

LyondellBasell Industries N.V.
Form 10-Q
October 30, 2018
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-Q

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

For the quarterly period ended September 30, 2018

or

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: 001-34726

LYONDELLBASELL INDUSTRIES N.V.

(Exact name of registrant as specified in its charter)

The Netherlands

(State or other jurisdiction of
incorporation or organization)

98-0646235

(I.R.S. Employer
Identification No.)

1221 McKinney St.,
Suite 300
Houston, Texas
USA 77010

4th Floor, One Vine Street
London
W1J0AH
The United Kingdom

Delftseplein 27E
3013 AA Rotterdam
The Netherlands

(Addresses of registrant's principal executive offices)

(713) 309-7200 +44 (0) 207 220 2600 +31 (0)10 275 5500

(Registrant's telephone numbers, including area codes)

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes No

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

Large accelerated filer Accelerated filer

Non-accelerated filer Smaller reporting company

Emerging growth company

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 registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes No

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Sections 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. Yes No

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The registrant had 383,657,690 ordinary shares, €0.04 par value, outstanding at October 26, 2018 (excluding 16,552,590 treasury shares).

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PART I. FINANCIAL INFORMATION

ITEM 1. CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

LYONDELLBASELL INDUSTRIES N.V.
CONSOLIDATED STATEMENTS OF INCOME

Millions of dollars, except earnings per share	Three Months		Nine Months	
	Ended	Ended	Ended	Ended
	September 30,	September 30,	September 30,	September 30,
	2018	2017	2018	2017
Sales and other operating revenues:				
Trade	\$9,926	\$8,312	\$29,441	\$24,775
Related parties	229	204	687	574
	10,155	8,516	30,128	25,349
Operating costs and expenses:				
Cost of sales	8,499	6,939	24,801	20,531
Selling, general and administrative expenses	309	218	803	622
Research and development expenses	30	27	87	77
	8,838	7,184	25,691	21,230
Operating income	1,317	1,332	4,437	4,119
Interest expense	(90)	(94)	(272)	(396)
Interest income	14	5	40	15
Other income, net	17	114	57	173
Income from continuing operations before equity investments and income taxes	1,258	1,357	4,262	3,911
Income from equity investments	89	81	253	240
Income from continuing operations before income taxes	1,347	1,438	4,515	4,151
Provision for income taxes	232	380	514	1,154
Income from continuing operations	1,115	1,058	4,001	2,997
Loss from discontinued operations, net of tax	(2)	(2)	(3)	(14)
Net income	1,113	1,056	3,998	2,983
Net loss attributable to non-controlling interests	—	1	—	2
Net income attributable to the Company shareholders	\$1,113	\$1,057	\$3,998	\$2,985
Earnings per share:				
Net income (loss) attributable to the Company shareholders —				
Basic:				
Continuing operations	\$2.86	\$2.67	\$10.21	\$7.49
Discontinued operations	—	—	(0.01)	(0.03)
	\$2.86	\$2.67	\$10.20	\$7.46
Diluted:				
Continuing operations	\$2.85	\$2.67	\$10.19	\$7.49
Discontinued operations	—	—	(0.01)	(0.03)
	\$2.85	\$2.67	\$10.18	\$7.46

See Notes to the Consolidated Financial Statements.

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CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

Millions of dollars	Three Months		Nine Months	
	Ended		Ended	
	September 30,	September 30,	September 30,	September 30,
	2018	2017	2018	2017
Net income	\$1,113	\$1,056	\$3,998	\$2,983
Other comprehensive income (loss), net of tax –				
Financial derivatives	51	(21)	89	(20)
Unrealized gains (losses) on available-for-sale debt securities	—	1	—	(1)
Unrealized gains on equity securities and equity securities held by equity investees	—	6	—	10
Defined pension and other postretirement benefit plans	6	7	20	20
Foreign currency translations	(8)	23	(63)	143
Total other comprehensive income, net of tax	49	16	46	152
Comprehensive income	1,162	1,072	4,044	3,135
Comprehensive loss attributable to non-controlling interests	—	1	—	2
Comprehensive income attributable to the Company shareholders	\$1,162	\$1,073	\$4,044	\$3,137
See Notes to the Consolidated Financial Statements.				

