This operating rate decrease could be less than expected due to the potential closure of higher-cost styrene plants. Effective operating rates can, from time to time, be impacted by planned and unplanned outages, leading to periods of elevated margins.

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 2019, Americas Styrenics was the #1 producer of polystyrene, based on capacity data, and supplied 18% of the styrene monomer capacity in North America. We received a total of \$110.0 million in cash dividends from Americas Styrenics during 2019. We estimate that the contribution to our equity earnings from Americas Styrenics' polystyrene business was approximately 49% in 2019, 32% in 2018, and 40% in 2017. This translates to a

contribution from Americas Styrenics' polystyrene business to our Adjusted EBITDA of approximately 13% in 2019, 8% in 2018, and 8% in 2017.

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 2019 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. However, with new styrene capacity expected in China, global styrene utilization rates are expected to decline, which may decrease global styrene margins.

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, finance, and ERP services and systems currently provided by Dow. At the end of 2019, Dow no longer provided the majority of these services, such as customer service and logistics activities, procurement services, and environmental health and safety activities. Certain information security and

information technology services and systems are planned for transition away from Dow in the first half of 2020. At that point, nearly all of the services covered under this agreement will no longer be provided by Dow. During 2019, the Company incurred \$68.1 million in costs related to our transition of these services away from Dow, of which \$21.8 million was capitalized and \$46.3 million was recognized as expense. The Company expects to incur further significant costs related to transitioning services away from Dow in 2020.

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. 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, 2019, we have converted approximately half of our plants from the MOD5 process control technology through a strategic external relationship with ABB Ltd. and expect to convert six additional plants in 2020, with the remainder of our plants converted thereafter. In 2020 we will negotiate amended agreement terms to appropriately allow for the conversion of plants that remain to be converted after 2020.

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, 2019, 2018, and 2017, we incurred a total of \$204.0 million, \$265.1 million, and \$236.4 million, respectively, in expenses under the SAR MOSA, AR MOD5 Agreement, and site services agreements (which include utilities), including \$164.2 million, \$210.8 million, and \$183.3 million, respectively, for both the variable and fixed cost components of the site services agreements and \$39.8 million, \$54.3 million, and \$53.1 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 manufacture 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, 2019, 2018, and 2017, purchases and other charges from Dow and its affiliated companies (excluding the SAR MOSA, AR MOD5 Agreement, and site services agreements) were approximately \$781.9 million, \$1,145.5 million, and \$1,120.8 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, 2019, 2018, and 2017, sales to Dow and its affiliated companies were approximately \$80.0 million, \$248.4 million, and \$235.2 million, respectively. Amounts presented represent transactions with Dow and do not include transactions with DuPont companies, noting the entities separated in 2019.

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.

	Latex Binders	Synthetic Rubber	Performance Plastics	Polystyrene	Feedstocks	Americas Styrenics
<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 2019, we obtained approximately 25% of our raw materials from Dow (based on aggregate purchase price). In 2019, Dow supplied us with approximately 99% of our benzene requirements and 100% of our ethylene requirements through 10-year contracts that commenced in 2010. Dow has been our largest supplier for these materials as well as a significant supplier of butadiene. In 2019, we gave notice of non-renewal of our existing ethylene, benzene, and butadiene supply agreements with Dow and are currently in negotiations on new agreements for supply of these raw materials.

While Dow has provided a significant portion of our raw materials pursuant to these supply agreements, we have developed a comprehensive strategy for obtaining additional sources of supply where needed. 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.

Through long-term strategic contracts and spot market purchases, we obtained 27% and 33%, respectively, of our styrene supply in 2019. Additionally, our internal production of styrene from purchased ethylene and benzene at our own manufacturing sites provided 40% of our styrene supply in 2019. 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. We are currently in negotiation with this supplier on a new multi-year BPA supply agreement.

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 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. We also operate a plastics research center, which integrates 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 \$54.6 million, \$56.0 million, and \$54.3 million, for the years ended December 31, 2019, 2018, and 2017, 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 162 professionals working in sales and marketing around the world, along with approximately 94 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.

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 providing us with comprehensive standards, tools and services. We supplement our programs 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 2019. 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 and rising sea levels, and which has prompted regulations limiting, among other things, 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, for which potential liabilities 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 have 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, 2019, we had approximately 2,700 employees worldwide. Nearly 69% 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 57 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”). Copies of our board committee charters, code of conduct, corporate governance guidelines and other corporate governance information are also available on our website. See Part III—Item 10—*Code of Ethics*. We provide this website and the information contained in or connected to it for informational purposes only. This information is not included in, or incorporated by reference to, 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 49% 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 given notice of non-renewal and are currently renegotiating supply agreements with Dow for ethylene, benzene, and butadiene, which are critical raw materials to our business. These raw materials and other less critical materials amount to approximately 25% of our total raw materials acquired in 2019, 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 supply agreements expire, we may be unable to renegotiate or renew these contracts, or obtain new long-term supply agreements on terms comparable or favorable to us, or at all, 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.

Escalations in global trade conflicts, including the imposition of tariffs, may have a material adverse impact on our business and results of operations.

Various governments have adopted new approaches to their trade policies seeking to renegotiate, or potentially terminate, certain existing bilateral or multi-lateral trade agreements and implement new tariff schedules. For example, the U.S. and China have applied tariffs to certain of each other's exports and announced additional tariffs to be applied in the future. These measures have resulted in shifting trade flows and increased costs for raw materials and finished goods. Uncertainty over global tariffs or trade wars has and may continue to delay purchasing decisions by our customers as they assess the impact of such trade policies on their business. Further, continued uncertainty over the future trade relationship between the United Kingdom and the EU as a result of Brexit could also negatively impact or delay our customers' purchasing decisions.

The adoption and expansion of trade restrictions, tariffs, or other governmental action has the potential to adversely impact demand for our products or our customers' products, and our costs, including prices of raw materials, which in turn could adversely impact our business, financial condition and results of operations.

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, disease pandemics, 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 significant disruptions to operations that could materially adversely affect our future results, business and financial condition.

During 2018 and 2019, the Company has taken significant steps to insource, and in some cases outsource to other vendors, certain information technology infrastructure, procurement, supply chain, and ERP services and applications currently provided by Dow. At the end of December 31, 2019, the Company had transitioned and Dow no longer provided the majority of these services, such as back office customer service and logistics activities, transactional procurement and sourcing services, and environmental health and safety support services. Primarily, the remaining information technology infrastructure, security, and ERP services and applications are planned for transition away from Dow in the first half of 2020. At that point, nearly all of the services covered under the SAR MOSA will no longer be provided by Dow. Additionally, the Company is continuing to migrate our manufacturing facilities away from Dow's MOD5 process controller technology over the next several years.

We believe we employ adequate methodologies to plan, test and execute this migration, and we believe that we have adequate staffing and resources to ensure successful implementation. However, the migration away from services and technologies previously developed and provided by Dow, or third party vendors employed by Dow, carries

significant potential risks, including the potential failure of our systems, automated processes, or other day-to-day operations to continue to operate as designed, inability of our systems to connect to third party vendor systems, the potential loss or corruption of data or information, impact of changes in security processes, implementation delays, disruption of operations, and the potential inability to meet business or customer demands or reporting requirements. Any prolonged disruption in the operations of our existing manufacturing facilities, supply chain, distribution or other operations, whether due to technical or integration difficulties, could have a material adverse effect on our business, reputation, future sales, financial condition and results of operations. We cannot assure that there will not be associated excessive costs, disruptions or other negative impacts in portions of our business in the course of our migration of these services and systems. For more information regarding our relationship with Dow, please see Item 1—*Business — Our Relationship with Dow*.

During 2019 and 2018, the Company incurred \$68.1 million and \$26.1 million in costs, respectively, related to our transition of these services away from Dow, of which \$21.8 million and \$5.7 million, respectively, was capitalized and \$46.3 million and \$20.4 million, respectively, was recognized as expense. The Company expects to incur further significant costs related to transitioning services away from Dow in 2020. Unanticipated capital expenditures and additional expense associated with these migrations may reduce the Company's cash position and profitability, respectively. The migration of these services and technologies may also 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 extreme weather and natural disasters, which may be aggravated by climate change;
- disease outbreaks or epidemics, and government responses thereto, which may impact our employees or those of our suppliers or transportation providers;
- 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. On October 28, 2019, a supplemental request for information was received from the European Commission. This request was limited to historical employment, entity, and organizational structures, along with certain financial, styrene purchasing, and styrene market information, as well as certain spot styrene purchase contracts. We have provided this information to the European Commission and continue to fully cooperate with the Request for Information.

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.

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, 2019, we received dividends of \$110.0 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.

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; and
- supply and sales agreements pursuant to which Dow, among other things, provides us with raw materials, including ethylene, benzene, and butadiene.

The SAR MOSA and AR MOD5 Agreement expire according to their terms as of December 31, 2020. Under the terms of the above agreements, either party is also 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 our inability to renegotiate, renew or replace any of these contracts, particularly without an alternative source of raw materials, could adversely affect our operations. 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, on terms as favorable to us or at all. 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 and consumer preferences 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 and consumer preferences for sustainable and recyclable materials may reduce the demand for some of our products over time.

Additionally, these regulatory regimes currently require significant compliance expenditures and future regulatory changes applicable to our raw materials and products or our customers' products, could require significant additional expenditures 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.

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

As of December 31, 2019, our indebtedness totaled approximately \$1.2 billion. Additionally, as of December 31, 2019, we had \$361.0 million (net of \$14.0 million outstanding letters of credit) of funds available for borrowings under our Senior Credit Facility, as well as \$150.0 million of funds available for borrowings under our accounts receivable securitization facility (the “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 Credit Agreement and the Indenture 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 Credit Agreement or Indenture 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, 2019, we operated, or others operated on our behalf, 32 manufacturing plants (which include a total of 77 production units) at 24 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. In addition to potential statutory liability, 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 and Dalton, Georgia. 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 continue to 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 require us to incur additional costs in complying with new regulatory and customer requirements, 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, as approximately 57% of our net sales were generated in Europe in 2019. 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 we may not be able to effectively limit our exposure to intermediate or long-term movements in currency exchange rates, which could adversely impact our financial condition or results of operations. 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.

We may be unable to achieve cost savings and other benefits from our restructuring activities and business excellence initiatives.

In 2019, we announced a corporate restructuring plan associated with our shift to a global functional structure and adoption of our business excellence initiatives designed to create cost savings through business process optimization and efficiencies. Our efforts to achieve these improvements and efficiencies may not be successful or generate expected cost savings, and we may incur greater costs than currently anticipated to implement and achieve these initiatives, which could have an adverse impact 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 63 production units at 17 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, 2019:

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
Hoek	The Netherlands	Owned	Performance Plastics	Performance Plastics
Hsinchu	Taiwan	Owned	Compounds and blends	Performance Plastics
Merak++	Indonesia	Owned	Latex, Polystyrene	Latex Binders, Polystyrene
Midland*	USA (MI)	Leased	Latex, ABS	Latex Binders, Performance Plastics
Mussolente	Italy	Owned	Soft-touch polymers and bioplastics	Performance Plastics
Norrköping	Sweden	Owned	Latex	Latex Binders
Rheinmünster*	Germany	Owned	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
Rheinmünster	Germany	Owned	Latex	Latex Binders
Samstagern	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				
Americas Styrenics				
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 (or other companies) 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, current and former employees, 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.

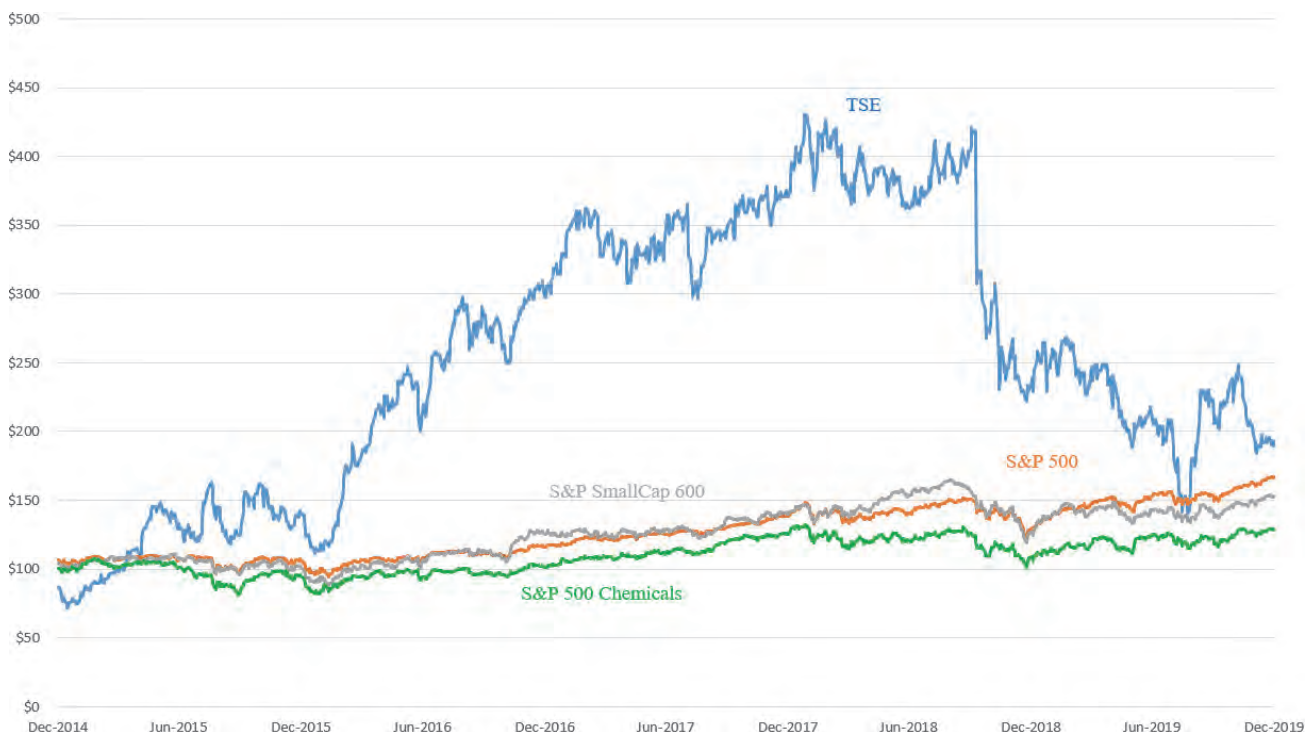
PART II

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 (“NYSE”), under the ticker symbol “TSE.” As of February 24, 2020, there were three record holders of our ordinary shares, 48,777,934 ordinary shares issued, and 38,320,508 ordinary shares outstanding. By including persons holding shares in broker accounts under street names, however, we estimate that we have approximately 13,871 beneficial holders.

Performance Graph

The following performance graph reflects the comparative changes in the value from December 31, 2014 through December 31, 2019, 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, (3) the S&P 500 Chemicals Industry GICS Level 3 Index, and (4) the S&P SmallCap 600 Index. The Company was added to the S&P SmallCap 600 GICS Commodity Chemicals Sub-Industry Index in August 2019, and as a result we have added the S&P SmallCap 600 Index to the performance graph in place of the S&P 500 Index, as we believe it is a more appropriate benchmark for comparative purposes. 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, 2019:

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, 2019	305,624	\$ 41.81	305,624	2,580,343 ⁽¹⁾
November 1 - November 30, 2019	167,749	\$ 41.64	167,749	2,412,594 ⁽¹⁾
December 1 - December 31, 2019	—	\$ —	—	2,412,594 ⁽¹⁾
Total	473,373	\$ 41.75	473,373	

- (1) The general meeting of our shareholders on June 19, 2019 authorized the Company to sunset the 2017 share repurchase authorization and replace it with a new authorization to repurchase up to 4.0 million ordinary shares over the next eighteen months at a price per share of not less than \$1.00 and not more than \$1,000.00.

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 of December 4, 1967) 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 and acting on their own behalf, capital gains will only be taxable if they are realized on a disposal 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. A disposal may include a sale, exchange, contribution or any other kind of transfer of the shareholding.

For Luxembourg individuals acting on their own behalf and holding (together with his/her spouse or civil partner and minor children) directly or indirectly more than 10% of the capital of Trinseo at any time in the last five years, capital gains will be taxable, if the sale, disposal, redemption 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 2020).

- 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 sale, disposal or redemption of shares by a Luxembourg corporate holder (not subject to a special tax regime) 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 200,001 will be 24.94% for fiscal year ended 2020 for a Luxembourg corporate holder established in Luxembourg-City (taking into account the solidarity surtax of 7% on the corporate income tax and including the 6.75% municipal business tax). 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 all 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. In certain circumstances, the exemption may not apply; for example, the capital gains exemption (for gains arising on a disposal of shares) does not apply up to the aggregate amount of previously tax deducted expenses and write-offs related to these shares.

A corporate non-Luxembourg Holder, which have neither 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

Luxembourg 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 all 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 qualified resident as defined in article 24 of the Treaty is the 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 12 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. In 2019, a general anti-abuse rule was implemented by Luxembourg under which dividend distributions will not benefit from the withholding tax exemption when the distributions are made in the framework of an arrangement created for the main purpose of obtaining a tax advantage.

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, 2019. 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 (a 0.05% rate applies for net wealth amount exceeding the threshold of 500 million euros). Net wealth tax is always levied at certain minimums. 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. No Luxembourg gift tax is levied on the transfer of the ordinary shares by way of a gift, unless the gift is recorded in a Luxembourg notarized deed or otherwise registered in Luxembourg.

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, 2019, 2018, and 2017, and the historical balance sheet data as of December 31, 2019 and 2018 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, 2016 and 2015 and the historical balance sheet data as of December 31, 2017, 2016, and 2015 were derived from our audited financial statements and the related notes thereto not included within this Annual Report. 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,				
	2019	2018	2017	2016	2015
Statement of Operations Data:					
Net sales ⁽¹⁾	\$ 3,775.8	\$ 4,622.8	\$ 4,448.1	\$ 3,716.6	\$ 3,971.9
Cost of sales ⁽¹⁾	3,446.9	4,094.0	3,807.8	3,124.4	3,496.7
Gross profit	328.9	528.8	640.3	592.2	475.2
Selling, general and administrative expenses	300.0	258.5	239.0	238.7	205.0
Equity in earnings of unconsolidated affiliates	119.0	144.1	123.7	144.7	140.2
Operating income	147.9	414.4	525.0	498.2	410.4
Interest expense, net	39.3	46.4	70.1	75.0	93.2
Loss on extinguishment of long-term debt	—	0.2	65.3	—	95.2
Other expense (income), net	4.0	3.5	(21.5)	17.9	18.2
Income before income taxes	104.6	364.3	411.1	405.3	203.8
Provision for income taxes	12.6	71.8	82.8	87.0	70.2
Net income	\$ 92.0	\$ 292.5	\$ 328.3	\$ 318.3	\$ 133.6
Weighted average shares— basic	40.3	42.8	43.8	46.5	48.8
Net income per share— basic	\$ 2.28	\$ 6.83	\$ 7.49	\$ 6.84	\$ 2.74
Weighted average shares— diluted	40.7	43.7	45.0	47.5	49.0
Net income per share— diluted	\$ 2.26	\$ 6.70	\$ 7.30	\$ 6.70	\$ 2.73
Dividends per share	\$ 1.60	\$ 1.56	\$ 1.38	\$ 0.90	\$ —

(In millions)	As of and for the Year Ended				
	December 31,				
	2019	2018	2017	2016	2015
Other Financial Data:					
Depreciation and amortization	\$ 136.0	\$ 130.2	\$ 110.6	\$ 96.4	\$ 96.8
Capital expenditures, net of subsidy ⁽²⁾	110.1	120.4	147.4	123.9	107.1
Balance Sheet Data:					
Cash and cash equivalents	\$ 456.2	\$ 452.3	\$ 432.8	\$ 465.1	\$ 431.3
Working capital	963.5	1,094.3	1,019.6	890.7	839.8
Total assets	2,758.8	2,726.8	2,772.0	2,421.3	2,270.7
Debt ⁽³⁾	1,194.7	1,192.4	1,199.7	1,187.4	1,207.8
Total liabilities	2,089.9	1,958.1	2,097.2	1,973.6	1,879.0
Total shareholders' equity	668.9	768.7	674.8	447.7	391.7

- (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. During the year ended December 31, 2019, capital expenditures include \$21.8 million of costs capitalized related to our transition of services away from Dow, as described in Item 1 – *Business – Our Relationship with Dow*. 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.
- (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.