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CONSOLIDATED BALANCE SHEETS

Millions of dollars	September 30, 2018	December 31, 2017
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 521	\$ 1,523
Restricted cash	11	5
Short-term investments	944	1,307
Accounts receivable:		
Trade, net	3,883	3,359
Related parties	204	180
Inventories	4,596	4,217
Prepaid expenses and other current assets	1,224	1,147
Total current assets	11,383	11,738
Property, plant and equipment at cost	18,116	16,570
Less: Accumulated depreciation	(6,094) (5,573
Property, plant and equipment, net	12,022	10,997
Investments and long-term receivables:		
Investment in PO joint ventures	440	420
Equity investments	1,688	1,635
Other investments and long-term receivables	20	17
Goodwill	1,819	570
Intangible assets, net	982	568
Other assets	342	261
Total assets	\$ 28,696	\$ 26,206
See Notes to the Consolidated Financial Statements.		

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CONSOLIDATED BALANCE SHEETS

Millions of dollars, except shares and par value data	September 30, 2018	December 31, 2017
LIABILITIES, REDEEMABLE NONCONTROLLING INTERESTS AND EQUITY		
Current liabilities:		
Current maturities of long-term debt	\$ 984	\$ 2
Short-term debt	214	68
Accounts payable:		
Trade	2,928	2,258
Related parties	627	637
Accrued liabilities	1,489	1,812
Total current liabilities	6,242	4,777
Long-term debt	7,471	8,549
Other liabilities	2,017	2,275
Deferred income taxes	1,774	1,655
Commitments and contingencies		
Redeemable noncontrolling interests	123	—
Stockholders' equity:		
Ordinary shares, €0.04 par value, 1,275 million shares authorized, 387,177,776 and 394,512,054 shares outstanding, respectively	22	31
Additional paid-in capital	7,033	10,206
Retained earnings	6,453	15,746
Accumulated other comprehensive loss	(1,309)	(1,285)
Treasury stock, at cost, 13,032,504 and 183,928,109 ordinary shares, respectively	(1,155)	(15,749)
Total Company share of stockholders' equity	11,044	8,949
Noncontrolling interests	25	1
Total equity	11,069	8,950
Total liabilities, redeemable noncontrolling interests and equity	\$ 28,696	\$ 26,206
See Notes to the Consolidated Financial Statements.		

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CONSOLIDATED STATEMENTS OF CASH FLOWS

Millions of dollars	Nine Months Ended September 30,	
	2018	2017
Cash flows from operating activities:		
Net income	\$3,998	\$2,983
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	908	876
Amortization of debt-related costs	11	12
Charges related to repayment of debt	—	49
Share-based compensation	33	39
Equity investments –		
Equity income	(253)	(240)
Distributions of earnings, net of tax	200	190
Deferred income taxes	111	217
Gain on sale of business and equity method investments	—	(108)
Changes in assets and liabilities that provided (used) cash:		
Accounts receivable	(128)	(278)
Inventories	(202)	(219)
Accounts payable	257	121
Other, net	(761)	82
Net cash provided by operating activities	4,174	3,724
Cash flows from investing activities:		
Expenditures for property, plant and equipment	(1,407)	(1,146)
Acquisition of A. Schulman, net of cash acquired	(1,776)	—
Payments for repurchase agreements	—	(512)
Proceeds from repurchase agreements	—	381
Purchases of available-for-sale debt securities	(50)	(653)
Proceeds from sales and maturities of available-for-sale debt securities	410	499
Proceeds from maturities of held-to-maturity securities	—	75
Purchases of equity securities	(64)	—
Proceeds from sales of equity securities	64	—
Net proceeds from sales of business and equity method investments	—	155
Proceeds from settlement of net investment hedges	872	609
Payments for settlement of net investment hedges	(850)	(658)
Other, net	(100)	(4)
Net cash used in investing activities	(2,901)	(1,254)
See Notes to the Consolidated Financial Statements.		