2019 Highlights

For the year ended December 31, 2019, we had net income of \$92.0 million and Adjusted EBITDA of \$351.8 million. The challenging market dynamics and economic conditions that began at the end of 2018 continued in 2019. Despite this, the Company delivered strong cash generation throughout 2019 and returned significant cash to our shareholders, purchasing approximately 2.8 million ordinary shares for an aggregate purchase price of \$119.7 million and declaring quarterly dividends for an aggregate value of \$1.60 per ordinary share, or \$64.2 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 2019 are described below.

Corporate Restructuring Program

In November 2019, the Company announced a corporate restructuring program associated with our shift to a global functional structure and business excellence initiatives to drive greater focus on business process optimization and efficiency. The corporate restructuring program is expected to be substantially completed by the end of the first half of 2020. The Company expects to achieve full-year cost savings in connection with this corporate restructuring program of approximately \$20 million to \$30 million.

Trinseo to Build New TPE Pilot Facility in Taiwan

On October 7, 2019, Trinseo announced plans to build a TPE pilot facility at our existing manufacturing site in Hsinchu, Taiwan, with operations anticipated to begin in 2020. The TPE pilot facility emphasizes Trinseo’s growth strategy for TPEs globally and will serve customers in the automotive, consumer electronics, footwear, and medical markets. This investment, which is expected to total approximately \$3.0 million, marks the next step of Trinseo’s TPE growth roadmap, following the acquisition of API Applicazioni Plastiche Industriali S.p.A (“API Plastics”) in July 2017.

Acquisition of Latex Binders Assets in Germany

On October 1, 2019, the Company completed the acquisition from Dow of its latex binders production facilities and related infrastructure in Rheinmünster, Germany. The transaction includes full ownership and operational control of latex production facilities, site infrastructure, and service contracts, as well as certain employees transferring from Dow to Trinseo. This acquisition will provide Trinseo with manufacturing assets supporting our strategy to grow our Latex Binders business in applications serving the coatings, adhesives, specialty paper, and sealants markets. Refer to Note 4 in the consolidated financial statements for further information.

Chief Executive Officer and Chief Financial Officer Transition

On March 4, 2019, Frank Bozich replaced Christopher Pappas as President and Chief Executive Officer. On July 1, 2019, David Stasse replaced Barry Niziolek as Executive Vice President and Chief Financial Officer. Both Messrs. Pappas and Niziolek had each previously announced their plans to retire.

Results of Operations

Results of Operations for the Years Ended December 31, 2019, 2018, and 2017

The table below sets forth our historical results of operations, and these results as a percentage of net sales for the periods indicated. Refer to the Company's Form 10-K filed on February 28, 2019 for explanations of our results of operations for 2018 in comparison to 2017.

(in millions)	Year Ended December 31,					
	2019	%	2018	%	2017	%
Net sales	\$ 3,775.8	100 %	\$ 4,622.8	100 %	\$ 4,448.1	100 %
Cost of sales	3,446.9	91 %	4,094.0	89 %	3,807.8	86 %
Gross profit	328.9	9 %	528.8	11 %	640.3	14 %
Selling, general and administrative expenses	300.0	8 %	258.5	6 %	239.0	5 %
Equity in earnings of unconsolidated affiliates	119.0	3 %	144.1	3 %	123.7	3 %
Operating income	147.9	4 %	414.4	9 %	525.0	12 %
Interest expense, net	39.3	1 %	46.4	1 %	70.1	2 %
Loss on extinguishment of long-term debt	—	— %	0.2	— %	65.3	1 %
Other expense (income), net	4.0	— %	3.5	— %	(21.5)	— %
Income before income taxes	104.6	3 %	364.3	8 %	411.1	9 %
Provision for income taxes	12.6	0 %	71.8	2 %	82.8	2 %
Net income	\$ 92.0	3 %	\$ 292.5	6 %	\$ 328.3	7 %

2019 vs. 2018

Net Sales

Of the 18% decrease in net sales, 14% was due to lower selling prices resulting mainly from the pass through of lower raw material costs, primarily from styrene and butadiene. There was also a 2% decrease due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period. An additional 2% decrease was due to lower sales volume within the Feedstocks, Polystyrene and Synthetic Rubber segments, which was partially offset by higher sales volume across the remaining segments. See segment discussion below for further information.

Cost of Sales

Of the 16% decrease in cost of sales, 11% was due to lower raw material costs, primarily from styrene and butadiene, as well as a 3% decrease due to lower sales volume primarily from the Feedstocks and Synthetic Rubber segments. An additional 3% decrease was due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period, which was slightly offset by a 1% increase due to higher fixed costs.

Gross Profit

The decrease in gross profit of 38% was primarily attributable to margin compression in the Feedstocks, Latex Binders and Performance Plastics segments. Overall performance was impacted by weaker market conditions, including in certain key markets such as automotive, graphical paper, and tires. See the segment discussion below for further information.

Selling, General and Administrative Expenses (SG&A)

The \$41.5 million, or 16%, increase in SG&A was due to several factors. Higher advisory and professional fees, as well as higher personnel costs, resulted in a \$39.2 million increase. These increases were primarily related to the Company's transition of business and technical services from Dow. Additionally, there was an increase of \$9.3 million

in restructuring charges due primarily to the \$17.8 million corporate restructuring program associated with the Company's shift to a global functional structure, which was partially offset by a decrease in other restructuring charges. There was also an increase of \$4.3 million related to increased depreciation. Offsetting these increased costs was a \$7.0 million decrease due to currency impacts on our euro-based expenses, as the euro weakened in comparison to the U.S. dollar, as well as a decrease of \$1.6 million related to decreased bad debt expense.

Equity in Earnings of Unconsolidated Affiliates

The decrease in equity earnings of \$25.1 million was due to lower equity earnings from Americas Styrenics, mainly attributable to lower styrene margins in the current year, as prior year results were positively impacted by several industry outages.

Interest Expense, Net

The decrease in interest expense, net of \$7.1 million, or 15%, was primarily attributable to the benefits received from the cross currency swaps that the Company entered into in September 2017, which are recorded as a benefit within interest expense following our adoption of new hedging accounting guidance during the second quarter of 2018.

Other Expense (Income), Net

Other expense, net for the year ended December 31, 2019 was \$4.0 million, which included \$6.4 million of expense related to the non-service cost components of net periodic benefit cost. Partially offsetting these expenses was a net gain of \$2.5 million recorded in conjunction with our acquisition of latex binders production assets and related site infrastructure in Rheinmünster, Germany, consisting of a bargain purchase gain of \$4.7 million offset by expense of \$2.2 million for certain jurisdictional asset transfer taxes incurred related to the acquisition. Refer to Note 4 of the consolidated financial statements for more information. Further offsetting these expenses were net foreign exchange transaction gains for the period of \$1.8 million. Net foreign transaction gains included \$8.0 million of gains from our foreign exchange forward contracts, which were partially offset by \$6.2 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. Other expense, net also included \$1.9 million of net other miscellaneous expenses during the period.

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.

Provision for Income Taxes

Provision for income taxes was \$12.6 million and \$71.8 million, respectively, for the years ended December 31, 2019 and 2018, which resulted in an effective tax rate of 12% and 20%, respectively. The decrease in provision for income taxes was primarily driven by a \$65.0 million one-time deferred tax benefit for the year ended December 31, 2019 as a result of changes in the Swiss federal and cantonal tax rules, which were enacted on August 6, 2019 and October 25, 2019, respectively. The decrease in provision for income taxes from this one-time benefit was partially offset by a \$25.3 million valuation allowance for the portion of the cantonal deferred tax asset that more likely than not will expire before utilization. Refer to Note 14 in the consolidated financial statements for further information. Conversely, the decrease in provision for income taxes was partially offset by a lower proportion of income before taxes attributable to non-U.S. jurisdictions, including losses not anticipated to provide a tax benefit for the Company in the future.

Selected Segment Information

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 present net sales, Adjusted EBITDA, and Adjusted EBITDA margin by segment for the years ended December 31, 2019, 2018, and 2017. 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. Refer to the Company's Form 10-K filed on February 28, 2019 for explanations of our segment results for 2018 in comparison to 2017.

Latex Binders Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2019	2018	2017	2019 vs. 2018	2018 vs. 2017
Net sales	\$ 902.8	\$ 1,069.0	\$ 1,097.1	(16)%	(3)%
Adjusted EBITDA	\$ 80.8	\$ 110.4	\$ 138.5	(27)%	(20)%
Adjusted EBITDA margin	9 %	10 %	13 %		

2019 vs. 2018

Of the 16% decrease in net sales, 15% was due to lower pricing from the pass through of lower raw material costs, primarily from styrene and butadiene, and 2% was due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period. These decreases were partially offset by a 2% increase in sales volume.

Adjusted EBITDA decreased by \$29.6 million, or 27%, compared to the prior year, primarily due to a 32% decrease due to lower margins from raw material dynamics, competitive market conditions and global market uncertainty, which was partially offset by a 6% increase in sales volume.

Synthetic Rubber Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2019	2018	2017	2019 vs. 2018	2018 vs. 2017
Net sales	\$ 441.3	\$ 572.5	\$ 582.8	(23)%	(2)%
Adjusted EBITDA	\$ 40.7	\$ 77.0	\$ 83.3	(47)%	(8)%
Adjusted EBITDA margin	9 %	13 %	14 %		

2019 vs. 2018

Of the 23% decrease in net sales, 11% was due to lower sales volume, primarily related to ESBR as a result of weakness in the global tire market, and 8% was due to lower pricing from the pass through of lower raw material costs. An additional 4% decrease was due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period.

Adjusted EBITDA decreased by \$36.3 million, or 47%, compared to the prior year. Lower margins resulted in a 21% decrease due mainly to unfavorable net timing impacts, and lower sales volume resulted in a 20% decrease primarily due to weakness in the global tire market. In addition, higher fixed costs, mainly due to a lower level of fixed cost absorption, resulted in an 8% decrease.

Performance Plastics Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2019	2018	2017	2019 vs. 2018	2018 vs. 2017
Net sales	\$ 1,366.2	\$ 1,577.6	\$ 1,419.1	(13)%	11 %
Adjusted EBITDA	\$ 135.1	\$ 188.9	\$ 230.9	(28)%	(18)%
Adjusted EBITDA margin	10 %	12 %	16 %		

2019 vs. 2018

Of the 13% decrease in net sales, 12% was due to lower pricing from the pass through of lower styrene costs as well as lower PC prices due to lower industry operating rates. In addition, there was a 2% decrease due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period.

Adjusted EBITDA decreased by \$53.8 million, or 28%, compared to the prior year. Lower margins, mainly related to PC, resulted in a \$45.4 million, or 24% decrease, due primarily to general market weakness as well as an increase in supply in the PC market. An additional 7% decrease was due to higher fixed costs from growth investments, including the ramping up of the new ABS facility in China, as well as lower fixed cost absorption in the current year. Partially offsetting these decreases was a 2% increase due to higher PC and compounding products sales volumes.

Polystyrene Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2019	2018	2017	2019 vs. 2018	2018 vs. 2017
Net sales	\$ 809.4	\$ 1,017.1	\$ 941.4	(20)%	8 %
Adjusted EBITDA	\$ 54.6	\$ 33.7	\$ 48.2	62 %	(30)%
Adjusted EBITDA margin	7 %	3 %	5 %		

2019 vs. 2018

Of the 20% decrease in net sales, 17% was due to lower pricing from the pass through of lower styrene costs to our customers and 2% was due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period.

Adjusted EBITDA increased by \$20.9 million, or 62%, compared to the prior year. Higher margins, primarily from business excellence initiatives related to pricing, resulted in a \$23.4 million, or 69%, increase, while lower fixed costs resulted in a 3% increase. Partially offsetting these increases was a \$2.9 million, or 9%, decrease in total sales volume driven by reduced sales volume in Europe, partially offset by higher sales volume in Asia. Additionally, there was a 2% decrease due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period.

Feedstocks Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2019	2018	2017	2019 vs. 2018	2018 vs. 2017
Net sales	\$ 256.1	\$ 386.6	\$ 407.7	(34)%	(5)%
Adjusted EBITDA	\$ 7.0	\$ 107.1	\$ 110.5	(93)%	(3)%
Adjusted EBITDA margin	3 %	28 %	27 %		

2019 vs. 2018

Of the 34% decrease in net sales, 18% was due to lower pricing from the pass through of lower styrene prices and 14% was due to lower styrene-related sales volume. There was an additional 2% decrease due to currency impacts as the euro weakened in comparison to the U.S. dollar during the period.

Adjusted EBITDA decreased by \$100.1 million, or 93%, compared to the prior year. Lower margins resulted in a \$101.3 million, or 95% decrease, due mainly to lower styrene margins in Europe and Asia as well as lower production volume from unplanned outages. In addition, higher fixed costs, due mainly to a lower level of fixed cost absorption, resulted in a 2% decrease. These decreases were partially offset by an increase of 3% due to currency impacts.

Americas Styrenics Segment

(\$ in millions)	Year Ended December 31,			Percentage Change	
	2019	2018	2017	2019 vs. 2018	2018 vs. 2017
Adjusted EBITDA*	\$ 119.0	\$ 144.1	\$ 122.9	(17)%	17 %

*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.

2019 vs. 2018

The 17% decrease in Adjusted EBITDA was mainly due to less favorable styrene margins in the current year, as prior year results were positively impacted by several industry outages.

Outlook

As discussed above, the Company's results continue to be impacted by difficult global economic conditions. In the fourth quarter of 2019 we adopted a corporate restructuring plan associated with the Company's shift to a global functional structure and business excellence initiatives to drive greater focus on business process optimization and efficiency. We anticipate that our Business Excellence program, our improved cost structure from the corporate restructuring, and our focus on the growth areas of our portfolio will partially offset the challenging market conditions, including expected lower styrene margins and the anticipated first quarter adverse impacts from the outbreak of the coronavirus.

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 benefits, 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, 2019, 2018, and 2017. For discussion related to 2017 activity, refer to the Company’s Form 10-K filed on February 28, 2019.

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net income	\$ 92.0	\$ 292.5	\$ 328.3
Interest expense, net	39.3	46.4	70.1
Provision for income taxes	12.6	71.8	82.8
Depreciation and amortization	136.0	130.2	110.6
EBITDA^(a)	\$ 279.9	\$ 540.9	\$ 591.8
Loss on extinguishment of long-term debt	—	0.2	65.3
Net gain on disposition of businesses and assets ^(b)	(0.7)	(1.0)	(9.7)
Restructuring and other charges ^(c)	18.1	8.2	6.0
Acquisition transaction and integration net costs (benefit) ^(d)	(0.9)	0.6	4.7
Asset impairment charges or write-offs ^(e)	—	1.5	4.3
Other items ^(f)	55.4	22.8	(19.9)
Adjusted EBITDA	\$ 351.8	\$ 573.2	\$ 642.5

- (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 on disposition of businesses and assets during the years ended December 31, 2019 and 2018 relates to the sale of our primary operating entity in Brazil, from which we earned consideration for the subsequent performance of our former latex business. Refer to Note 4 in the consolidated financial statements for further information.
- (c) Restructuring and other charges for the year ended December 31, 2019 primarily relate to employee termination benefit charges as well as contract termination charges incurred in connection with the Company’s corporate restructuring program. 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. Additionally, a portion of the restructuring and other charges for the years ended December 31, 2019 and 2018 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. 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 Company’s corporate restructuring program and the upgrade and replacement of the Company’s compounding facility in Terneuzen, The Netherlands 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 net benefit for the year ended December 31, 2019 is comprised of the bargain purchase gain, recorded in conjunction with our acquisition of latex binders production assets and related

site infrastructure in Rheinmünster, Germany, offset by certain jurisdictional asset transfer taxes and advisory and professional fees incurred related to this acquisition. Acquisition transaction and integration costs for the year ended December 31, 2018 relate to advisory and professional fees incurred in conjunction with our acquisition of API Plastics, which closed in July 2017. Refer to Note 4 in the consolidated financial statements for further information.

- (e) Asset impairment charges for the year ended December 31, 2018 relate to the impairment of certain corporate long-lived assets.
- (f) Other items for the years ended December 31, 2019 and 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, finance, and IT services. Also included within other items for the years ended December 31, 2019 and 2018 are fees incurred in conjunction with certain of the Company's strategic initiatives.

Liquidity and Capital Resources

Cash Flows

The table below summarizes our primary sources and uses of cash for the years ended December 31, 2019, 2018, and 2017. We have derived the summarized cash flow information from our audited financial statements. Refer to the Company's Form 10-K filed on February 28, 2019 for discussion related to 2017.

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net cash provided by (used in):			
Operating activities	\$ 322.5	\$ 366.5	\$ 391.3
Investing activities	(109.3)	(118.7)	(182.6)
Financing activities	(206.7)	(222.2)	(253.0)
Effect of exchange rates on cash	(1.4)	(6.1)	12.0
Net change in cash, cash equivalents, and restricted cash	\$ 5.1	\$ 19.5	\$ (32.3)

Operating Activities

Net cash provided by operating activities during the year ended December 31, 2019 totaled \$322.5 million, inclusive of \$110.0 million in dividends from Americas Styrenics. Net cash provided by operating assets and liabilities for the year ended December 31, 2019 totaled \$129.3 million, noting decreases in inventories of \$70.7 million and accounts receivable of \$66.6 million. This activity was partially offset by a decrease in income taxes payable of \$10.9 million. The decrease in inventories was primarily due to lower days sales in inventory as well as decreased raw material prices. Accounts receivable at the end of 2019 decreased relative to the end of 2018 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.

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.

Investing Activities

Net cash used in investing activities during the year ended December 31, 2019 totaled \$109.3 million, primarily resulting from capital expenditures of \$110.1 million.

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.

Financing Activities

Net cash used in financing activities during the year ended December 31, 2019 totaled \$206.7 million. This activity was primarily due to \$119.7 million of payments related to the repurchase of ordinary shares, \$65.7 million of dividends paid, \$7.0 million of net principal payments related to our 2024 Term Loan B during the period, and \$10.6 million net repayments of short-term borrowings. Additionally, net cash used in financing activities included \$4.6 million of withholding taxes paid related to the vesting of certain Restricted Stock Units ("RSUs") during the period, partially offset by \$0.9 million of proceeds received from the exercise of option awards.

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.

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.

(in millions)	Year Ended December 31,		
	2019	2018	2017
Cash provided by operating activities	\$ 322.5	\$ 366.5	\$ 391.3
Capital expenditures	(110.1)	(121.4)	(147.4)
Free Cash Flow	<u>\$ 212.4</u>	<u>\$ 245.1</u>	<u>\$ 243.9</u>

Refer to the discussion above for significant impacts to cash provided by operating activities for the years ended December 31, 2019 and 2018. Refer to the Company's Form 10-K filed on February 28, 2019 for discussion related to 2017.

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, 2019 and 2018, we had \$1,194.7 million and \$1,192.4 million, respectively, in outstanding indebtedness and \$963.5 million and \$1,094.3 million, respectively, in working capital. In addition, as of December 31, 2019 and 2018, we had \$153.5 million and \$113.7 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, 2019 and 2018 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, 2019			As of and for the Year Ended December 31, 2018		
	Balance	Effective Interest Rate	Interest Expense	Balance	Effective Interest Rate	Interest Expense
Senior Credit Facility						
2024 Term Loan B	\$ 684.3	4.3 %	\$ 31.5	\$ 691.3	4.1 %	\$ 31.6
2022 Revolving Facility	—	—	3.2	—	—	2.9
2025 Senior Notes	500.0	5.4 %	12.1	500.0	5.4 %	16.1
Accounts Receivable Securitization Facility	—	—	1.5	—	—	1.5
Other indebtedness	10.4	2.1 %	0.1	1.1	4.8 %	0.1
Total	\$ 1,194.7		\$ 48.4	\$ 1,192.4		\$ 52.2

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, 2019 the Company had no outstanding borrowings and had \$361.0 million (net of \$14.0 million outstanding letters of credit) of funds available for borrowing under this facility. Further, as of December 31, 2019, 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. The stated interest rate on our 2024 Term Loan B is LIBOR plus 2.00% (subject to a 0.00% LIBOR floor). During the year ended December 31, 2019, 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, 2019.

Our 2025 Senior Notes issued 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. 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 matures in September 2021 and has an outstanding borrowing capacity of \$150.0 million. As of December 31, 2019, there were no amounts outstanding under this facility and the Company had approximately \$137.6 million of accounts receivable available to

support this facility, 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, 2019, the Company declared total dividends of \$1.60 per ordinary share, or \$64.2 million, of which \$16.4 million, inclusive of dividend equivalents, remains accrued as of December 31, 2019 and the majority of which will be paid in January 2020. 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. During the year ended December 31, 2019, under authority from our board of directors, the Company purchased approximately 2.8 million ordinary shares from our shareholders through open market transactions for an aggregate purchase price of \$119.7 million. We believe that funds provided by operations, our existing cash, cash equivalent, and restricted cash balances, 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, while also providing the Company the ability to return capital to our shareholders via dividend payments and share repurchases. 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, 2019, 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.

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 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 previously 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 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.

On February 26, 2020, the Company settled our existing CCS and replaced it with a new CCS arrangement that carried substantially the same terms (the "2020 CCS") as the existing CCS. Upon settlement of the existing CCS, the Company realized net cash proceeds of \$51.6 million. Under the 2020 CCS, the Company notionally exchanged \$500.0 million at an interest rate of 5.375% for €459.3 million at a weighted average interest rate of 3.672% for approximately 2.7 years, with a final maturity of November 3, 2022. The cash flows under the 2020 CCS are aligned with the Company's principal and interest obligations on our 5.375% 2025 Senior Notes. The 2020 CCS was executed at an exchange rate of 1.09 USD per euro.

The Company does not expect to record any significant gains or losses within the consolidated statements of operations as a result of the above settlement. Further, as a result of these combined transactions, the Company expects to incur an increase in annual cash interest payments and book interest expense of approximately \$2.5 million. Additionally, the Company expects that annual book interest expense will increase by approximately \$5.0 million, as the excluded component related to the existing CCS, referenced above, will no longer be amortized as a reduction to "Interest expense, net."

Contractual Obligations and Commercial Commitments

The following table reflects our contractual obligations as of December 31, 2019. Amounts we pay in future periods may vary from those reflected in the table:

(In millions)	Payments due by year						
	2020	2021	2022	2023	2024	Thereafter	Total
Purchase commitments ⁽¹⁾	\$ 1,038.8	\$ 90.5	\$ 67.0	\$ —	\$ —	\$ —	\$ 1,196.3
Long-term indebtedness ⁽²⁾	7.0	7.0	7.0	7.0	7.0	1,149.3	1,184.3
Interest payments on long-term debt (net of interest rate swap effects) ⁽³⁾	53.2	52.9	52.5	52.3	44.3	22.2	277.4
Pension and other postretirement benefits ⁽⁴⁾	17.7	5.9	7.2	10.1	8.9	63.4	113.2
Minimum lease commitments and other obligations ⁽⁵⁾	18.9	13.4	11.1	8.5	6.8	35.6	94.3
Uncertain tax positions, including interest and penalties ⁽⁶⁾	—	—	—	—	—	9.7	9.7
Total	\$ 1,135.6	\$ 169.7	\$ 144.8	\$ 77.9	\$ 67.0	\$ 1,280.2	\$ 2,875.2

- (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, 2019, 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, 2019 totaling \$10.4 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, 2019. 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, 2019.
- (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 2019 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 \$2.9 million through 2029. The payments identified above as subsequent to 2024 represent estimated pension and postretirement payments from 2025 through 2029. Refer to Note 16 in the consolidated financial statements for further information.
- (5) Includes minimum commitments related to our finance and operating lease obligations. Refer to Note 23 in the consolidated financial statements for further information. 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 discussed in the aforementioned section of Item 1, the Company has transitioned the majority of the services under the SAR MOSA that were previously provided by Dow as of December 31, 2019, and nearly all of the remaining services under the agreement will be transitioned in the first half of 2020. Based on this transition, we estimate our minimum remaining obligation under the SAR MOSA to be approximately \$5.0 million as of December 31, 2019.

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 \$157.1 million annually for 2020 through 2024, and a total of \$2,116.2 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. 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 1.03% and 3.48% for pension and postretirement benefits, respectively, to be appropriate as of December 31, 2019.

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 2019 were 1.79% and 4.42%, respectively. The weighted-average discount rates that we used to measure interest cost for pension and postretirement plans during 2019 were 1.59% and 4.14%, respectively.

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.

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 1.57% and 1.54% for 2019 and 2018, respectively. The increase was primarily due to higher interest rates during 2019 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) 2020 pension expense by approximately \$1.8 million and \$(1.7) 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) 2020 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, 2019 and 2018, plan assets totaled \$151.8 million and \$138.5 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, typically utilize 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, 2019 net property, plant and equipment, net identifiable finite-lived intangible assets, and goodwill totaled \$625.8 million, \$191.5 million, and \$67.7 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.

Through December 31, 2019, 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 was considered probable to close within one year following the balance sheet date; therefore, as of the years ended December 31, 2019 and 2018, the land was recorded as held-for-sale within "Other current assets" at a value of \$11.8 million and \$12.0 million, respectively (adjusted for foreign currency impact), and the deferred tax liability associated with that land is recorded as held-for-sale within "Accrued expenses and other current liabilities" at a value of \$2.8 million and \$2.9 million, respectively (adjusted for foreign currency impact), on the Company's consolidated balance sheets. The Company closed on the sale of the land in January 2020. 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, 2019, 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, 2019, our \$67.7 million in total goodwill is allocated to our reportable segments as follows: \$15.6 million to Latex Binders, \$11.0 million to Synthetic Rubber, \$36.7 million to Performance Plastics, and \$4.4 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.

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, 2019. 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, 2019, we had deferred tax assets of \$84.9 million, after valuation allowances of \$218.0 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.

Swiss federal and cantonal tax reform was enacted on August 6, 2019 and October 25, 2019, respectively, and includes measures such as, the elimination of certain preferential tax regimes and implementation of new tax rates at both the federal and cantonal levels. It also includes transitional relief measures which may provide for future tax deductions. As a result of both the federal and cantonal law changes, the Company recorded a \$65.0 million one-time deferred tax benefit for the year ended December 31, 2019, of which \$61.6 million was related to cantonal tax law changes. We believe it is more likely than not that a portion of the \$61.6 million deferred tax benefit recorded as a result of these cantonal tax law changes will not be realized during the utilization period provided by the legislation, spanning 2025 through 2029. This is based on our estimate of future taxable income in Switzerland, which was determined using management's judgment and assumptions about various factors, such as: historical experience and results, cyclicity of the business, and future industry and macroeconomic conditions and trends during the aforementioned utilization period. As a result, we recorded a \$25.3 million valuation allowance as of December 31, 2019.

As of December 31, 2019, we had deferred tax assets for tax loss carryforward of approximately \$748.4 million, \$51.4 million of which is subject to expiration in the years between 2020 and 2024. 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 estimate of future taxable income is based on management's judgment and assumptions about various factors including historical experience and results, cyclicity of the business, and future industry and macroeconomic conditions and

trends. Changes in these assumptions in future periods may require we 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, 2019. 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 for the year ended December 31, 2019, an increase in 100 basis points in LIBOR would have resulted in approximately \$5.0 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, 2019, 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, 2019, 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, 2019, 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, 2019, 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 57% of our net sales were generated in Europe for the year ended December 31, 2019. 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 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 2020, the Company has hedged approximately 80% of our exposure to the euro at a rate of 1.12. Inclusive of these hedges, a 1% change in the euro will impact our annual profitability by approximately \$1.0 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, 2019 and 2018.

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 \$261.0 million for the year ended December 31, 2019.

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, 2019. 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, 2019 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, 2019, 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, 2019 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, 2019 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 “Delinquent Section 16(a) Reports” of the Company’s definitive proxy statement for the 2020 annual general meeting of shareholders to be filed with the SEC pursuant to Regulation 14A under the Securities Exchange Act of 1934 (the “2020 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 a part of, and are not incorporated by reference into, this Annual Report.

Item 11. *Executive Compensation*

The information required by this Item 11 will be contained in our 2020 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 2020 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 2020 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 2020 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, 2019 and 2018	F-5
Consolidated Statements of Operations for the years ended December 31, 2019, 2018, and 2017	F-6
Consolidated Statements of Comprehensive Income (Loss) for the years ended December 31, 2019, 2018, and 2017	F-7
Consolidated Statements of Shareholders' Equity for the years ended December 31, 2019, 2018, and 2017	F-8
Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018, and 2017	F-9
Notes to Consolidated Financial Statements for the years ended December 31, 2019, 2018, and 2017	F-10
Financial Statement Schedule – Schedule II. Valuation and Qualifying Accounts for the years ended December 31, 2019, 2018, and 2017	F-59

Americas Styrenics LLC

Audited Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm	F-60
Consolidated Balance Sheets as of December 31, 2019 and 2018	F-61
Consolidated Statements of Comprehensive Income for the years ended December 31, 2019, 2018, and 2017	F-62
Consolidated Statements of Members' Equity for the years ended December 31, 2019, 2018, and 2017	F-63
Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018, and 2017	F-64
Notes to Consolidated Financial Statements for the years ended December 31, 2019, 2018, and 2017	F-65

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 on Form 10-Q for the quarter ended June 30, 2018, filed August 3, 2018)
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 on Form 8-K, 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)
4.3†	Description of Securities
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 on Form 8-K, 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 on Form 10-Q for the quarter ended June 30, 2018, filed on August 3, 2018)
10.3	Deed of Amendment and Restatement, 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, Styrone 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 for the quarter ended September 30, 2018, filed on November 9, 2018)
10.4	Form of Cross-Currency Rate Swap Transaction Confirmation (incorporated herein by reference to Exhibit 10.2 to the Current Report on Form 8-K, filed September 7, 2017)
10.5*	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 on Form 10-Q for the quarter ended March 31, 2018, filed May 3, 2018)
10.6*	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 on Form 8-K, filed on December 21, 2018)

Exhibit No.	Description
10.7*	Employment Agreement between Trinseo LLC and Barry Niziolek, dated May 20, 2016 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K, filed May 23, 2016)
10.8*	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 for the year ended December 31, 2015, File No. 001-36473, filed March 11, 2016)
10.9*	Letter Agreement Amendment to the Employment Agreement between Timothy Stedman and Trinseo Europe GmbH, dated October 2, 2019 (incorporated herein by reference to Exhibit 10.2 to the Current Report filed on Form 8-K, filed on October 2, 2019)
10.10*	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 on Form 10-K filed, March 11, 2016)
10.11*	Separation Agreement between Hayati Yarkadas and Trinseo Europe GmbH, dated October 2, 2019 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed October 3, 2019)
10.12*	Employment Agreement between Trinseo LLC and Frank A. Bozich, dated December 11, 2018 (incorporated herein by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on October 3, 2019)
10.13*	Employment Agreement between Trinseo LLC and David Stasse, dated April 29, 2019 (incorporated herein by reference to Exhibit 10.1 to the Current Report on Form 8-K, filed on April 30, 2019)
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 on Form 10-K for the year ended December 31, 2015, 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 on Form 10-Q for the quarter ended June 30, 2018, filed on August 3, 2018)
10.16*	Employment Agreement between Trinseo Europe GmbH and Alice Heezen-Dokianos dated June 3, 2019 (incorporated by reference to Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, filed August 9, 2019)
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)

Exhibit No.	Description
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)
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 for the quarter ended September 30, 2018, 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*	Amended and Restated Omnibus Incentive Plan (incorporated herein by reference to Exhibit 4.2 to the Form S-8, File No. 333-232925, filed on July 31, 2019)
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 on Form 10-K for the year ended December 31, 2017, filed March 1, 2018)

Exhibit No.	Description
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 for the quarter ended March 31, 2017, filed May 3, 2017)
10.32*	Form of Restricted Stock Unit Award Agreement for Executives (incorporated herein by reference to Exhibit 10.5 to the Quarterly Report on Form 10-Q, for the quarter ended March 31, 2018, 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 on Form 10-Q, for the quarter ended March 31, 2018, 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 on Form 10-Q, for the quarter ended March 31, 2018, 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 on Form 10-Q, for the quarter ended March 31, 2018, 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 on Form 10-Q, for the quarter ended March 31, 2018, 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 on Form 10-K, for the year ended December 31, 2016, filed March 1, 2017)
10.38*	Form of Executive Side Letter for Equity Grants (incorporated by reference to Exhibit 10.7 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, filed August 9, 2019)
10.39*	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 on Form 8-K, 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

Exhibit No.	Description
101.INS†	iXBRL Instance Document
101.SCH†	iXBRL Taxonomy Extension Schema Document
101.CAL†	iXBRL Taxonomy Extension Calculation Linkbase Document
101.DEF†	iXBRL Taxonomy Extension Definition Linkbase Document
101.LAB†	iXBRL Extension Label Linkbase Document
101.PRE†	iXBRL Taxonomy Extension Presentation Linkbase Document
104†	Cover Page Interactive Data File (formatted iXBRL and contained in Exhibit 101)

* Compensatory plan or arrangement.

** 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, 2020

TRINSEO S.A.

By: /s/ Frank Bozich
Name: Frank Bozich
Title: President and Chief Executive Officer
(Principal 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/ Frank Bozich</u> Frank Bozich	President, Chief Executive Officer and Director (Principal Executive Officer)	February 28, 2020
<u>/s/ David Stasse</u> David Stasse	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 28, 2020
<u>/s/ Bernard M. Skeete</u> Bernard M. Skeete	Vice President, Global Controller and Principal Accounting Officer (Principal Accounting Officer)	February 28, 2020
<u>/s/ Joseph Alvarado</u> Joseph Alvarado	Director	February 28, 2020

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Sandra Beach Lin</u> Sandra Beach Lin	Director	February 28, 2020
<u>/s/ Jeffrey J. Cote</u> Jeffrey J. Cote	Director	February 28, 2020
<u>/s/ Pierre-Marie De Leener</u> Pierre-Marie De Leener	Director	February 28, 2020
<u>/s/ K'Lynne Johnson</u> K'Lynne Johnson	Director	February 28, 2020
<u>/s/ Philip R. Martens</u> Philip R. Martens	Director	February 28, 2020
<u>/s/ Donald T. Misheff</u> Donald T. Misheff	Director	February 28, 2020
<u>/s/ Christopher D. Pappas</u> Christopher D. Pappas	Director	February 28, 2020
<u>/s/ Henri Steinmetz</u> Henri Steinmetz	Director	February 28, 2020
<u>/s/ Mark Tomkins</u> Mark Tomkins	Director	February 28, 2020
<u>/s/ Stephen M. Zide</u> Stephen M. Zide	Director	February 28, 2020

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* The audited financial statements of Americas Styrenics LLC as of December 31, 2019 and 2018 and for the years ended December 31, 2019, 2018, and 2017 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, 2019 and 2018, and the related consolidated statements of operations, of comprehensive income (loss), of shareholders' equity and of cash flows for each of the three years in the period ended December 31, 2019, 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, 2019, 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, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, 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 \$188.1 million and \$179.1 million as of December 31, 2019 and 2018, respectively, and income from equity investment of \$119.0 million, \$144.1 million and \$122.9 million for the years ended December 31, 2019, 2018 and 2017 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.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

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.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Valuation of Deferred Tax Asset Associated with Swiss Cantonal Tax Reform

As described in Note 14 to the consolidated financial statements, the Company is subject to income taxes in Luxembourg, the United States and numerous other foreign jurisdictions. Management records valuation allowances to reduce deferred tax assets when it is more-likely-than not that a tax benefit will not be realized. As of December 31, 2019, management had recorded a \$62.4 million deferred tax asset related to the enactment of Swiss Cantonal Tax Reform. This deferred tax asset was offset by a \$25.3 million valuation allowance for the portion of the deferred tax asset that more-likely-than-not, as a result of these cantonal tax law changes, will not be realized during the utilization period provided by the legislation, spanning 2025 through 2029. The valuation of the deferred tax asset associated with Swiss Cantonal Tax Reform is based on management's estimate of future taxable income in Switzerland, which was determined using management's judgment and assumptions about various factors, such as: historical experience and results, cyclicity of the business, and future industry and macroeconomic conditions and trends possible during the aforementioned utilization period.