Table of ContentsLYONDELLBASELL INDUSTRIES N.V.
CONSOLIDATED STATEMENTS OF CASH FLOWS

Millions of dollars	Nine Months Ended September 30, 2018 2017	
Cash flows from financing activities:		
Repurchases of Company ordinary shares	(801)	(866)
Dividends paid	(1,176)	(1,060)
Issuance of long-term debt	—	990
Repayments of long-term debt	(394)	(1,000)
Debt extinguishment costs	—	(65)
Payments of debt issuance costs	—	(8)
Net of proceeds from (repayments of) commercial paper	140	(178)
Other, net	(11)	(4)
Net cash used in financing activities	(2,242)	(2,191)
Effect of exchange rate changes on cash	(27)	54
Increase (decrease) in cash and cash equivalents and restricted cash	(996)	333
Cash and cash equivalents and restricted cash at beginning of period	1,528	878
Cash and cash equivalents and restricted cash at end of period	\$532	\$1,211
See Notes to the Consolidated Financial Statements.		

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CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

Millions of dollars	Three Months Ended September 30, 2018						
	Ordinary Shares Issued	Treasury	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Company Share of Stockholders' Equity	Non-Controlling Interests
Balance, June 30, 2018	\$31	\$(16,200)	\$10,190	\$17,939	\$ (1,358)	\$ 10,602	\$ 1
Net income	—	—	—	1,113	—	1,113	—
Other comprehensive income	—	—	—	—	49	49	—
Share-based compensation	—	4	8	—	—	12	—
Dividends (\$1.00 per share)	—	—	—	(389)	—	(389)	—
Repurchase of Company ordinary shares	—	(343)	—	—	—	(343)	—
Cancellation of treasury shares	(9)	15,384	(3,165)	(12,210)	—	—	—
Acquisition of A. Schulman Inc.	—	—	—	—	—	—	24
Balance, September 30, 2018	\$22	\$(1,155)	\$7,033	\$6,453	\$ (1,309)	\$ 11,044	\$ 25
Millions of dollars	Three Months Ended September 30, 2017						
	Ordinary Shares Issued	Treasury	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Company Share of Stockholders' Equity	Non-Controlling Interests
Balance, June 30, 2017	\$31	\$(15,494)	\$10,198	\$13,506	\$ (1,375)	\$ 6,866	\$ 2
Net income (loss)	—	—	—	1,057	—	1,057	(1)
Other comprehensive income	—	—	—	—	16	16	—
Share-based compensation	—	6	3	—	—	9	—
Dividends (\$0.90 per share)	—	—	—	(356)	—	(356)	—
Repurchase of Company ordinary shares	—	(266)	—	—	—	(266)	—
Balance, September 30, 2017	\$31	\$(15,754)	\$10,201	\$14,207	\$ (1,359)	\$ 7,326	\$ 1

See Notes to the Consolidated Financial Statements.

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CONSOLIDATED STATEMENT OF STOCKHOLDERS' EQUITY

Millions of dollars	Nine Months Ended September 30, 2018						
	Ordinary Shares Issued	Treasury	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Company Share of Stockholders' Equity	Non-Controlling Interests
Balance, December 31, 2017	\$31	\$(15,749)	\$10,206	\$15,746	\$ (1,285)	\$ 8,949	\$ 1
Adoption of accounting standards	—	—	—	95	(70)	25	—
Net income	—	—	—	3,998	—	3,998	—
Other comprehensive income	—	—	—	—	46	46	—
Share-based compensation	—	31	20	—	—	51	—
Dividends (\$3.00 per share)	—	—	—	(1,176)	—	(1,176)	—
Repurchase of Company ordinary shares	—	(821)	—	—	—	(821)	—
Purchase of non-controlling interest	—	—	(28)	—	—	(28)	—
Cancellation of treasury shares	(9)	15,384	(3,165)	(12,210)	—	—	—
Acquisition of A. Schulman Inc.	—	—	—	—	—	—	24
Balance, September 30, 2018	\$22	\$(1,155)	\$7,033	\$6,453	\$ (1,309)	\$ 11,044	\$ 25
Millions of dollars	Nine Months Ended September 30, 2017						
	Ordinary Shares Issued	Treasury	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Company Share of Stockholders' Equity	Non-Controlling Interests
Balance, December 31, 2016	\$31	\$(14,945)	\$10,191	\$12,282	\$ (1,511)	\$ 6,048	\$ 25
Net income (loss)	—	—	—	2,985	—	2,985	(2)
Other comprehensive income	—	—	—	—	152	152	—
Share-based compensation	—	36	9	—	—	45	—
Dividends (\$2.65 per share)	—	—	—	(1,060)	—	(1,060)	—
Repurchase of Company ordinary shares	—	(845)	—	—	—	(845)	—
Purchase of non-controlling interest	—	—	1	—	—	1	(22)
Balance, September 30, 2017	\$31	\$(15,754)	\$10,201	\$14,207	\$ (1,359)	\$ 7,326	\$ 1