The principal considerations for our determination that performing procedures relating to the valuation of the deferred tax asset associated with Swiss Cantonal Tax Reform is a critical audit matter are there was significant judgment and estimation by management when applying the more likely than not recognition criteria to the Company's deferred tax assets, particularly as it relates to estimates of future taxable income in Switzerland over the utilization period provided by the legislation, spanning 2025 through 2029. This in turn led to a high degree of auditor judgment, subjectivity, and

effort in performing procedures and evaluating audit evidence relating to management's estimates of future taxable income over the utilization period and assumptions, including historical experience and results, cyclicalities of the business, and future industry and macroeconomic conditions and trends possible during the aforementioned utilization period.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the valuation of deferred tax assets and controls associated with Swiss Cantonal Tax Reform, including determination of future taxable income over the utilization period. These procedures also included, among others, evaluating the judgments used by management in applying the more likely than not recognition criteria to the Company's deferred tax asset balance relating to Swiss Cantonal Tax Reform, including evaluating management's assessment of the realizability of the deferred tax asset and evaluating assumptions related to future taxable income over the utilization period. Evaluating management's assumptions relating to future taxable income over the utilization period involved evaluating historical experience and results, cyclicalities of the business, and future industry and macroeconomic conditions and trends possible during the aforementioned utilization period. Professionals with specialized skill and knowledge were used to assist in evaluating the reasonableness of assumptions used by management in assessing the realizability of the deferred tax asset associated with Swiss Cantonal Tax Reform.

/s/ PricewaterhouseCoopers LLP
Philadelphia, Pennsylvania
February 28, 2020

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

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

	December 31,	
	2019	2018
Assets		
Current assets		
Cash and cash equivalents	\$ 456.2	\$ 452.3
Accounts receivable, net of allowance	570.8	648.1
Inventories	438.2	510.4
Other current assets	25.9	20.5
Total current assets	<u>1,491.1</u>	<u>1,631.3</u>
Investments in unconsolidated affiliates	188.1	179.1
Property, plant and equipment, net	625.8	592.1
Other assets		
Goodwill	67.7	69.0
Other intangible assets, net	191.5	191.1
Right-of-use assets - operating	71.4	—
Deferred income tax assets	67.5	26.7
Deferred charges and other assets	55.7	37.5
Total other assets	<u>453.8</u>	<u>324.3</u>
Total assets	<u>\$ 2,758.8</u>	<u>\$ 2,726.8</u>
Liabilities and shareholders' equity		
Current liabilities		
Short-term borrowings and current portion of long-term debt	\$ 11.1	\$ 7.0
Accounts payable	343.0	354.2
Current lease liabilities - operating	14.1	—
Income taxes payable	5.0	16.0
Accrued expenses and other current liabilities	154.4	159.8
Total current liabilities	<u>527.6</u>	<u>537.0</u>
Noncurrent liabilities		
Long-term debt, net of unamortized deferred financing fees	1,162.6	1,160.8
Noncurrent lease liabilities - operating	58.0	—
Deferred income tax liabilities	41.5	45.4
Other noncurrent obligations	300.2	214.9
Total noncurrent liabilities	<u>1,562.3</u>	<u>1,421.1</u>
Commitments and contingencies (Note 15)		
Shareholders' equity		
Ordinary shares, \$0.01 nominal value, 50,000.0 shares authorized (December 31, 2019: 48.8 shares issued and 39.0 shares outstanding; December 31, 2018: 48.8 shares issued and 41.6 shares outstanding)	0.5	0.5
Additional paid-in-capital	574.7	575.4
Treasury shares, at cost (December 31, 2019: 9.8 shares; December 31, 2018: 7.2 shares)	(524.9)	(418.1)
Retained earnings	781.0	753.2
Accumulated other comprehensive loss	(162.4)	(142.3)
Total shareholders' equity	<u>668.9</u>	<u>768.7</u>
Total liabilities and shareholders' equity	<u>\$ 2,758.8</u>	<u>\$ 2,726.8</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,		
	2019	2018	2017
Net sales	\$ 3,775.8	\$ 4,622.8	\$ 4,448.1
Cost of sales	3,446.9	4,094.0	3,807.8
Gross profit	328.9	528.8	640.3
Selling, general and administrative expenses	300.0	258.5	239.0
Equity in earnings of unconsolidated affiliates	119.0	144.1	123.7
Operating income	147.9	414.4	525.0
Interest expense, net	39.3	46.4	70.1
Loss on extinguishment of long-term debt	—	0.2	65.3
Other expense (income), net	4.0	3.5	(21.5)
Income before income taxes	104.6	364.3	411.1
Provision for income taxes	12.6	71.8	82.8
Net income	\$ 92.0	\$ 292.5	\$ 328.3
Weighted average shares- basic	40.3	42.8	43.8
Net income per share- basic	\$ 2.28	\$ 6.83	\$ 7.49
Weighted average shares- diluted	40.7	43.7	45.0
Net income per share- diluted	\$ 2.26	\$ 6.70	\$ 7.30

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>2019</u>	<u>2018</u>	<u>2017</u>
Net income	\$ 92.0	\$ 292.5	\$ 328.3
Other comprehensive income (loss), net of tax:			
Cumulative translation adjustments	5.1	(17.3)	24.5
Net gain (loss) on cash flow hedges	(8.3)	15.0	(18.4)
Pension and other postretirement benefit plans:			
Prior service credit arising during period (net of tax of \$0, \$0.2, and \$0)	—	0.7	—
Net gain (loss) arising during period (net of tax of \$(8.9), \$0.3, and \$10.8)	(19.0)	1.8	31.8
Amounts reclassified from accumulated other comprehensive income (loss)	2.1	3.1	(13.3)
Total other comprehensive income (loss), net of tax	<u>(20.1)</u>	<u>3.3</u>	<u>24.6</u>
Comprehensive income	<u>\$ 71.9</u>	<u>\$ 295.8</u>	<u>\$ 352.9</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, 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 loss	—	—	—	—	—	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
Net income	—	—	—	—	—	—	92.0	92.0
Other comprehensive income	—	—	—	—	—	(20.1)	—	(20.1)
Share-based compensation activity	0.2	(0.2)	—	(0.7)	9.6	—	—	8.9
Purchase of treasury shares	(2.8)	2.8	—	—	(116.4)	—	—	(116.4)
Dividends on ordinary shares (\$1.60 per share)	—	—	—	—	—	—	(64.2)	(64.2)
Balance at December 31, 2019	39.0	9.8	\$ 0.5	\$ 574.7	\$ (524.9)	\$ (162.4)	\$ 781.0	\$ 668.9

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,		
	2019	2018	2017
Cash flows from operating activities			
Net income	\$ 92.0	\$ 292.5	\$ 328.3
Adjustments to reconcile net income to net cash provided by operating activities			
Depreciation and amortization	136.0	130.2	110.6
Amortization of deferred financing fees, issuance discount, and excluded component of hedging instruments	(0.5)	0.6	5.1
Deferred income tax	(37.4)	5.3	14.8
Share-based compensation expense	13.5	15.8	13.8
Earnings of unconsolidated affiliates, net of dividends	(9.0)	(26.6)	5.3
Unrealized net (gain) loss on foreign exchange forward contracts	3.0	(0.9)	2.6
Loss on extinguishment of long-term debt	—	0.2	65.3
Gain on sale of businesses and other assets	(0.7)	(1.0)	(10.5)
Impairment charges	0.2	1.9	4.3
Gain on bargain purchase	(4.7)	—	—
Pension curtailment and settlement (gain) loss	0.8	0.6	(21.6)
Changes in assets and liabilities			
Accounts receivable	66.6	21.2	(51.8)
Inventories	70.7	(16.0)	(80.2)
Accounts payable and other current liabilities	(1.7)	(43.8)	9.3
Income taxes payable	(10.9)	(19.7)	9.9
Other assets, net	(0.2)	(4.4)	(4.5)
Other liabilities, net	4.8	10.6	(9.4)
Cash provided by operating activities	<u>322.5</u>	<u>366.5</u>	<u>391.3</u>
Cash flows from investing activities			
Capital expenditures	(110.1)	(121.4)	(147.4)
Net cash received (paid) for asset and business acquisitions, net of cash acquired	0.1	—	(82.3)
Proceeds from capital expenditures subsidy	—	1.0	—
Proceeds from the sale of businesses and other assets	0.7	1.7	46.2
Distributions from unconsolidated affiliates	—	—	0.9
Cash used in investing activities	<u>(109.3)</u>	<u>(118.7)</u>	<u>(182.6)</u>
Cash flows from financing activities			
Deferred financing fees	—	(0.6)	(21.5)
Short-term borrowings, net	(10.6)	(0.3)	(0.3)
Purchase of treasury shares	(119.7)	(142.9)	(88.9)
Dividends paid	(65.7)	(66.0)	(58.0)
Proceeds from exercise of option awards	0.9	2.8	9.3
Withholding taxes paid on restricted share units	(4.6)	(8.2)	(0.3)
Net proceeds from issuance of 2024 Term Loan B	—	696.5	700.0
Repayments of 2024 Term Loan B	(7.0)	(703.5)	(1.8)
Repayments of 2021 Term Loan B	—	—	(492.5)
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>(206.7)</u>	<u>(222.2)</u>	<u>(253.0)</u>
Effect of exchange rates on cash	(1.4)	(6.1)	12.0
Net change in cash, cash equivalents, and restricted cash	5.1	19.5	(32.3)
Cash, cash equivalents, and restricted cash—beginning of period	452.3	432.8	465.1
Cash, cash equivalents, and restricted cash—end of period	<u>\$ 457.4</u>	<u>\$ 452.3</u>	<u>\$ 432.8</u>
Less: Restricted cash, included in "Other current assets"	(1.2)	—	—
Cash and cash equivalents—end of period	<u>\$ 456.2</u>	<u>\$ 452.3</u>	<u>\$ 432.8</u>
Supplemental disclosure of cash flow information			
Cash paid for income taxes, net of refunds	\$ 66.3	\$ 85.2	\$ 75.0
Cash paid for interest, net of amounts capitalized	\$ 39.7	\$ 50.7	\$ 63.3
Accrual for property, plant and equipment	\$ 17.2	\$ 10.2	\$ 15.6

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, 2019, the Company’s production facilities included 32 manufacturing plants (which included a total of 77 production units) at 24 sites across 12 countries, including its joint venture. Additionally, as of December 31, 2019, 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.

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, 2019 and 2018 and for each of the three years in the period ended December 31, 2019 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.

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, 2019 and 2018, 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, 2019 and 2018, 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 new hedge accounting guidance effective April 1, 2018.

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, 2019 and 2018, the Company recognized net foreign exchange transaction losses of \$6.2 million and \$15.8 million, respectively, while for the year ended December 31, 2017, the Company recognized a net foreign exchange transaction gain 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, 2019 and 2018, 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, 2019 and 2018, \$23.1 million and \$15.1 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. The Company also capitalizes interest as a component of the cost of capital assets constructed for its own use. 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.

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, 2019.

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 ("ASC") 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, 2019, 2018, and 2017.

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, 2019, 2018, and 2017.

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.

Restricted Cash and Cash Equivalents

Restrictions on the Company's cash and cash equivalents are primarily related to customs requirements. As of December 31, 2019 and 2018, the Company had restricted cash and cash equivalents of \$1.2 million and \$0.0 million, respectively, included within "Other current assets" in the consolidated balance sheets.

Sales

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. For arrangements where the period between customer payment and transfer of goods/services is determined to be one year or less at contract inception, the Company applies the practical expedient exception available under ASC 606 and does not adjust the promised amount of consideration under the contract for the effects of a significant financing component. Additionally, the Company's 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, pursuant to the practical expedient in ASC 606.

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 \$54.6 million, \$56.0 million, and \$54.3 million for the years ended December 31, 2019, 2018, and 2017, respectively.

The Company expenses promotional and advertising costs as incurred to SG&A expenses. Total promotional and advertising expenses were \$1.8 million, \$1.6 million, and \$1.5 million for the years ended December 31, 2019, 2018, and 2017, respectively.

Restructuring charges included within SG&A expenses were \$18.6 million, \$9.3 million, and \$8.0 million for the years ended December 31, 2019, 2018, and 2017, 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. 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 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 ("ROU") 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. The new guidance must be adopted using a modified retrospective transition, applying the new standard to all leases existing at the date of initial application. The Company adopted the standard effective January 1, 2019, and as a result, the Company recorded ROU assets and lease liabilities of \$73.0 million and \$72.4 million, respectively, on the consolidated balance sheet as of January 1, 2019. The Company's adoption of this standard did not result in a cumulative

effect adjustment being recorded to opening retained earnings as of January 1, 2019 and did not have a material impact on the Company's consolidated statements of operations or cash flows. Refer to Note 23 for new disclosure requirements in effect as a result of this adoption.

In August 2018, the FASB issued guidance which modifies the disclosure requirements for employers that sponsor defined benefit pension plans or other postretirement plans. Under the guidance, the Company is required to disclose reasons for significant gains and losses related to changes in the benefit obligation for the period. The Company adopted this guidance during the fourth quarter of 2019 on a retrospective basis, which did not result in material impact on its consolidated financial statements. Refer to Note 16 for new disclosure requirements in effect as a result of this adoption.

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. The Company will adopt the new guidance prospectively to eligible costs incurred on or after the date first applied. The Company does not anticipate that adoption of this guidance will have a material impact on its consolidated financial statements, barring significant future cloud computing transactions.

In December 2019, the FASB issued guidance that simplifies the accounting for income taxes. The amended guidance includes removal of certain exceptions to the general principles of ASC 740, Income Taxes, and simplification in several other areas such as accounting for a franchise tax (or similar tax) that is partially based on income. This guidance is effective for public business entities for interim and annual reporting periods beginning after December 15, 2020, with early adoption permitted. The Company is currently assessing the timing and impacts of adopting this guidance on its consolidated financial statements.

NOTE 3—NET SALES

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, 2019, 2018, and 2017.

Year Ended	Latex Binders	Synthetic Rubber	Performance Plastics	Polystyrene	Feedstocks	Total
December 31, 2019						
United States	\$ 263.7	\$ —	\$ 305.9	\$ —	\$ 10.7	\$ 580.3
Europe	388.5	441.3	735.9	448.8	148.8	2,163.3
Asia-Pacific	239.3	—	238.2	360.6	96.6	934.7
Rest of World	11.3	—	86.2	—	—	97.5
Total	<u>\$ 902.8</u>	<u>\$ 441.3</u>	<u>\$ 1,366.2</u>	<u>\$ 809.4</u>	<u>\$ 256.1</u>	<u>\$ 3,775.8</u>
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						
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>

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 58 days as of December 31, 2019), 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, 2019, the impact of recognizing changes in selling prices related to prior periods was immaterial.

NOTE 4—ACQUISITIONS AND DIVESTITURES

Acquisition of API Plastics

In July 2017, the Company acquired 100% of the equity interest of API Applicazioni Plastiche Industriali S.p.A ("API Plastics") a privately held company that manufactures soft-touch polymers and bioplastics, such as thermoplastic elastomers ("TPEs"). 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, which was paid for in the year ended December 31, 2017. Of the total consideration for the transaction, the Company allocated \$28.3 million to goodwill, based on the expected future cash flows of the acquired business. The Company finalized the purchase price allocation for API Plastics during the third quarter of 2018, which is described in further detail in its Form 10-K filed on February 28, 2019.

Acquisition of Latex Binders Assets in Germany

On October 1, 2019, the Company completed the acquisition from Dow of its latex binder production facilities and related infrastructure in Rheinmünster, Germany. The transaction includes full ownership and operational control of latex production facilities, site infrastructure, and service contracts, as well as certain employees transferring from Dow to Trinseo. This acquisition provides Trinseo with manufacturing assets supporting its strategy to grow its Latex Binders business in applications serving the coatings, adhesives, specialty paper, and sealants markets. The transaction, which is being accounted for as a business combination, did not require any upfront cash outlay from Trinseo. The Company assumed net liabilities of \$2.0 million as well as employees transferred in connection with the acquisition, as detailed in the table below. In exchange for the net liabilities assumed, Trinseo received net cash of \$6.7 million.

The Company allocated the purchase price of the acquisition, which was represented by the value of the pension liabilities assumed net of cash and net assets received in connection with the transaction, to identifiable assets acquired and liabilities assumed based on their estimated fair values as of the acquisition date. There was an excess in the aggregate fair value of the identifiable net assets acquired over the purchase price, which was recorded as a bargain purchase gain of \$4.7 million during the fourth quarter of 2019. There were no intangible assets identified in conjunction with this acquisition.

The Company calculated the fair value of the assets acquired and certain liabilities assumed using the market, cost, and income approaches (or a combination thereof). Fair values of assets and certain liabilities were determined based on Level 3 inputs including comparable asset sale information, discount rates, anticipated useful lives and depreciation

curves, and estimated future cash flows. The fair value of pension liabilities assumed was determined in accordance with ASC 715 using key inputs including, but not limited to, discount rates, expected rates of return on plan assets, and future compensation growth rates. The various inputs used in the asset and pension valuations require management judgment.

The purchase price allocation is based upon preliminary information and is subject to change if additional information about the facts and circumstances that existed at the acquisition date become available. Additional information is being gathered to finalize these preliminary measurements, particularly with respect to property, plant and equipment, inventory, deferred income taxes and pension liabilities. Further adjustments may be necessary as a result of the Company's ongoing assessment of additional information related to the fair value of assets acquired and liabilities assumed, including the bargain purchase gain, during the measurement period.

The following table summarizes the preliminary fair value measurement of the assets acquired and liabilities assumed as of the date of acquisition:

	October 1, 2019
Inventories	\$ 3.9
Property, plant, and equipment	48.2
Right-of-use-assets - operating	0.3
Total fair value of assets acquired	52.4
Accrued expenses and other current liabilities	(0.6)
Noncurrent lease liabilities - operating	(0.3)
Deferred income tax liabilities	(2.0)
Other noncurrent obligations ⁽¹⁾	(51.5)
Total fair value of liabilities assumed	\$ (54.4)
Net liabilities assumed	\$ (2.0)
Net cash received	\$ 6.7
Bargain purchase gain⁽²⁾	\$ 4.7

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- (1) Relates primarily to pension liabilities of \$44.5 million and unfavorable leasehold interest of \$7.0 million. The unfavorable leasehold interest is being amortized over its estimated remaining useful life of 18 years.
- (2) The bargain purchase gain is included within "Other expense (income), net" in the consolidated statement of operations for the year ended December 31, 2019.

During the year ended December 31, 2019, \$2.2 million of expense was incurred related to jurisdictional asset transfer taxes expected to be paid in conjunction with this acquisition, which were included within "Other expense (income), net" in the consolidated statement of operations. Furthermore, during the year ended December 31, 2019, transaction and integration costs related to advisory and professional fees incurred in conjunction with the acquisition were \$1.6 million, and are included within "Selling, general and administrative expenses" in the consolidated statement of operations. Pro forma results of operations information have not been presented as the effect of the acquisition is not material. The operating results of the acquisition are included within the Company's consolidated statement of operations since the acquisition date of October 1, 2019 and were not material for the year ended December 31, 2019.

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, 2017, the Company received \$1.7 million in proceeds from the sale of these businesses. During the years ended December 31, 2019 and 2018, the Company recognized \$0.7 million and \$1.0 million, respectively, of consideration earned for the performance of the transferred

latex binders business, of which \$0.7 million and \$0.5 million, respectively, was received in cash.

NOTE 5—INVESTMENTS IN UNCONSOLIDATED AFFILIATES

During the year ended December 31, 2019, 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 \$119.0 million, \$144.1 million, and \$123.7 million for the years ended December 31, 2019, 2018, and 2017, respectively.

Both of the unconsolidated affiliates are privately held companies; therefore, quoted market prices for their equity interests 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,	
	2019	2018
Current assets	\$ 326.6	\$ 373.4
Noncurrent assets	247.7	236.2
Total assets	<u>\$ 574.3</u>	<u>\$ 609.6</u>
Current liabilities	\$ 158.8	\$ 167.2
Noncurrent liabilities	18.5	17.4
Total liabilities	<u>\$ 177.3</u>	<u>\$ 184.6</u>

	Year Ended December 31,		
	2019	2018	2017
Sales	\$ 1,486.1	\$ 1,825.7	\$ 1,798.1
Gross profit	\$ 243.2	\$ 310.2	\$ 244.3
Net income	\$ 192.5	\$ 260.2	\$ 196.3

There were no sales to unconsolidated affiliates for the year ended December 31, 2019 and 2018. Sales to unconsolidated affiliates for the year ended December 31, 2017 were \$3.6 million. Purchases from unconsolidated affiliates were \$81.9 million, \$91.5 million, and \$78.8 million for the years ended December 31, 2019, 2018, and 2017, respectively.

As of December 31, 2019 and 2018, respectively, \$0.1 million and \$0.1 million due from unconsolidated affiliates was included in “Accounts receivable, net of allowance” and \$6.3 million and \$5.4 million due to unconsolidated affiliates was included in “Accounts payable” in the consolidated balance sheets.

Americas Styrenics

As of December 31, 2019 and 2018, respectively, the Company’s investment in Americas Styrenics was \$188.1 million and \$179.1 million, which was \$10.3 million, and \$33.3 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 1.5 years as of December 31, 2019. The Company received dividends from Americas Styrenics of \$110.0 million, \$117.5 million, and \$120.0 million for the years ended December 31, 2019, 2018, and 2017, 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 for the year ended December 31, 2017.

NOTE 6—ACCOUNTS RECEIVABLE

Accounts receivable consisted of the following:

	<u>December 31,</u>	
	<u>2019</u>	<u>2018</u>
Trade receivables	\$ 455.0	\$ 535.4
Non-income tax receivables	63.4	74.6
Other receivables	57.7	44.2
Less: allowance for doubtful accounts	(5.3)	(6.1)
Total	<u>\$ 570.8</u>	<u>\$ 648.1</u>

For the years ended December 31, 2019, 2018, and 2017, the Company recognized bad debt expense (benefit) of \$(0.7) million, \$0.6 million, and \$1.5 million, respectively.

NOTE 7—INVENTORIES

Inventories consisted of the following:

	<u>December 31,</u>	
	<u>2019</u>	<u>2018</u>
Finished goods	\$ 210.8	\$ 269.8
Raw materials and semi-finished goods	190.1	205.8
Supplies	37.3	34.8
Total	<u>\$ 438.2</u>	<u>\$ 510.4</u>

NOTE 8—PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consisted of the following:

	Estimated Useful Lives (Years)	December 31,	
		2019	2018
Land	N/A	\$ 53.0	\$ 26.0
Land and waterway improvements	1 - 20	26.9	18.4
Buildings	10 - 50	110.7	97.0
Machinery and equipment	3 - 10	955.5	912.9
Leasehold interests	9 - 40	41.6	40.9
Other property	1 - 20	47.4	34.8 ⁽¹⁾
Construction in process	N/A	56.4	52.7
Property, plant and equipment		1,291.5	1,182.7
Less: accumulated depreciation		(665.7)	(590.6)
Property, plant and equipment, net		\$ 625.8	\$ 592.1

(1) This prior year amount has been reclassified within the table to conform to the current year presentation.

	Year Ended December 31,		
	2019	2018	2017
Depreciation expense	\$ 96.9	\$ 95.7	\$ 77.9
Capitalized interest	\$ 3.0	\$ 3.6	\$ 5.0

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, 2017 through December 31, 2019:

	Latex Binders	Synthetic Rubber	Performance Plastics	Polystyrene	Feedstocks	Americas Styrenics	Total
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
Foreign currency impact	(0.3)	(0.3)	(0.6)	(0.1)	—	—	(1.3)
Balance at December 31, 2019	\$ 15.6	\$ 11.0	\$ 36.7	\$ 4.4	\$ —	\$ —	\$ 67.7

Goodwill impairment testing is performed annually as of October 1. In 2019, 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, 2019, 2018, and 2017.

Other Intangible Assets

The following table provides information regarding the Company's other intangible assets as of December 31, 2019 and 2018:

	Estimated Useful Life (Years)	December 31, 2019			December 31, 2018		
		Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Developed technology	9 - 15	\$ 188.6	\$ (117.2)	\$ 71.4	\$ 192.3	\$ (105.6)	\$ 86.7
Customer Relationships	19	13.8	(1.8)	12.0	14.1	(1.1)	13.0
Manufacturing Capacity							
Rights	6	22.1	(20.0)	2.1	21.8	(16.8)	5.0
Software	5 - 10	119.2	(50.0)	69.2	101.9	(35.3)	66.6
Software in development	N/A	34.7	—	34.7	17.2	—	17.2
Other	3	4.3	(2.2)	2.1	3.9	(1.3)	2.6
Total		\$ 382.7	\$ (191.2)	\$ 191.5	\$ 351.2	\$ (160.1)	\$ 191.1

Amortization expense related to finite-lived intangible assets totaled \$33.0 million, \$29.7 million, and \$27.0 million, for the years ended December 31, 2019, 2018, and 2017, 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					
	2020	2021	2022	2023	2024
	\$ 30.6	\$ 26.6	\$ 25.7	\$ 25.3	\$ 24.9

NOTE 10—ACCOUNTS PAYABLE

Accounts payable consisted of the following:

	December 31,	
	2019	2018
Trade payables	\$ 304.6	\$ 319.9
Other payables	38.4	34.3
Total	\$ 343.0	\$ 354.2

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, 2019 and 2018.

	Interest Rate as of December 31, 2019	Maturity Date	December 31, 2019		
			Carrying Amount	Unamortized Deferred Financing Fees ⁽¹⁾	Total Debt, Less Unamortized Deferred Financing Fees
Senior Credit Facility					
2024 Term Loan B	3.799%	September 2024	\$ 684.3	\$ (13.7)	\$ 670.6
2022 Revolving Facility ⁽²⁾	Various	September 2022	—	—	—
2025 Senior Notes	5.375%	September 2025	500.0	(7.3)	492.7
Accounts Receivable Securitization Facility ⁽³⁾	Various	September 2021	—	—	—
Other indebtedness	Various	Various	10.4	—	10.4
Total debt			\$ 1,194.7	\$ (21.0)	\$ 1,173.7
Less: current portion ⁽⁴⁾					(11.1)
Total long-term debt, net of unamortized deferred financing fees					\$ 1,162.6

	Interest Rate as of December 31, 2018	Maturity Date	December 31, 2018		
			Carrying Amount	Unamortized Deferred Financing Fees ⁽¹⁾	Total Debt, Less Unamortized Deferred Financing Fees
Senior Credit Facility					
2024 Term Loan B	4.522%	September 2024	\$ 691.3	\$ (16.2)	\$ 675.1
2022 Revolving Facility ⁽²⁾	Various	September 2022	—	—	—
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			\$ 1,192.4	\$ (24.6)	\$ 1,167.8
Less: current portion					(7.0)
Total long-term debt, net of unamortized deferred financing fees					\$ 1,160.8

- (1) This caption does not include unamortized deferred financing fees of \$2.6 million and \$3.6 million as of December 31, 2019 and 2018, 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 \$361.0 million (net of \$14.0 million outstanding letters of credit) of funds available for borrowing under this facility as of December 31, 2019. 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) As of December 31, 2019, the Company had \$137.6 million of accounts receivable available to support this facility, based on the pool of eligible accounts receivable. In regard to outstanding borrowings, fixed interest charges are 1.95% plus variable commercial paper rates, while for available, but undrawn commitments, fixed charges are 1.00%.
- (4) As of December 31, 2019 and 2018, the current portion of long-term debt is primarily related to \$7.0 million of scheduled future principal payments on the 2024 Term Loan B.

Total interest expense, net recognized during the years ended December 31, 2019, 2018, and 2017, was \$39.3 million, \$46.4 million, and \$70.1 million, respectively, of which \$4.7 million, \$4.5 million, and \$5.1 million,

respectively, represented amortization of deferred financing fees and debt discounts. Total accrued interest on outstanding debt as of December 31, 2019 and 2018 was \$4.4 million, excluding the impact of the CCS (see Note 12). 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 above) 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, 2019, 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, 2019 and 2018, \$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:

<u>12-month period commencing September 1 in Year</u>	<u>Percentage</u>
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, 2019, 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 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.

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 balance sheet 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 this exposure, the Company also uses foreign exchange forward contracts to economically hedge the impact of the variability in exchange rates on assets and liabilities denominated in certain foreign currencies. These derivative contracts are not designated for hedge accounting treatment.

As of December 31, 2019, the Company had open foreign exchange forward contracts with a notional U.S. dollar equivalent absolute value of \$500.3 million. The following table displays the notional amounts of the most significant net foreign exchange hedge positions outstanding as of December 31, 2019:

Buy / (Sell)	December 31, 2019
Euro	\$ (346.4)
Chinese Yuan	\$ (48.3)
Swiss Franc	\$ 35.4
Indonesian Rupiah	\$ (18.5)
Korean Won	\$ (12.2)

Open foreign exchange forward contracts as of December 31, 2019 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, 2019 have maturities occurring over a period of 12 months and had a net notional U.S. dollar equivalent of \$84.0 million.

Interest Rate Swaps

On September 6, 2017, the Company issued the 2024 Term Loan B, which currently bears an interest rate of the London Interbank Offered Rate ("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 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, 2019, 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 in September 2022. 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 (1.80% as of December 31, 2019) 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 cross currency swaps ("CCS"), swapping USD principal and interest payments on its 2025 Senior Notes for euro-denominated payments. Under the terms of the CCS, the Company has 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 its 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 new hedge 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 OCI, and will remain in AOCI until either the sale or substantially complete liquidation of the subsidiary. As of December 31, 2019, 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 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 the Company elected to amortize 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 are being recognized within "Interest expense, net" in the consolidated statements of operations.

On February 26, 2020, the Company settled its existing CCS and replaced it with a new CCS arrangement that carried substantially the same terms (the "2020 CCS") as the existing CCS. Upon settlement of the existing CCS, the Company realized net cash proceeds of \$51.6 million. Under the 2020 CCS, the Company notionally exchanged \$500.0 million at an interest rate of 5.375% for €459.3 million at a weighted average interest rate of 3.672% for approximately 2.7 years, with a final maturity of November 3, 2022. The cash flows under the 2020 CCS are aligned with the Company's principal and interest obligations on its 5.375% 2025 Senior Notes. The 2020 CCS was executed at an exchange rate of 1.09 USD per euro. The Company does not expect to record any significant gains or losses within the consolidated statements of operations as a result of the above settlement.

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, 2019, 2018, and 2017:

	Location and Amount of Gain (Loss) Recognized in Statements of Operations								
	Year Ended December 31, 2019			Year Ended December 31, 2018			Year Ended December 31, 2017		
	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 and expense line items presented in the statements of operations in which the effects of derivative instruments are recorded	\$ 3,446.9	\$ 39.3	\$ 4.0	\$ 4,094.0	\$ 46.4	\$ 3.5	\$ 3,807.8	\$ 70.1	\$ (21.5)
Effects of cash flow hedge instruments:									
Foreign exchange cash flow hedges									
Amount of gain (loss) reclassified from AOCI into income	\$ 6.7	\$ —	\$ —	\$ (6.0)	\$ —	\$ —	\$ (2.0)	\$ —	\$ —
Interest rate swaps									
Amount of gain (loss) reclassified from AOCI into income	\$ —	\$ 0.9	\$ —	\$ —	\$ 0.3	\$ —	\$ —	\$ (0.3)	\$ —
Effects of net investment hedge instruments:									
Cross currency swaps (CCS)									
Amount of gain excluded from effectiveness testing	\$ —	\$ 15.8	\$ —	\$ —	\$ 11.8	\$ —	\$ —	\$ —	\$ —
Effects of derivatives not designated as hedge instruments:									
Foreign exchange forward contracts									
Amount of gain (loss) recognized in income	\$ —	\$ —	\$ 8.0	\$ —	\$ —	\$ 21.0	\$ —	\$ —	\$ (19.2)

The following table presents the effect of cash flow and net investment hedge accounting on AOCI for the years ended December 31, 2019, 2018, and 2017:

	Gain (Loss) Recognized in AOCI on Balance Sheets		
	Year Ended		
	December 31,		
	2019	2018	2017
Designated as Cash Flow Hedges			
Foreign exchange cash flow hedges	\$ (2.2)	\$ 13.3	\$ (21.3)
Interest rate swaps	(6.1)	1.7	2.9
Total	\$ (8.3)	\$ 15.0	\$ (18.4)
Designated as Net Investment Hedges			
Euro Notes	\$ —	\$ —	\$ 38.6
Cross currency swaps (CCS)	\$ 17.9	\$ 23.7	\$ (17.5)
Total	\$ 17.9	\$ 23.7	\$ 21.1

The Company recorded gains of \$8.0 million and \$21.0 million during the years ended December 31, 2019 and 2018, 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 \$6.2 million and \$15.8 million during the years ended December 31, 2019 and 2018, 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 12 months an approximate \$0.1 million net loss from AOCI into earnings related to the Company's outstanding foreign exchange cash flow hedges and interest rate swaps as of December 31, 2019 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, 2019					Total
	Foreign Exchange Forward Contracts	Foreign Exchange Cash Flow Hedges	Interest Rate Swaps	Cross Currency Swaps		
Asset Derivatives:						
Accounts receivable, net of allowance	\$ 1.1	\$ —	\$ —	\$ 8.6	\$ 9.7	
Deferred charges and other assets	—	—	—	19.2	19.2	
Gross derivative asset position	1.1	—	—	27.8	28.9	
<i>Less: Counterparty netting</i>	(0.4)	—	—	—	(0.4)	
Net derivative asset position	\$ 0.7	\$ —	\$ —	\$ 27.8	\$ 28.5	
Liability Derivatives:						
Accounts payable	\$ (5.7)	\$ (0.5)	\$ (0.4)	\$ —	\$ (6.6)	
Other noncurrent obligations	—	—	(1.0)	—	(1.0)	
Gross derivative liability position	(5.7)	(0.5)	(1.4)	—	(7.6)	
<i>Less: Counterparty netting</i>	0.5	—	—	—	0.5	
Net derivative liability position	\$ (5.2)	\$ (0.5)	\$ (1.4)	\$ —	\$ (7.1)	
Total net derivative position	\$ (4.5)	\$ (0.5)	\$ (1.4)	\$ 27.8	\$ 21.4	

Balance Sheet Classification	December 31, 2018					Total
	Foreign Exchange Forward Contracts	Foreign Exchange Cash Flow Hedges	Interest Rate Swaps	Cross Currency Swaps		
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	

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, 2019 and 2018:

Assets (Liabilities) at Fair Value	December 31, 2019			
	Quoted Prices in Active Markets for Identical Items (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Foreign exchange forward contracts—Assets	\$ —	\$ 0.7	\$ —	\$ 0.7
Foreign exchange forward contracts—(Liabilities)	—	(5.2)	—	(5.2)
Foreign exchange cash flow hedges—(Liabilities)	—	(0.5)	—	(0.5)
Interest rate swaps—(Liabilities)	—	(1.4)	—	(1.4)
Cross currency swaps—Assets	—	27.8	—	27.8
Total fair value	\$ —	\$ 21.4	\$ —	\$ 21.4

Assets (Liabilities) at Fair Value	December 31, 2018			
	Quoted Prices in Active Markets for Identical Items (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
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

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, 2019 and 2018:

	As of <u>December 31, 2019</u>	As of <u>December 31, 2018</u>
2025 Senior Notes	\$ 503.7	\$ 438.3
2024 Term Loan B	686.4	658.9
Total fair value	\$ 1,190.1	\$ 1,097.2

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, 2019 and 2018.

NOTE 14—INCOME TAXES

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

	Year Ended December 31,		
	2019	2018	2017
United States	\$ 115.3	\$ 147.0	\$ 138.0
Outside of the United States	(10.7)	217.3	273.1
Income before income taxes	\$ 104.6	\$ 364.3	\$ 411.1

The provision for income taxes is composed of:

	Year Ended December 31, 2019			Year Ended December 31, 2018			Year Ended December 31, 2017		
	Current	Deferred	Total	Current	Deferred	Total	Current	Deferred	Total
U.S. federal	\$ 16.9	\$ 5.2	\$ 22.1	\$ 22.8	\$ 5.9	\$ 28.7	\$ 33.5	\$ 6.9	\$ 40.4
U.S. state and other	2.8	0.9	3.7	4.1	1.0	5.1	4.8	—	4.8
Non-U.S.	30.3	(43.5)	(13.2)	39.6	(1.6)	38.0	29.7	7.9	37.6
Total	\$ 50.0	\$ (37.4)	\$ 12.6	\$ 66.5	\$ 5.3	\$ 71.8	\$ 68.0	\$ 14.8	\$ 82.8

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

	<u>Year Ended December 31,</u>		
	<u>2019</u>	<u>2018</u>	<u>2017</u>
Taxes at U.S. statutory rate ⁽¹⁾	\$ 22.0	\$ 76.5	\$ 143.9
State and local income taxes	3.2	4.3	3.4
Non U.S. statutory rates, including credits	(8.8)	(39.7) ⁽²⁾	(97.4) ⁽²⁾
U.S. tax effect of foreign earnings and dividends	(1.5)	(2.8)	(1.6)
Unremitted earnings	5.2	2.2	6.6
Change in valuation allowances ⁽³⁾	45.0	29.9	34.0
Uncertain tax positions	4.0	1.3	(10.7)
Withholding taxes	4.4	3.7	2.9
U.S. manufacturing deduction	—	—	(3.6)
Share-based compensation	(1.0)	(1.9)	(1.1)
Non-deductible interest	2.1	2.2	2.9
Non-deductible other expenses	0.3	1.5	1.2
Provision to return adjustments	3.4	(3.1)	(0.3)
Swiss Tax Reform ⁽³⁾	(65.0)	—	—
Other—net ⁽⁴⁾	(0.7)	(2.3) ⁽²⁾	2.6 ⁽²⁾
Total provision for income taxes	<u>\$ 12.6</u>	<u>\$ 71.8</u>	<u>\$ 82.8</u>
Effective tax rate	<u>12 %</u>	<u>20 %</u>	<u>20 %</u>

- (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%, 21%, and 35%, respectively, for the years ended December 31, 2019, 2018, and 2017.
- (2) These prior year amounts have been reclassified within the table to conform to the current year presentation.
- (3) The year ended December 31, 2019 includes a \$65.0 million one-time deferred tax benefit recorded as a result of changes in the Swiss federal and cantonal tax rules, which were enacted on August 6, 2019 and October 25, 2019, respectively. This one-time benefit was partially offset by a \$25.3 million valuation allowance for the portion of the cantonal deferred tax asset that more likely than not will expire before utilization. See discussion below for further information.
- (4) 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.

In addition to the footnoted items above, the decrease in provision for income taxes was partially offset by a lower proportion of income before taxes attributable to non-U.S. jurisdictions, including losses not anticipated to provide a tax benefit for the Company in the future.