See Notes to the Consolidated Financial Statements.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

1. Basis of Presentation

LyondellBasell Industries N.V., together with its consolidated subsidiaries (collectively “LyondellBasell N.V.”), is a worldwide manufacturer of chemicals and polymers, a refiner of crude oil, a significant producer of gasoline blending components and a developer and licensor of technologies for production of polymers. Unless otherwise indicated, the “Company,” “we,” “us,” “our” or similar words are used to refer to LyondellBasell N.V.

The accompanying Consolidated Financial Statements are unaudited and have been prepared from the books and records of LyondellBasell N.V. in accordance with the instructions to Form 10-Q and Rule 10-1 of Regulation S-X for interim financial information. Accordingly, they do not include all of the information and notes required by accounting principles generally accepted in the United States (“U.S. GAAP”) for complete financial statements. In our opinion, all adjustments, including normal recurring adjustments, considered necessary for a fair statement have been included. The results for interim periods are not necessarily indicative of results for the entire year. These Consolidated Financial Statements should be read in conjunction with the Consolidated Financial Statements and notes thereto included in the Company’s Annual Report on Form 10-K for the year ended December 31, 2017.

On August 21, 2018, we acquired A. Schulman Inc. (“A. Schulman”), a global supplier of high-performance plastic compounds, composites and resins, pursuant to an Agreement and Plan of Merger dated February 15, 2018. As a result of the acquisition, A. Schulman became a wholly owned subsidiary and its results of operations are consolidated prospectively from August 21, 2018 (see Note 3).

2. Accounting and Reporting Changes

Standard	Description	Period of Adoption	Effect on the Consolidated Financial Statements
Recently Adopted Guidance			
Accounting Standards Update (“ASU”) 2014-09, Revenue from Contracts with Customers (Topic 606) (including subsequent amendments: ASU 2015-14, ASU 2016-08, ASU 2016-10, ASU 2016-12 and ASU 2016-20)	This guidance requires entities to recognize revenue upon the transfer of promised goods or services to customers in an amount that reflects the consideration expected to be received in exchange for those goods and services. This guidance also enhanced related disclosures and was effective for annual and interim periods beginning after December 15, 2017.	First quarter of 2018	See Note 4 for disclosures related to the adoption of this guidance.
ASU 2016-01, Financial Instruments-Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities	This guidance includes a requirement for equity investments (except those accounted for under the equity method of accounting or those that result in consolidation of the investee) to be measured at fair value with changes in fair value recognized in net income. This guidance was effective for annual and interim periods beginning after December 15, 2017.	First quarter of 2018	We adopted this guidance prospectively and recorded a cumulative effect adjustment of \$15 million to beginning retained earnings.
ASU 2018-03, Technical Corrections and Improvements to Financial Instruments – Overall (Subtopic 825-10)	This ASU was issued as part of the Financial Accounting Standards Board’s ongoing agenda to make improvements clarifying the Accounting Standards Codification and	First quarter of 2018	The adoption of this guidance did not have a material impact.