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

	December 31,			
	2019		2018	
	Deferred Tax Assets	Deferred Tax Liabilities	Deferred Tax Assets	Deferred Tax Liabilities
Tax loss and credit carryforwards	\$ 185.9	\$ —	\$ 157.8	\$ —
Unremitted earnings	—	24.6	—	19.4
Unconsolidated affiliates	—	11.8	—	5.9
Other accruals and reserves	3.3	—	0.7	—
Property, plant and equipment	—	22.5	—	26.1
Goodwill and other intangible assets ⁽¹⁾	65.1	—	—	0.9
Deferred financing fees	5.4	—	7.7	—
Employee benefits	43.2	—	35.0	—
	<u>302.9</u>	<u>58.9</u>	<u>201.2</u>	<u>52.3</u>
Valuation allowance	(218.0)	—	(167.6)	—
Total	<u>\$ 84.9</u>	<u>\$ 58.9</u>	<u>\$ 33.6</u>	<u>\$ 52.3</u>

(1) Includes the impact of Swiss federal and cantonal tax reform of \$4.2 million and \$62.4 million, respectively, as of December 31, 2019, measured at period-end exchange rates. See discussion below for further information.

As of December 31, 2019 and 2018, all undistributed earnings of foreign subsidiaries and affiliates are expected to be repatriated.

Operating loss carryforwards amounted to \$748.4 million in 2019 and \$601.7 million in 2018. As of December 31, 2019, \$51.4 million of the operating loss carryforwards were subject to expiration in 2020 through 2024, and \$697.0 million of the operating loss carryforwards expire in years beyond 2024 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, Switzerland and China, of \$218.0 million as of December 31, 2019 and \$167.6 million as of December 31, 2018.

Swiss federal and cantonal tax reform was enacted on August 6, 2019 and October 25, 2019, respectively, and includes measures such as, the elimination of certain preferential tax regimes and implementation of new tax rates at both the federal and cantonal levels. It also includes transitional relief measures which may provide for future tax deductions. As a result of both the federal and cantonal law changes, the Company recorded a \$65.0 million one-time deferred tax benefit for the year ended December 31, 2019, of which \$61.6 million was related to cantonal tax law changes. The Company believes it is more likely than not that a portion of the \$61.6 million deferred tax benefit recorded as a result of these cantonal tax law changes, will not be realized during the utilization period provided by the legislation, spanning 2025 through 2029. This is based on the Company's estimate of future taxable income in Switzerland, which was determined using management's judgment and assumptions about various factors, such as: historical experience and results, cyclicity of the business, and future industry and macroeconomic conditions and trends possible during the aforementioned utilization period. As a result, the Company recorded a \$25.3 million valuation allowance as of December 31, 2019.

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, 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	—
Decreases due to expiration of statutes of limitations	(0.9)
Balance as of December 31, 2018	\$ 6.3
Increases related to current year tax positions	0.6
Increases related to prior year tax positions	3.8
Decreases related to prior year tax positions	—
Settlement of uncertain tax positions	(1.3)
Decrease due to expiration of statutes of limitations	(0.4)
Balance as of December 31, 2019	\$ 9.0

In regard to unrecognized tax benefits, the Company recognized expense related to interest and penalties of \$0.8 million and \$0.2 million during the years ended December 31, 2019 and 2018, 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, 2019 and 2018, the Company had \$1.9 million and \$1.0 million, respectively, accrued for interest and penalties. To the extent that the unrecognized tax benefits are recognized in the future, \$8.3 million will impact the Company's effective tax rate.

As of December 31, 2019, the Company anticipates that it is reasonably possible that less than \$0.1 million of unrecognized tax benefits, including the impact relating to accrued interest and penalties, could be realized within the next 12 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.

<u>Major Tax Jurisdictions</u>	<u>Earliest Open Year</u>
United States: Federal income tax	2014
Germany	2014
Switzerland	2014
Netherlands	2017
Luxembourg	2011
China	2009
Hong Kong	2006
Indonesia	2014
Italy	2010

NOTE 15—COMMITMENTS AND CONTINGENCIES

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. 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. As of December 31, 2019 and 2018, the Company had no accrued obligations for environmental remediation and restoration costs.

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 over the next 12 months.

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, 2019:

Annual Commitment						
2020	2021	2022	2023	2024	Thereafter	Total
\$ 1,038.8	\$ 90.5	\$ 67.0	\$ —	\$ —	\$ —	\$ 1,196.3

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. The Company subsequently commenced an internal investigation into these commercial activities and discovered instances of inappropriate activity. On October 28, 2019, a supplemental request for information was received from the European Commission. This request was limited to historical employment, entity, and organizational structures, along with certain financial, styrene

purchasing, and styrene market information, as well as certain spot styrene purchase contracts. The Company has provided this information and continues to fully cooperate with the European Commission.

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.

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.

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>2019</u>	<u>2018</u>	<u>2017</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>
Discount rate for projected benefit obligation	1.03 %	1.86 %	1.79 %	1.86 %	1.80 %	1.65 %
Discount rate for service cost	N/A	N/A	N/A	1.79 %	1.72 %	1.64 %
Discount rate for interest cost	N/A	N/A	N/A	1.59 %	1.53 %	1.42 %
Rate of increase in future compensation levels	2.81 %	2.80 %	2.81 %	2.80 %	2.83 %	2.61 %
Expected long-term rate of return on plan assets	N/A	N/A	N/A	1.57 %	1.54 %	1.44 %

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>2019</u>	<u>2018</u>	<u>2017</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>
Discount rate for accumulated postretirement benefit obligation	3.48 %	4.38 %	3.68 %	4.38 %	3.68 %	4.16 %
Discount rate for service cost	N/A	N/A	N/A	4.42 %	3.70 %	4.18 %
Discount rate for interest cost	N/A	N/A	N/A	4.14 %	3.46 %	3.81 %
Initial health care cost trend rate	6.70 %	6.70 %	6.70 %	6.70 %	6.70 %	6.70 %
Ultimate health care cost trend rate	5.00 %	5.00 %	5.00 %	5.00 %	5.00 %	5.00 %
Year ultimate trend rate to be reached	2025	2024	2023	2024	2023	2022

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.

The net periodic benefit costs for the pension and other postretirement benefit plans for the years ended December 31, 2019, 2018, and 2017 were as follows:

	<u>Defined Benefit Pension Plans</u>			<u>Other Postretirement Benefit Plans</u>		
	<u>December 31,</u>			<u>December 31,</u>		
	<u>2019</u>	<u>2018</u>	<u>2017</u>	<u>2019</u>	<u>2018</u>	<u>2017</u>
Net periodic benefit cost⁽¹⁾						
Service cost	\$ 13.1	\$ 12.3	\$ 20.5	\$ 0.1	\$ 0.2	\$ 0.2
Interest cost	5.1	4.9	4.9	0.2	0.2	0.3
Expected return on plan assets	(2.2)	(2.1)	(1.7)	—	—	—
Amortization of prior service cost (credit)	(1.1)	(1.1)	(2.0)	—	0.1	0.1
Amortization of net (gain) loss	3.3	4.1	5.6	(0.2)	—	(0.1)
Settlement and curtailment (gain) loss	0.8	0.6	(21.9) ⁽²⁾	—	—	—
Net periodic benefit cost	<u>\$ 19.0</u>	<u>\$ 18.7</u>	<u>\$ 5.4</u>	<u>\$ 0.1</u>	<u>\$ 0.5</u>	<u>\$ 0.5</u>
Amounts recognized in other comprehensive income (loss)						
Net (gain) loss	\$ 27.9	\$ (0.6)	\$ (42.6)	\$ 0.1	\$ (1.3)	\$ (0.1)
Amortization of prior service (cost) credit	1.1	1.1	2.0	—	(0.1)	(0.1)
Amortization of net gain (loss)	(3.3)	(4.1)	(5.6)	0.2	—	0.1
Settlement and curtailment gain (loss)	(0.8)	(0.6)	21.9 ⁽²⁾	—	—	—
Prior service credit	—	(0.5)	—	—	(0.4)	—
Total recognized in other comprehensive income (loss)	24.9	(4.7)	(24.3)	0.3	(1.8)	(0.1)
Net periodic benefit cost	<u>19.0</u>	<u>18.7</u>	<u>5.4</u>	<u>0.1</u>	<u>0.5</u>	<u>0.5</u>
Total recognized in net periodic benefit cost and other comprehensive income (loss)	<u>\$ 43.9</u>	<u>\$ 14.0</u>	<u>\$ (18.9)</u>	<u>\$ 0.4</u>	<u>\$ (1.3)</u>	<u>\$ 0.4</u>

- (1) 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.
- (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.

The changes in the pension benefit obligations, the fair value of plan assets, and the funded status of all significant plans for the years ended December 31, 2019 and 2018 were as follows:

	Defined Benefit		Other Postretirement	
	Pension Plans		Benefit Plans	
	December 31,		December 31,	
	2019	2018	2019	2018
Change in projected benefit obligations				
Benefit obligation at beginning of period	\$ 321.9	\$ 321.7	\$ 5.8	\$ 7.1
Service cost	13.1	12.3	0.1	0.2
Interest cost	5.1	4.9	0.2	0.2
Plan participants' contributions	1.9	1.8	—	—
Actuarial changes in assumptions and experience ⁽¹⁾	45.7	(0.4)	0.1	(1.3)
Benefits paid from fund	0.1	(0.7)	—	—
Benefit payments by employer	(2.3)	(2.3)	—	—
Acquisitions	44.5	—	—	—
Plan amendments	—	(0.5)	—	(0.4)
Curtailments	(3.8)	—	—	—
Settlements	(7.2)	(3.8)	—	—
Other	(0.1)	1.6	—	—
Currency impact	(2.7)	(12.7)	—	—
Benefit obligation at end of period	\$ 416.2	\$ 321.9	\$ 6.2	\$ 5.8
Change in plan assets				
Fair value of plan assets at beginning of period	\$ 138.5	\$ 140.1	\$ —	\$ —
Actual return on plan assets	16.3	2.4	—	—
Settlements	(7.2)	(3.8)	—	—
Employer contributions	5.7	5.9	—	—
Plan participants' contributions	1.9	1.8	—	—
Benefits paid	(2.2)	(3.0)	—	—
Currency impact	(1.2)	(4.9)	—	—
Fair value of plan assets at end of period	151.8	138.5	—	—
Funded status at end of period	\$ (264.4)	\$ (183.4)	\$ (6.2)	\$ (5.8)

- (1) The actuarial loss for the year ended December 31, 2019 was primarily due to the decrease in discount rates during the year, while the actuarial gain for the year ended December 31, 2018 was primarily due to an increase in discount rates during the year.

The net amounts recognized in the consolidated balance sheets as of December 31, 2019 and 2018 were as follows:

	Defined Benefit Pension Plans		Other Postretirement Benefit Plans	
	December 31,		December 31,	
	2019	2018	2019	2018
Net amounts recognized in the balance sheets as of December 31				
Current liabilities	\$ (5.8)	\$ (2.7)	\$ (0.1)	\$ —
Noncurrent liabilities	(258.6)	(180.7)	(6.1)	(5.8)
Net amounts recognized in the balance sheet	<u>\$ (264.4)</u>	<u>\$ (183.4)</u>	<u>\$ (6.2)</u>	<u>\$ (5.8)</u>
Accumulated benefit obligation at the end of the period	<u>\$ 380.6</u>	<u>\$ 293.7</u>	<u>\$ 6.2</u>	<u>\$ 5.8</u>
Pretax amounts recognized in AOCI as of December 31				
Net prior service cost (credit)	\$ (3.7)	\$ (4.8)	\$ (0.1)	\$ (0.2)
Net loss (gain)	84.3	60.5	(1.9)	(2.1)
Total at end of period	<u>\$ 80.6</u>	<u>\$ 55.7</u>	<u>\$ (2.0)</u>	<u>\$ (2.3)</u>

The estimated future benefit payments, reflecting expected future service, as appropriate, are presented in the following table:

	2020	2021	2022	2023	2024	2025 through 2029	Total
Defined benefit pension plans	\$ 17.6	\$ 5.8	\$ 7.1	\$ 9.9	\$ 8.6	\$ 61.3	\$ 110.3
Other postretirement benefit plans	0.1	0.1	0.1	0.2	0.3	2.1	2.9
Total	<u>\$ 17.7</u>	<u>\$ 5.9</u>	<u>\$ 7.2</u>	<u>\$ 10.1</u>	<u>\$ 8.9</u>	<u>\$ 63.4</u>	<u>\$ 113.2</u>

The Company estimates it will make cash contributions, including benefit payments for unfunded plans, of \$7.8 million in 2020 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, 2019 and 2018:

	December 31,	
	2019	2018
Projected Benefit Obligation		
Exceeds the Fair Value of Plan Assets		
Projected benefit obligations	\$ 319.9	\$ 239.7
Fair value of plan assets	\$ 55.5	\$ 56.3
Accumulated Benefit Obligation		
Exceeds the Fair Value of Plan Assets		
Accumulated benefit obligations	\$ 289.1	\$ 210.8
Fair value of plan assets	\$ 55.5	\$ 50.3

Plan Assets

As of December 31, 2019 and 2018, plan assets totaled \$151.8 million and \$138.5 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, 2019 and 2018 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, 2019, 2018, and 2017 were \$0.3 million, \$0.8 million, and \$1.1 million, respectively. This plan was concluded in 2019 and all remaining benefit payments were completed during the year ended December 31, 2019. There were no benefit obligations under this plan as of December 31, 2019 and there were \$15.5 million of benefit obligations as of December 31, 2018. As of December 31, 2019 and 2018, the amounts of net loss included in AOCI were \$0.0 million and \$0.3 million, respectively, with \$0.3 million and \$0.5 million amortized from AOCI into net periodic benefit costs during the years ended December 31, 2019 and 2018, respectively.

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, Taiwan, 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, 2019, 2018, and 2017, the Company contributed \$11.1 million, \$7.9 million, and \$8.4 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 years ended December 31, 2019 and 2018, the Company recorded expense of \$4.3 million and \$4.5 million, respectively, related to the plan, and made contributions of \$4.2 million and \$3.8 million, respectively, 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, 2019, 2018, and 2017. Share amounts in the tables below are in whole numbers, unless otherwise indicated.

	Year Ended December 31,			As of December 31, 2019	
	2019	2018	2017	Unrecognized Compensation Cost	Weighted Average Years
	<i>2014 Omnibus Plan Awards</i>				
RSUs	\$ 7.5	\$ 8.8	\$ 8.6	\$ 8.6	1.8
Option Awards	3.1	4.4	4.1	1.4	1.3
PSUs	2.9	2.6	1.1	3.3	2.0
Total share-based compensation expense	<u>\$ 13.5</u>	<u>\$ 15.8</u>	<u>\$ 13.8</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 and amended on June 19, 2019, under which 5.3 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, 2019:

Restricted Share Units	Shares	Weighted-Average Grant Date Fair Value per Share
Unvested, December 31, 2018	492,149	\$ 48.82
Granted	236,156	48.63
Vested	(319,580)	33.98
Forfeited	(94,397)	62.45
Unvested, December 31, 2019	<u>314,328</u>	<u>\$ 59.67</u>

The following table summarizes the weighted-average grant date fair value per share of RSUs granted during the years ended December 31, 2019, 2018, and 2017 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, 2019	\$ 48.63	\$ 10.9
Year Ended December 31, 2018	\$ 79.18	\$ 7.4
Year Ended December 31, 2017	\$ 70.85	\$ 1.3

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, 2019:

Option Awards	Shares	Weighted-Average Exercise Price per share	Weighted-Average Contractual Term (years)	Aggregate Intrinsic Value
Outstanding as of December 31, 2018	934,338	\$ 46.72		
Granted	237,071	51.00		
Exercised	(40,263)	23.82		
Forfeited	(27,220)	60.19		
Expired	<u>(6,214)</u>	58.64		
Outstanding as of December 31, 2019	1,097,712	\$ 48.08	6.1	\$ 6.2
Exercisable as of December 31, 2019	<u>688,131</u>	\$ 38.91	5.3	\$ 6.2
Expected to vest as of December 31, 2019	409,581	\$ 63.49	7.5	\$ —

During the years ended December 31, 2019, 2018, and 2017, the total intrinsic value of option awards exercised was \$0.7 million, \$6.7 million, and \$21.4 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, 2019, 2018, and 2017:

	Year Ended December 31,		
	2019	2018	2017
Expected term (in years)	5.50	5.50	5.50
Expected volatility	36.00 %	32.00 %	35.00 %
Risk-free interest rate	2.53 %	2.71 %	2.19 %
Dividend yield	2.00 %	2.00 %	2.00 %

Utilizing the above assumptions, the weighted-average grant date fair value per option award granted in the years ended December 31, 2019, 2018, and 2017 was \$15.40, \$22.29, and \$20.61, 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, 2019:

Performance Share Units	Shares	Weighted-Average Grant Date
		Fair Value per Share
Unvested, December 31, 2018	116,362	\$ 82.10
Granted	117,053	54.01
Vested	—	—
Forfeited	(97,158)	66.93
Unvested, December 31, 2019	136,257	\$ 68.78

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, 2019 and 2018:

	Year Ended December 31,		
	2019	2018	2017
Expected term (in years)	3.00	3.00	3.00
Expected volatility	36.40 %	35.03 %	39.00 %
Risk-free interest rate	2.58 %	2.55 %	1.56 %
Share Price	\$ 50.95	\$ 79.42	\$ 71.45

Utilizing the above assumptions, the total grant date fair value for PSU awards granted in the years ended December 31, 2019, 2018 and 2017 was \$6.3 million, \$6.1 million and \$3.9 million, respectively.

NOTE 18—RELATED PARTY AND DOW TRANSACTIONS

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 2019 and 2018, the Company incurred \$68.1 million and \$26.1 million, respectively, 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 in 2020. The Company has transitioned the majority of the services under the SAR MOSA that were previously provided by Dow as of December 31, 2019, and nearly all of the remaining services under the agreement will be transitioned in the first half of 2020. Based on this transition, the Company’s estimated remaining minimum obligation under the SAR MOSA was approximately \$5.0 million as of December 31, 2019.

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, 2019, 2018, and 2017 under the SAR MOSA and SAR SSAs by financial statement line item:

Financial Statement Line Item	Year Ended December 31, 2019		
	SAR MOSA	SAR SSAs	Total
Cost of sales	\$ 26.2	\$ 160.8	\$ 187.0
Selling, general, and administrative expenses	8.2	3.4	11.6
Total	\$ 34.4	\$ 164.2	\$ 198.6

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

The Company has transactions in the normal course of business with Dow and its affiliates. For the years ended December 31, 2019, 2018, and 2017, sales to Dow and its affiliated companies were approximately \$80.0 million, \$248.4 million, and \$235.2 million, respectively. For the years ended December 31, 2019, 2018, and 2017, purchases from Dow and its affiliated companies were approximately \$985.9 million, \$1,410.6 million, and \$1,357.2 million, respectively. Amounts presented represent transactions with Dow and do not include transactions with DuPont companies, noting the entities separated in 2019.