provides technical corrections and improvements related to ASU 2016-01. This ASU was effective for annual and interim periods beginning after December 15, 2017.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Standard	Description	Period of Adoption	Effect on the Consolidated Financial Statements
ASU 2016-16, Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory	This ASU is aimed at reducing complexity in accounting standards. Under current GAAP, the tax effects of intra-entity asset transfers (intercompany sales) are deferred until the transferred asset is sold to a third party or otherwise recovered through use. This new guidance eliminates the exception for all intra-entity sales of assets other than inventory. A reporting entity would be required to recognize tax expense from the sale of assets in the seller's tax jurisdiction when the transfer occurs, even though the pre-tax effects of that transaction are eliminated in consolidation. Any deferred tax asset that arises in the buyer's jurisdiction would also be recognized at the time of the transfer. This guidance was effective for annual periods beginning after December 15, 2017. Early adoption is permitted.	First quarter of 2018 (early adopted)	We adopted this guidance using the modified-retrospective method and recorded a cumulative-effect adjustment of \$9 million to beginning retained earnings.
ASU 2018-02, Income Statement—Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income	This guidance permits entities to reclassify tax effects stranded in accumulated other comprehensive income as a result of the U.S.-enacted "H.R.1," also known as the "Tax Cuts and Jobs Act" (the "Tax Act") to retained earnings. This amendment will be effective for annual and interim periods beginning after December 15, 2018. Early adoption is permitted.	First quarter of 2018 (early adopted)	We adopted this guidance using the specific identification method and recorded a cumulative-effect adjustment of \$52 million to beginning retained earnings.
ASU 2017-01, Clarifying the Definition of a Business	This ASU clarifies the definition of a business with the objective of adding guidance to assist entities with evaluating whether a transaction should be accounted for as an acquisition or disposal of an asset or a business. This amendment was effective for annual and interim periods beginning after December 15, 2017.	First quarter of 2018	The prospective adoption of this guidance did not have a material impact.
ASU 2017-05, Clarifying the Scope of Asset Derecognition Guidance and Accounting for Partial Sales of Nonfinancial Assets	This guidance provides clarification about the term in substance nonfinancial asset, other aspects of the scope of Subtopic 610-20 Other Income, and how an entity should account for partial sales of nonfinancial assets once the amendments in ASU 2014-09 become effective. This amendment was effective for annual and interim periods beginning after December 15, 2017.	First quarter of 2018	The retrospective adoption of this guidance did not have a material impact.

ASU 2017-07, Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost	This guidance requires changes in the presentation of current service cost and other components of net benefit cost. This amendment was effective for annual and interim periods beginning after December 15, 2017.	First quarter of 2018	The retrospective adoption of this guidance did not have a material impact.
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LYONDELLBASELL INDUSTRIES N.V.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Standard	Description	Period of Adoption	Effect on the Consolidated Financial Statements
ASU 2017-12, Targeted Improvements to Accounting for Hedging Activities	This guidance makes more financial and nonfinancial hedging strategies eligible for hedge accounting, amends the presentation and disclosure requirements and changes how companies assess effectiveness. This amendment will be effective for annual and interim periods beginning after December 15, 2018. Early application is permitted.	First quarter of 2018 (early adopted)	The adoption of this guidance did not have a material impact.
Accounting Guidance Issued But Not Adopted as of September 30, 2018	This guidance, as amended, requires lessee leases with a term longer than 12 months to be recognized as a lease liability and a right-of-use asset representing the right to use the underlying asset for the lease term. Topic 842 retains a classification distinction between finance leases and operating leases, with the classification affecting the pattern of expense recognition in the income statement. Enhanced disclosures are also required. This amendment will be effective for annual periods beginning after December 15, 2018. Early adoption is permitted.	January 1, 2019	We have made significant progress assessing the impact of this guidance through review of existing lease contracts and other purchase obligations that contain embedded lease features. We are finalizing the implementation of a lease accounting software solution. We are also approaching the end of our efforts to update our systems and processes, including our internal control framework.
ASU 2016-02, Leases (Topic 842) (including subsequent amendments: ASU 2018-01, Land Easement Practical Expedient for Transition to Topic 842, ASU 2018-10, Codification Improvements to Topic 842, and ASU 2018-11, Leases, Targeted Improvements)	This guidance, as amended, modifies the current incurred loss model of recognizing credit losses and requires a current expected credit loss model which requires utilizing historical, current and forecasted information to develop a current estimate of credit losses for financial assets recorded either at amortized costs or fair value through Other Comprehensive Income. The guidance will be effective for public entities for annual and interim periods beginning after December 15, 2019. Early adoption is permitted.	January 1, 2020	We are currently assessing the impact of the amendment of this guidance on our Consolidated Financial Statements.
ASU 2016-13, Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments			