NOTE 19—SEGMENTS

The Company operates under six segments: Latex Binders, Synthetic Rubber, Performance Plastics, Polystyrene, Feedstocks, and Americas Styrenics. 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 includes a variety of highly engineered compounds and blends, the Company's acrylonitrile-butadiene-styrene ("ABS"), styrene-acrylonitrile ("SAN"), and polycarbonate ("PC") businesses, and the Company's soft-touch polymers and bioplastics business, which includes TPES. The Polystyrene segment 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, including 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.

The following table provides disclosure of the Company's segment Adjusted EBITDA, which is used to measure segment operating performance and is defined below, for the years ended December 31, 2019, 2018, and 2017. Asset and intersegment sales information by reporting segment is not regularly reviewed or included with the Company's reporting

to the chief operating decision maker. Therefore, this information has not been disclosed below. Refer to Note 3 for the Company's net sales to external customers by segment for the years ended December 31, 2019, 2018, and 2017.

Year Ended	Latex Binders	Synthetic Rubber	Performance Plastics	Polystyrene	Feedstocks	Americas Styrenics	Corporate Unallocated	Total
December 31, 2019								
Equity in earnings of unconsolidated affiliates	\$ —	\$ —	\$ —	\$ —	\$ —	\$ 119.0	\$ —	\$ 119.0
Adjusted EBITDA ⁽¹⁾	80.8	40.7	135.1	54.6	7.0	119.0	—	—
Investment in unconsolidated affiliates	—	—	—	—	—	188.1	—	188.1
Depreciation and amortization	25.8	44.4	28.8	10.9	12.8	—	13.3	136.0
Capital expenditures ⁽²⁾	21.4	26.1	26.6	4.1	8.1	—	23.8	110.1
December 31, 2018								
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								
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

- (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 benefits 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 years ended December 31, 2019 and 2018.

The reconciliation of income before income taxes to segment Adjusted EBITDA is as follows:

	Year Ended December 31,		
	2019	2018	2017
Income before income taxes	\$ 104.6	\$ 364.3	\$ 411.1
Interest expense, net	39.3	46.4	70.1
Depreciation and amortization	136.0	130.2	110.6
Corporate Unallocated ⁽³⁾	85.4	88.0	91.8
Adjusted EBITDA Addbacks ⁽⁴⁾	71.9	32.3	50.7
Segment Adjusted EBITDA	\$ 437.2	\$ 661.2	\$ 734.3

- (3) Corporate unallocated includes corporate overhead costs and certain other income and expenses.

(4) Adjusted EBITDA addbacks for the years ended December 31, 2019, 2018, and 2017 are as follows:

	Year Ended December 31,		
	2019	2018	2017
Loss on extinguishment of long-term debt (Note 11)	\$ —	\$ 0.2	\$ 65.3
Net gain on disposition of businesses and assets (Note 4)	(0.7)	(1.0)	(9.7)
Restructuring and other charges (Note 20)	18.1	8.2	6.0
Acquisition transaction and integration net costs (benefit) (Note 4)	(0.9)	0.6	4.7
Asset impairment charges or write-offs ^(a)	—	1.5	4.3
Other items ^(b)	55.4	22.8	(19.9)
Total Adjusted EBITDA Addbacks	\$ 71.9	\$ 32.3	\$ 50.7

- (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 years ended December 31, 2019 and 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, finance, and IT services. Also included within other items for the year ended December 31, 2019 are fees incurred in conjunction with certain of the Company's strategic initiatives. Other items for the year ended December 31, 2018 are primarily related to 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 are 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.

Geographic Information

As of December 31, 2019, the Company operates 32 manufacturing plants (which include a total of 77 production units) at 24 sites in 12 countries, inclusive of its joint venture. It also operates 10 R&D facilities globally, including technology and innovation development centers. 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,		
	2019	2018	2017
<i>United States</i>			
Sales to external customers	\$ 580.3	\$ 627.3	\$ 602.7
Long-lived assets	44.9	38.6	43.2
Right-of-use assets - operating	10.4	—	—
<i>Europe</i>			
Sales to external customers	\$ 2,163.3	\$ 2,782.6	\$ 2,688.9
Long-lived assets	457.7	424.8	449.3
Right-of-use assets - operating	55.1	—	—
<i>Asia-Pacific</i>			
Sales to external customers	\$ 934.7	\$ 1,104.3	\$ 1,051.4
Long-lived assets	123.2	128.7	134.4
Right-of-use assets - operating	5.9	—	—
<i>Rest of World</i>			
Sales to external customers	\$ 97.5	\$ 108.6	\$ 105.1
Long-lived assets	—	—	0.1
Right-of-use assets - operating	—	—	—
<i>Total</i>			
Sales to external customers ⁽¹⁾	\$ 3,775.8	\$ 4,622.8	\$ 4,448.1
Long-lived assets ⁽²⁾	625.8	592.1	627.0
Right-of-use assets - operating ⁽³⁾	71.4	—	—

- (1) Sales to external customers in Germany represented approximately 9%, 9%, and 10% of the total for the years ended December 31, 2019, 2018, and 2017, respectively. Sales to external customers in Hong Kong represented approximately 13% of the total for each of the years ended December 31, 2019, 2018, and 2017. Sales to external customers in China represented approximately 6%, 6%, and 7% of the total for the years ended December 31, 2019, 2018, and 2017, respectively.
- (2) Long-lived assets in Germany represented approximately 46%, 43%, and 45% of the total as of December 31, 2019, 2018, and 2017, respectively. Long-lived assets in The Netherlands represented approximately 17%, 19%, and 15% of the total as of December 31, 2019, 2018, and 2017, respectively. Long-lived assets consist of property, plant and equipment, net. Long-lived assets in China represented approximately 12%, 13%, and 13% of the total as of December 31, 2019, 2018, and 2017, respectively. Amounts include right-of-use assets for finance leases.
- (3) The Company began recognizing operating lease ROU assets on its consolidated balance sheets during the first quarter of 2019 in conjunction with its adoption of the new lease accounting standard, as discussed further in Note 2. Operating lease ROU assets in The Netherlands represented approximately 61% of the total as of December 31, 2019. ROU assets in the United States represented approximately 15% of the total as of December 31, 2019. Operating lease ROU assets in Germany represented approximately 7% of the total as of December 31, 2019.

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, 2019, 2018, and 2017:

	Year Ended December 31,			Cumulative Life-to-date Charges	Segment
	2019	2018	2017		
<i>Corporate Restructuring Program</i>					
Accelerated depreciation	\$ 0.4	\$ —	\$ —	\$ 0.4	
Employee termination benefits	17.0	—	—	17.0	
Contract terminations	0.4	—	—	0.4	
Corporate Program Subtotal	\$ 17.8	\$ —	\$ —	\$ 17.8	N/A ⁽¹⁾
<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	(0.3)	0.5	0.5	0.7	
Contract terminations	—	(0.3)	0.6	0.3	
Decommissioning and other	0.6	0.6	0.2	2.0	
Terneuzen Subtotal	\$ 0.3	\$ 1.9	\$ 3.3	\$ 6.1	Performance Plastics
<i>Livorno Plant Restructuring</i>					
Asset impairment/accelerated depreciation	\$ —	\$ 0.4	\$ —	\$ 14.7	
Employee termination benefits	—	—	0.8	5.4	
Contract terminations	—	—	—	0.3	
Decommissioning and other	0.5	0.7	2.3	4.2	
Livorno Subtotal	\$ 0.5	\$ 1.1	\$ 3.1	\$ 24.6	Latex Binders
<i>Allyn's Point Restructuring</i>					
Asset impairment/accelerated depreciation	\$ —	\$ —	\$ —	\$ 7.3	
Employee termination benefits	—	—	—	0.8	
Decommissioning and other	—	0.8	0.4	2.9	
Allyn's Point Subtotal	\$ —	\$ 0.8	\$ 0.4	\$ 11.0	Latex Binders
Other Restructurings	—	—	1.2	—	Various
Total Restructuring Charges	\$ 18.6	\$ 9.3	\$ 8.0		

(1) As this was identified as a corporate-related activity, the charges related to this restructuring program were not allocated to a specific segment, but rather included within corporate unallocated.

The following tables provide a rollforward of the liability balances associated with the Company’s restructuring activities as of December 31, 2019 and 2018. Employee termination benefit and contract termination charges are recorded within “Accrued expenses and other current liabilities” in the consolidated balance sheets. The liability balance as of December 31, 2019 primarily represents activity related to the corporate restructuring program. No other individual restructuring activity had a material liability balance as of December 31, 2019 or 2018.

	Balance at			Balance at
	December 31, 2018	Expenses	Deductions ⁽¹⁾	
Employee termination benefits	\$ 6.4	\$ 16.7	\$ (5.9)	\$ 17.2
Contract terminations	0.3	0.4	—	0.7
Decommissioning and other	—	1.1	(1.1)	—
Total	\$ 6.7	\$ 18.2	\$ (7.0)	\$ 17.9

	Balance at			Balance at
	December 31, 2017	Expenses	Deductions ⁽¹⁾	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

(1) Includes primarily payments made against the existing accrual, as well as immaterial impacts of foreign currency remeasurement.

Corporate Restructuring Program

In November 2019, the Company announced a corporate restructuring program associated with the Company's shift to a global functional structure and business excellence initiatives to drive greater focus on business process optimization and efficiency. The corporate restructuring program is expected to be substantially completed by the end of the first half of 2020. In connection with this restructuring plan, during the fourth quarter of 2019, the Company incurred employee termination benefit charges of \$17.0 million, inclusive of a share-based compensation benefit of \$1.1 million, and contract termination charges of \$0.4 million, which will predominantly be paid in 2020. The Company also incurred accelerated depreciation charges of \$0.4 million during the fourth quarter of 2019. The Company expects to incur incremental employee termination benefit charges of \$1.5 million, inclusive of pension charges of approximately \$0.5 million, as well as contract termination charges of \$2.6 million and accelerated depreciation charges of \$2.4 million through the end of 2020, the majority of which are expected to be paid during 2020.

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, which were paid during 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, 2019, the new facility is complete, noting certain ongoing quality assurance activities. Substantive production at the prior facility ceased and decommissioning activities began during the second quarter of 2019, which are expected to continue through 2020. The Company estimates it will incur decommissioning and other charges of approximately \$0.7 million in 2020, the majority of which are expected to be paid during the first half of the year.

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 September 2018, the Company entered into a preliminary agreement to sell the land where the former facility is located. This land sale closed on January 10, 2020, for a total purchase price of \$12.5 million. Note that \$1.3 million of the purchase price was received as a prepayment in 2018, and is recorded within "Accrued expenses and other current liabilities" on the consolidated balance sheets as of the years ended December 31, 2019 and 2018. The remaining

purchase price was received in January 2020. The Company expects to record a net gain on sale of less than \$1.0 million during the first quarter of 2020.

This land sale was considered probable to close within one year following the balance sheet date as of both December 31, 2019 and 2018. As such, the land is recorded as held-for-sale within “Other current assets” at a value of \$11.8 million and \$12.0 million, respectively (adjusted for foreign currency impact), and the deferred tax liability associated with that land is recorded as held-for-sale within “Accrued expenses and other current liabilities” at a value of \$2.8 million and \$2.9 million, respectively (adjusted for foreign currency impact), on the Company’s consolidated balance sheets.

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 2020, 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, 2019, 2018, and 2017	Cumulative Translation Adjustments	Pension & Other Postretirement Benefit Plans, Net	Cash Flow Hedges, Net	Total
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 ⁽¹⁾	—	(13.3)	2.3	(11.0)
Balance at December 31, 2017	\$ (94.5)	\$ (45.0)	\$ (6.1)	\$ (145.6)
Other comprehensive income (loss)	(17.3)	2.5	9.3	(5.5)
Amounts reclassified from AOCI to net income ⁽¹⁾	—	3.1	5.7	8.8
Balance at December 31, 2018	\$ (111.8)	\$ (39.4)	\$ 8.9	\$ (142.3)
Other comprehensive income (loss)	5.1	(19.0)	(0.7)	(14.6)
Amounts reclassified from AOCI to net income ⁽¹⁾	—	2.1	(7.6)	(5.5)
Balance at December 31, 2019	\$ (106.7)	\$ (56.3)	\$ 0.6	\$ (162.4)

- (1) The following is a summary of amounts reclassified from AOCI to net income for the years ended December 31, 2019, 2018, and 2017:

AOCI Components	Amount Reclassified from AOCI			Statement of Operations Classification
	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017	
Cash flow hedging items				
Foreign exchange cash flow hedges	\$ (6.7)	\$ 6.0	\$ 2.0	Cost of sales
Interest rate swaps	(0.9)	(0.3)	0.3	Interest expense, net
Total before tax	(7.6)	5.7	2.3	
Tax effect	—	—	—	Provision for income taxes
Total, net of tax	<u>\$ (7.6)</u>	<u>\$ 5.7</u>	<u>\$ 2.3</u>	
Amortization of pension and other postretirement benefit plan items				
Curtailment and settlement (gain) loss	\$ 0.8	\$ 0.6	\$ (21.9)	(a)
Prior service credit	(1.1)	(1.0)	(1.9)	(b)
Net actuarial loss	3.4	4.6	6.4	(b)
Total before tax	3.1	4.2	(17.4)	
Tax effect	(1.0)	(1.1)	4.1	Provision for income taxes
Total, net of tax	<u>\$ 2.1</u>	<u>\$ 3.1</u>	<u>\$ (13.3)</u>	

- (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.

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, 2019, 2018, and 2017.

(in millions, except per share data)	Year Ended December 31,		
	2019	2018	2017
Earnings:			
Net income	\$ 92.0	\$ 292.5	\$ 328.3
Shares:			
Weighted average ordinary shares outstanding	40.3	42.8	43.8
Dilutive effect of RSUs, option awards, and PSUs ⁽¹⁾	0.4	0.9	1.2
Diluted weighted average ordinary shares outstanding	<u>40.7</u>	<u>43.7</u>	<u>45.0</u>
Income per share:			
Income per share—basic	<u>\$ 2.28</u>	<u>\$ 6.83</u>	<u>\$ 7.49</u>
Income per share—diluted	<u>\$ 2.26</u>	<u>\$ 6.70</u>	<u>\$ 7.30</u>

- (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 0.6 million, 0.4 million, and 0.2 million for the years ended December 31, 2019, 2018, and 2017, respectively.

NOTE 23 – LEASES

As discussed in Note 2, effective January 1, 2019, the Company adopted accounting guidance, Topic 842, issued by the FASB related to leases that outlines a comprehensive lease accounting model and supersedes the prior lease guidance. The Company adopted this guidance using the modified retrospective approach and elected the optional transition method. As a result, comparative prior periods in the Company’s financial statements are not adjusted for the impacts of the new standard. The Company’s accounting policy and practical expedient elections related to accounting for leases, including those elected as a result of the adoption of Topic 842, are summarized as follows:

- Package of practical expedients – The Company did not reassess whether expired or existing contracts contain a lease, did not reassess the classification of expired or existing leases, and did not reassess whether lease initial direct costs would qualify for capitalization under the new lease accounting standards.
- Lease and non-lease components as lessee – For leases across all asset classes in which the Company is a lessee (discussed below), the Company did not separate non-lease components from lease components and instead accounted for these items as a single lease component.
- Portfolio approach – The Company elected to utilize the portfolio approach under which it did not have to consider the components to apply lease accounting. Specifically, the Company leveraged the portfolio approach in determining the discount rate within multiple asset classes, and in determining the lease term considerations for immaterial asset classes, including, but not limited to, motor vehicles and plant, office, and information technology equipment.
- Land easements – The Company did not reassess whether existing or expired land easements that were not previously accounted for as leases are or contain a lease under the new lease accounting standards.
- Use of hindsight and short-term lease exemption – The Company did not elect to utilize either the practical expedient related to the use of hindsight or the election to exclude short-term leases from balance sheet presentation.

The Company's ROU assets and lease liabilities are classified on its consolidated balance sheets as follows:

	As of December 31,	Location on Balance Sheet
	2019	
Operating lease ROU assets	\$ 71.4	Right-of-use assets - operating
Finance lease ROU assets	7.9	Property, plant, and equipment, net of accumulated depreciation
Operating lease liabilities - current portion	14.1	Current lease liabilities - operating
Operating lease liabilities - noncurrent portion	58.0	Noncurrent lease liabilities - operating
Finance lease liabilities - current portion	2.6	Short-term borrowings and current portion of long-term debt
Finance lease liabilities - noncurrent portion	5.3	Long-term debt, net of unamortized deferred financing fees

The components of the Company's lease costs are classified on its consolidated statements of operations as follows:

	<u>Year Ended December 31,</u>	
	<u>2019</u>	
Finance lease cost:		
Amortization of lease ROU assets	\$	0.8
Interest on lease liabilities		0.1
Operating lease cost		18.2
Variable lease cost		0.2
Total lease cost	\$	19.3

The table below shows the cash and non-cash activity related to the Company's lease liabilities during the period:

	<u>Year Ended December 31,</u>	
	<u>2019</u>	
Cash paid related to lease liabilities:		
Operating cash flows from operating leases	\$	17.0
Operating cash flows from finance leases		0.1
Financing cash flows from finance leases		0.8
Non-cash lease liability activity⁽¹⁾:		
ROU assets obtained in exchange for new operating lease liabilities	\$	86.2
ROU assets obtained in exchange for new finance lease liabilities		8.8

(1) Amounts include the impact of adopting the new lease accounting standard effective January 1, 2019.

As of December 31, 2019, the maturities of the Company's operating and finance lease liabilities were as follows:

	<u>Maturity of lease liabilities by year</u>						<u>Total Lease Payments</u>	<u>Less Imputed Interest</u>	<u>Lease Liability</u>
	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>	<u>2024</u>	<u>Thereafter</u>			
Operating Leases	\$ 16.1	\$ 10.6	\$ 8.8	\$ 8.4	\$ 6.7	\$ 35.3	\$ 85.9	\$ (13.8)	\$ 72.1
Finance Leases	\$ 2.8	\$ 2.8	\$ 2.3	\$ 0.1	\$ 0.1	\$ 0.3	\$ 8.4	\$ (0.5)	\$ 7.9
Total	\$ 18.9	\$ 13.4	\$ 11.1	\$ 8.5	\$ 6.8	\$ 35.6	\$ 94.3	\$ (14.3)	\$ 80.0

As of December 31, 2019, the weighted average remaining lease term of the Company's operating and finance leases was 9.2 and 3.8 years, respectively, and the weighted average discount rate used to determine the lease liability for operating and finance leases was 4.7% and 3.1%, respectively.

As of December 31, 2019, the Company has additional operating leases that have not yet commenced of \$3.2 million. These leases are expected to commence in the first quarter of 2020 with lease terms of 0.5 to 5.0 years.

Disclosures related to periods prior to adoption of Topic 842

As discussed above, the Company adopted Topic 842 effective January 1, 2019 using a modified retrospective approach. As required, the following disclosure is provided for periods prior to adoption. The Company's total future

minimum annual rentals in effect at December 31, 2018 for noncancelable operating leases, which were accounted for under the previous leasing standard, ASC 840, were 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

NOTE 24—SELECTED QUARTERLY FINANCIAL DATA (Unaudited)

(in millions, except per share data)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2019				
Net sales	\$ 1,013.1	\$ 951.8	\$ 922.1	\$ 888.8
Gross profit	97.4	86.2	85.2	60.0
Equity in earnings of unconsolidated affiliates	32.2	40.3	25.7	20.8
Operating income (loss)	60.8	55.1	43.3	(11.2) ⁽²⁾
Income before income taxes	46.6	43.7	31.8	(17.5) ⁽²⁾
Net income	35.8	28.0	22.5 ⁽¹⁾	5.7 ⁽²⁾⁽³⁾
Net income per share- basic	\$ 0.87	\$ 0.69	\$ 0.56 ⁽¹⁾	\$ 0.14 ⁽²⁾⁽³⁾
Net income per share- diluted	\$ 0.86	\$ 0.68	\$ 0.56 ⁽¹⁾	\$ 0.14 ⁽²⁾⁽³⁾
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)

- (1) Includes a \$7.4 million deferred tax benefit related to the re-measurement of the Company's deferred tax assets and liabilities in Switzerland due to changes in Swiss Federal tax rules, which were enacted in August 2019. Refer to Note 14 for more information.
- (2) Includes \$17.8 million of expense related to the Company's corporate restructuring program. Refer to Note 20 for further information.
- (3) Includes a net \$24.1 million tax benefit, which primarily related to a \$32.7 million benefit recorded in connection with the re-measurement of the Company's deferred tax assets and liabilities in Switzerland due to changes in Swiss Cantonal and Federal tax rules enacted in 2019. This is partially offset by a \$6.2 million charge recorded to increase the Company's reserves for uncertain tax positions. Refer to Note 14 for more information.

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SCHEDULE II—FINANCIAL STATEMENT SCHEDULE
VALUATION AND QUALIFYING ACCOUNTS
(In Millions)

	Balance at Beginning of the Period	Charged to Cost and Expense	Deduction from Reserves	Currency Translation Adjustments	Balance at End of the Period
<u>Allowance for doubtful accounts:</u>					
Year ended December 31, 2019	\$ 6.1	\$ (0.7)	\$ (0.2) ^(a)	\$ 0.1	\$ 5.3
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
<u>Tax valuation allowances:</u>					
Year ended December 31, 2019	\$ 167.6	\$ 50.4	\$ —	\$ —	\$ 218.0
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

(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, 2019 and 2018, the related consolidated statements of comprehensive income, members' equity, and cash flows for each of the three years in the period ended December 31, 2019, 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, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, 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 12, 2020

We have served as the Company's auditor since 2008.

AMERICAS STYRENICS LLC

CONSOLIDATED BALANCE SHEETS
AS OF DECEMBER 31, 2019 AND 2018
(In millions of dollars)

	2019	2018
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 42.2	\$ 31.3
Trade receivables (net of allowance of \$2.1 in 2019 and \$2.4 in 2018)	117.1	165.4
Related company receivables	6.1	5.5
Inventories	145.7	155.0
Other current assets	15.5	16.2
Total current assets	<u>326.6</u>	<u>373.4</u>
NET PROPERTY, PLANT AND EQUIPMENT	<u>238.6</u>	<u>227.4</u>
INVESTMENT IN UNCONSOLIDATED AFFILIATE	<u>2.7</u>	<u>—</u>
OTHER ASSETS:		
Deferred income taxes	1.0	1.3
Other assets	5.4	7.5
Total other assets	<u>6.4</u>	<u>8.8</u>
TOTAL	<u>\$ 574.3</u>	<u>\$ 609.6</u>
LIABILITIES AND MEMBERS' EQUITY		
CURRENT LIABILITIES:		
Trade payables	\$ 89.3	\$ 106.0
Related company payables	34.6	29.0
Other payables	14.1	9.3
Income taxes payable	4.3	7.0
Accrued liabilities	16.5	15.9
Total current liabilities	<u>158.8</u>	<u>167.2</u>
POSTRETIREMENT BENEFIT LIABILITY	16.9	15.4
OTHER LONG-TERM LIABILITIES	<u>1.6</u>	<u>2.0</u>
Total liabilities	<u>177.3</u>	<u>184.6</u>
COMMITMENTS AND CONTINGENCIES (Note 8)		
MEMBERS' EQUITY:		
Members' equity	398.3	425.8
Accumulated other comprehensive loss	(1.3)	(0.8)
Total members' equity	<u>397.0</u>	<u>425.0</u>
TOTAL	<u>\$ 574.3</u>	<u>\$ 609.6</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC

**CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018, AND 2017**
(In millions of dollars)

	2019	2018	2017
Net sales	\$ 1,486.1	\$ 1,825.7	\$ 1,783.6
Cost of sales	1,242.9	1,515.5	1,542.8
Gross margin	243.2	310.2	240.8
Technical service and development	2.3	2.7	2.4
Selling and marketing	9.5	8.9	7.5
Administrative	31.3	29.4	27.6
Foreign exchange loss	0.6	1.2	0.4
Equity in loss of investment in unconsolidated affiliate	1.2	—	—
Other operating expense - net	1.2	0.5	0.6
Operating income	197.1	267.5	202.3
Interest income	0.2	0.2	0.2
Other expense - net	(1.3)	(1.3)	(1.3)
Income before income taxes	196.0	266.4	201.2
Income tax expense	(3.5)	(6.2)	(6.8)
Net income	192.5	260.2	194.4
Other comprehensive loss:			
Net actuarial (loss) gain	(1.2)	1.1	1.0
Reclassification of prior-service cost to income	0.7	0.7	0.7
Net other comprehensive (loss) income — defined benefit plans	(0.5)	1.8	1.7
Total comprehensive income	<u>\$ 192.0</u>	<u>\$ 262.0</u>	<u>\$ 196.1</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC

**CONSOLIDATED STATEMENTS OF MEMBERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018, AND 2017
(In millions of dollars)**

	Members' Equity	Accumulated Other Comprehensive Loss	Total
BALANCE—January 1, 2017	\$ 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	425.8	(0.8)	425.0
Distribution to Members	(220.0)	—	(220.0)
Defined benefit plans—other comprehensive loss	—	(0.5)	(0.5)
Net income	192.5	—	192.5
BALANCE—December 31, 2019	<u>\$ 398.3</u>	<u>\$ (1.3)</u>	<u>\$ 397.0</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC

CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018, AND 2017
(In millions of dollars)

	<u>2019</u>	<u>2018</u>	<u>2017</u>
OPERATING ACTIVITIES:			
Net income	\$ 192.5	\$ 260.2	\$ 194.4
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	41.4	43.0	42.4
Net loss on disposal of assets	0.7	0.2	0.1
Deferred income taxes	0.3	(0.5)	1.0
Equity in loss of investment in unconsolidated affiliate	1.1	—	—
Allowance for doubtful accounts	(0.3)	(0.7)	0.4
Changes in assets and liabilities that provided (used) cash:			
Trade receivables	48.6	(18.3)	(26.8)
Related company receivables	(0.6)	0.8	5.0
Inventories	9.3	(20.8)	12.6
Trade payables	(16.7)	(5.6)	42.5
Related company payables	5.6	(7.3)	(0.2)
Other assets and liabilities	7.2	(14.3)	0.9
Net cash provided by operating activities	<u>289.1</u>	<u>236.7</u>	<u>272.3</u>
INVESTING ACTIVITIES:			
Capital expenditures	(54.4)	(36.8)	(29.2)
Disposal of assets	—	0.2	0.2
Investment in unconsolidated affiliate	(3.8)	—	—
Net cash used in investing activities	<u>(58.2)</u>	<u>(36.6)</u>	<u>(29.0)</u>
FINANCING ACTIVITY—Distribution to Members			
Cash used in financing activity	<u>(220.0)</u>	<u>(235.0)</u>	<u>(240.0)</u>
INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS			
	10.9	(34.9)	3.3
CASH AND CASH EQUIVALENTS—Beginning of year			
	31.3	66.2	62.9
CASH AND CASH EQUIVALENTS—End of year			
	<u>\$ 42.2</u>	<u>\$ 31.3</u>	<u>\$ 66.2</u>
SUPPLEMENTAL CASH FLOW INFORMATION:			
Noncash investing activity—capital expenditures payable	\$ 7.6	\$ 10.6	\$ 4.3
Cash paid for income taxes	<u>\$ 3.9</u>	<u>\$ 4.0</u>	<u>\$ 4.5</u>

See notes to consolidated financial statements.

AMERICAS STYRENICS LLC

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
AS OF DECEMBER 31, 2019 AND 2018, AND
FOR THE YEARS ENDED DECEMBER 31, 2019, 2018, AND 2017
(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 Participacoes 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 were nil and \$0.2 of interest-bearing investments at December 31, 2019 and 2018, 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, 2019 and 2018, were as follows:

	2019	2018
Finished goods	\$ 61.4	\$ 57.4
Work in process	32.0	53.5
Raw materials	32.7	24.7
Supplies	19.6	19.4
Total inventories	<u>\$ 145.7</u>	<u>\$ 155.0</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 \$28.7 at December 31, 2019, and \$26.5 at December 31, 2018. In 2019, the liquidation of certain of the Company’s LIFO inventory layers increased operating income by \$0.3. Inventories held by foreign subsidiaries 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, 2019 and 2018, are as follows:

	2019	2018
Land and waterway improvements	\$ 13.2	\$ 12.7
Buildings	33.8	32.3
Transportation and construction equipment	63.3	64.5
Machinery and other equipment	914.6	888.7
Utilities and supply lines/other property	21.7	14.1
Construction in progress	36.1	42.8
Total property, plant, and equipment	1,082.7	1,055.1
Less accumulated depreciation	(844.1)	(827.7)
Net property, plant, and equipment	\$ 238.6	\$ 227.4

Equity Method Investments—The Company contributed \$3.8 million to establish the Regenyx LLC joint venture in April 2019 for which the Company has an ownership percentage of 50%. We account for our equity investment where we own a non-controlling interest, but exercise significant influence, under the equity method of accounting. Under the equity method of accounting, our original cost of the investment is adjusted for our share of equity in the earnings of the equity investee and reduced by dividends and distributions of capital received. The Company’s investment in this unconsolidated affiliate was \$2.7 million as of December 31, 2019.

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 2019, 2018, or 2017.

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, 2019 and 2018, the Company had no significant asset retirement obligations.

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 generates all revenue through product sales in which revenue is recognized at a point in time. The Company recognizes revenue when control of the promised goods is transferred to the customer. Control of goods usually passes to the customer at the time shipment is made. Revenue is measured as the amount that reflects the consideration expected to be entitled to in exchange for those goods. See “Note 5 Revenue Recognition.”

Cost of Goods Sold—The Company classifies the costs of manufacturing and distributing our products as cost of goods sold. Manufacturing costs include variable costs, primarily raw materials and energy, and fixed expenses directly associated with production. Manufacturing costs also include, among other things, plant site operating costs and overhead (including depreciation), production planning and logistics costs, repair and maintenance costs, plant site purchasing costs, and engineering and technical support costs. Distribution, freight and warehousing costs are also included in cost of goods sold.

Subsequent Events— The Company has evaluated subsequent events through February 12, 2020, the date the financial statements were available to be issued.

3. RECENT ACCOUNTING GUIDANCE

Accounting Pronouncements Adopted during 2019

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. On January 1, 2018, we adopted the amendments in ASU No. 2014-09, as amended, to all current revenue contracts using the modified retrospective approach, and the initial adoption of these amendments did not have an impact on our consolidated financial statements. As a result of the adoption of these amendments, we revised our accounting policy for revenue recognition as detailed in “Note 2. Nature of Operations and Significant Accounting Policies.”

Accounting Pronouncements Pending Adoption in Future Periods

The FASB issued ASUs which amended ASU No. 2016-02, *Leases (Topic 842)*. This ASU, as amended, 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, 2020. 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 on our consolidated financial statements and believe, based on our preliminary assessment, that we will record material additional right-to-use assets and lease obligations. We are establishing and evaluating an inventory of our existing leases for consideration of the accounting impact of each lease. We have selected a lease accounting software solution to support the new requirements under the amendments in these ASUs. We are also evaluating key policy elections and considerations under the amendments in these ASUs and are developing internal policies to address these amendments.

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, 2019) as defined in the credit agreement. There were no outstanding borrowings at December 31, 2019 or 2018.

5. REVENUE RECOGNITION

The Company generates all revenues through sales in the open market and long-term supply agreements. The Company recognizes revenue when control of the promised goods is transferred to the customers. Control of goods usually passes to the customer at the time shipment is made. Revenue is measured as the amount that reflects the consideration that we expect to be entitled to in exchange for those goods. Sales, value add, and other taxes collected concurrent with revenue-producing activities are excluded from revenue. Incidental items that are immaterial in the context of the contract are recognized as expense. The Company has elected to account for all shipping and handling activities as fulfillment costs. The Company also elected to expense commissions when incurred as the amortization period of the commission asset that the Company would have otherwise recognized is less than one year.

All revenue is generated through product sales and recognized at a point in time. At contract inception, the Company assesses the goods and services, if any, promised in the contracts and identify a performance obligation for each promise to transfer to the customer a good or service that is distinct. In all cases, a contract has a single performance obligation to deliver a promised good to the customer. Revenue is recognized when control of the product is transferred to the customer (i.e., when the Company’s performance obligation is satisfied), which typically occurs at shipment. Further, in determining whether control has transferred, the Company considers if there is a present right to payment and legal title, along with risks and rewards of ownership having transferred to the customer.

The amount of consideration the Company receives and recognizes as revenue is based upon the terms stated in the sales contract, which may contain variable consideration such as discounts or rebates. The Company allocates the transaction price to each distinct product based on their relative standalone selling price. The product price as specified on the purchase order or in the sales contract is considered the standalone selling price as it is an observable input that depicts the price as if sold to a similar customer in similar circumstances. In order to estimate the applicable variable consideration, the Company uses historical and current trend information to estimate the amount of discounts or rebates to which customers are likely to be entitled. Historically, actual discount or rebate adjustments relative to those estimated and included when determining the transaction price have not materially differed. Payment terms vary but are less than one year. As standard payment terms are less than one year, the Company has elected to not assess whether a contract has a significant financing component. In the normal course of business, the Company does not accept product returns unless the item is defective as manufactured

6. INCOME TAXES

The components of income before taxes for the years ended December 31, 2019, 2018, and 2017, are as follows:

	2019	2018	2017
Domestic	\$ 179.2	\$ 254.9	\$ 188.2
Foreign	16.8	11.5	13.0
Total income before taxes	<u>\$ 196.0</u>	<u>\$ 266.4</u>	<u>\$ 201.2</u>

The components of income tax expense for the years ended December 31, 2019, 2018, and 2017, are as follows:

	2019	2018	2017
State—current	\$ 0.1	\$ 0.2	\$ 0.2
Foreign—current	3.5	6.2	5.6
Foreign—deferred	(0.1)	(0.2)	1.0
Total income tax expense	<u>\$ 3.5</u>	<u>\$ 6.2</u>	<u>\$ 6.8</u>

The components of deferred income tax assets and liabilities at December 31, 2019 and 2018, are as follows:

	2019		2018	
	Deferred Tax Assets	Deferred Tax Liabilities	Deferred Tax Assets	Deferred Tax Liabilities
Inventory	\$ 0.5	\$ —	\$ 1.1	\$ —
Fixed assets	0.4	—	—	(0.4)
Other temporary differences	0.1	—	0.2	—
Total deferred tax	<u>\$ 1.0</u>	<u>\$ —</u>	<u>\$ 1.3</u>	<u>\$ (0.4)</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.

7. 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, 2019 and 2018, the RRA had benefit obligations in the amount of \$18.0 and \$16.4, respectively. The Company contributed and paid benefits in the amount of \$0.8 in 2019, \$0.8 in 2018, and \$0.7 in 2017.

At December 31, 2019 and 2018, amounts recognized in the consolidated balance sheets consist of:

	<u>2019</u>	<u>2018</u>
Current liabilities	\$ (1.1)	\$ (1.0)
Noncurrent liabilities	(16.9)	(15.4)
Total	<u>\$ (18.0)</u>	<u>\$ (16.4)</u>

At December 31, 2019 and 2018, amounts recognized in accumulated other comprehensive loss were as follows:

	<u>2019</u>	<u>2018</u>
Net actuarial loss (gain)	\$ 0.7	\$ (0.5)
Prior service cost	0.7	1.3
Total	<u>\$ 1.4</u>	<u>\$ 0.8</u>

In 2020, \$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>2019</u>	<u>2018</u>	<u>2017</u>
Service cost	\$ 0.5	\$ 0.5	\$ 0.5
Interest cost	0.7	0.6	0.6
Amortization of prior service cost	0.6	0.7	0.7
Net periodic postretirement benefit cost	<u>\$ 1.8</u>	<u>\$ 1.8</u>	<u>\$ 1.8</u>
Other changes in benefit obligations recognized in other comprehensive loss:			
Net actuarial loss (gain)	1.2	(1.1)	(1.0)
Recognized prior-service cost	<u>(0.7)</u>	<u>(0.7)</u>	<u>(0.7)</u>
Total recognized in other comprehensive (loss) income	<u>0.5</u>	<u>(1.8)</u>	<u>(1.7)</u>
Total recognized in net periodic benefit cost and other comprehensive loss	<u>\$ 2.3</u>	<u>\$ —</u>	<u>\$ 0.1</u>

Actuarial assumptions used to determine benefit obligations and net periodic benefit cost were as follows:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Discount rate used to determine net periodic benefit cost	4.28 %	3.49 %	3.82 %
Discount rate used to determine benefit obligation at December 31	2.94 %	4.28 %	N/A
	<u>2019</u>	<u>2018</u>	<u>2017</u>
Health Care Cost Assumptions			
Initial health care cost trend rate	6.95 %	7.30 %	7.65 %
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 \$1.2 to its RRA plan in 2020.

At December 31, 2019, the estimated future benefit payments, reflecting expected future service, as appropriate, are expected to be paid as follows:

2020	\$	1.2
2021		1.3
2022		1.5
2023		1.7
2024		1.8
2025 through 2029		9.2
Total	\$	16.7

The Company also has a defined contribution employee savings plan and made discretionary contributions of \$4.2 in 2019, \$3.8 in 2018, and \$3.7 in 2017.

8. 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 2020 and 2029.

Total future minimum annual rentals in effect at December 31, 2019, for noncancelable operating leases are as follows:

Years Ending December 31		
2020	\$	8.8
2021		7.6
2022		4.6
2023		2.9
2024		1.8
2025 and thereafter		7.1
Total	\$	32.8

Expense for total rental and long-term commitments was \$8.3, \$13.6, and \$12.2, for the years ended December 31, 2019, 2018, and 2017, respectively.

The Company has entered into long-term sales commitments and purchase agreements with several of its key suppliers, including its Members (see Note 9). 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 \$66.8 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, 2019 and 2018.

9. 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, 2019, 2018, and 2017, is as follows:

	<u>2019</u>	<u>2018</u>	<u>2017</u>
Net sales	\$ 86.5	\$ 101.4	\$ 82.9
Purchases	365.2	423.8	386.1

Balances receivable and payable to the Members are presented in the consolidated balance sheets as related company receivables and payables.



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