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Standard	Description	Period of Adoption	Effect on the Consolidated Financial Statements
ASU 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework - Change to the Disclosure Requirements for Fair Value Measurement	This guidance eliminates, adds and modifies certain disclosure requirements for fair value measurements as part of its disclosure framework project. It removes transfer disclosures between Level 1 and Level 2 of the fair value hierarchy, and adds disclosures for the range and weighted average used to develop significant unobservable inputs for Level 3 fair value measurements. The guidance will be effective for public entities for annual and interim periods beginning after December 15, 2019. Early adoption is permitted.	January 1, 2020	We are currently assessing the impact of this guidance on our Consolidated Financial Statements.
ASU 2018-14, Compensation - Retirement Benefits - Defined Benefit Plans - General (Subtopic 715-20): Disclosure Framework - Changes to the Disclosure Requirements for Defined Benefit Plans	This guidance changes disclosure requirements for employers that sponsor defined benefit pension and/or other postretirement benefit plans. It eliminates the requirement of certain disclosures that are no longer considered cost beneficial; however, it adds more pertinent disclosures. The guidance will be effective for public entities for annual periods ending after December 15, 2020. Early adoption is permitted.	January 1, 2021	We are currently assessing the impact of this guidance on our Consolidated Financial Statements.
ASU 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 (a consensus of the FASB Emerging Issue Task Force)	This guidance requires a customer in a hosted, cloud computing arrangement that is a service contract to follow the internal-use software guidance to determine which implementation costs to capitalize as assets or expense as incurred. Capitalized costs are amortized over the term of the hosting arrangement when the recognized asset is ready for use. The guidance will be effective for public entities for annual and interim periods beginning after December 15, 2019. Early adoption is permitted.	January 1, 2020	We are currently assessing the impact of this guidance on our Consolidated Financial Statements.

3. Business Combination

On August 21, 2018, through an indirect wholly owned subsidiary, we acquired all of the outstanding common stock of A. Schulman Inc., a Delaware corporation for an aggregate purchase price of approximately \$1,940 million, including a \$1,240 million cash payment to the former common stock holders, \$594 million for the repayment of A. Schulman debt and \$106 million for the settlement of stock-based compensation plans and other purchase

consideration.

The acquisition of A. Schulman, a global supplier of high-performance plastic compounds, composites and powders, builds upon our already existing platform in this space, allowing us to create our Advanced Polymer Solutions business with broad geographic reach, leading technologies and a diverse product portfolio.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Preliminary Purchase Price Allocation—The following table summarizes the allocation of the purchase price based on the fair value of the assets acquired and liabilities, redeemable noncontrolling interests and noncontrolling interests assumed on the acquisition date.

Millions of dollars	
Cash and cash equivalents	\$71
Restricted cash	10
Accounts receivable	407
Prepaid expenses and other current assets	77
Inventories	300
Property, plant and equipment	431
Equity investments	16
Goodwill	1,259
Intangible assets	488
Other assets	170
Total assets	\$3,229
Current maturities of long-term debt	\$397
Accounts payable	327
Accrued liabilities	103
Other liabilities	164
Deferred income taxes	149
Total liabilities	1,140
Redeemable noncontrolling interests	125
Noncontrolling interests	24
Total liabilities, redeemable noncontrolling interests and noncontrolling interests	\$1,289

Total net assets acquired	\$1,940
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In determining the fair value, we utilized various forms of the income, cost and market approaches depending on the asset or liability being fair valued, primarily using Level 3 inputs. The estimation of fair value required significant judgment related to future net cash flows (including net sales, cost of products sold, selling and marketing costs, and working capital/contributory asset charges), discount rates reflecting the risk inherent in each cash flow stream, competitive trends, market comparisons and other factors. Inputs were generally determined by taking into account historical data, supplemented by current and anticipated market conditions, and growth rates.

The purchase price allocation presented above, including the residual amount allocated to goodwill, is based on preliminary information and is subject to change as additional information concerning final asset and liability valuations is obtained. The primary areas of the preliminary purchase price allocation that have not been finalized relate to the fair value of inventories, accounts receivables, property, plant and equipment, investments, intangible assets, contingencies and the related impacts on deferred income taxes and cumulative translation adjustments. During the measurement period, we will adjust assets and liabilities if new information is obtained about facts and circumstances that existed as of the acquisition date that, if known, would have resulted in revised estimated values of those assets or liabilities as of that date. The effect of measurement period adjustments to the estimated fair values will be reflected as

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

if the adjustments had been completed on the acquisition date. The impact of all changes that do not qualify as measurement period adjustments will be included in current period earnings.

Inventories—The acquired inventory of \$300 million comprises \$180 million of finished goods, \$8 million of work-in-process and \$112 million of raw materials and supplies. Fair value of finished goods was based on the estimated selling price of finished goods on hand less costs to sell, including disposal and holding period costs, and a reasonable profit margin on the selling and disposal effort for each specific category of finished goods being evaluated. Fair value of work in process was based on the estimated selling price once completed less total costs to complete the manufacturing process, costs to sell including disposal and holding period costs, a reasonable profit margin on the remaining manufacturing, selling, and disposal effort. Raw materials were valued based on current replacement cost.

Other Current Assets and Current Liabilities—Due to the short maturity of these assets and liabilities, their fair values closely approximate their carrying values; therefore, their fair values are deemed to be their respective carrying values. The gross contractual amount of the receivables presented in the table above is \$415 million.

Property, Plant and Equipment—The fair value of the components of property, plant and equipment acquired are represented in the table below:

Millions of dollars	
Land	\$54
Major manufacturing equipment	197
Buildings	141
Light equipment and instrumentation	12
Office furniture	9
Information system equipment	2
Construction in progress	16
Total	\$431

Fair value for the acquired property, plant and equipment was determined using two valuation methods: the market approach and the replacement cost approach. The market approach represents a sales comparison that measures the value of an asset through an analysis of sales and offerings of comparable assets. The replacement cost approach measures the value of an asset by estimating the cost to acquire or construct comparable assets adjusted for the age and condition of the asset.

Goodwill—Goodwill represents the excess of consideration over the net fair value of the acquired assets and liabilities, redeemable noncontrolling interest and noncontrolling interest assumed. The acquisition resulted in \$1,259 million of goodwill, which will not be deductible for tax purposes. The goodwill recognized in this transaction largely consists of the acquired workforce and expected synergies resulting from the acquisition. Cost synergies will be achieved through a combination of workforce consolidations, savings from procurement synergies, optimizing warehouse and logistic footprints, implementing systems and processes best practices and leveraging existing research and development knowledge management systems. All of the goodwill was assigned to our APS segment. As a result of the reorganization of our operating segments, an additional \$40 million of goodwill attributed to the polypropylene compounding, Catalloy and polybutene-1 businesses previously reported in our O&P-EAI segment was assigned to our APS segment at the acquisition date.

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Intangible Assets—The fair value, weighted average useful life and useful life of each class of intangible asset acquired are presented in the following table:

Millions of dollars	Fair Value	Weighted Average Life (Years)	Useful Life (Years)
Customer relationships	\$ 265	15	15
Trade name and trademarks	106	5	5
Know-how	89	8	5 - 8
Various contracts	28	2	1 - 2
Total	\$ 488		

Know-how in the table above represents formulations, know-how and trade secrets associated with manufacturing processes.

The fair values of know-how and trade name and trademarks were determined using the relief from royalty method. The excess earnings method was used to determine the fair value of customer relationships. These methods are all variations of the income approach.

The total weighted-average life of the acquired intangible assets that are subject to amortization is 11 years.

Other Assets and Other Liabilities—Other assets include deferred tax assets and pension assets while other liabilities are primarily related to pension and other postretirement benefit plans.

Long-Term Debt—In August 2018, we notified bondholders that we would call the assumed \$375 million 6.875% Senior Notes due June 2023 at a price of 105.156% of par. In conjunction with the repayment of the debt in September 2018, we paid a make-whole premium of \$19 million. These notes were recognized at redemption value which approximates fair value at the acquisition date.

Redeemable Noncontrolling Interests—Our redeemable noncontrolling interests relate to 124,347 shares of cumulative perpetual special stock issued by our consolidated subsidiary, A. Schulman, Inc. (“A. Schulman Special Stock”).

Holder of A. Schulman Special Stock are entitled to receive cumulative dividends at the rate of 6% per share on the liquidation preference of \$1,000 per share. These shares may be redeemed at any time at the discretion of the holders. In August and September of 2018, 2,820 shares of A. Schulman Special Stock were redeemed for approximately \$3 million. As of September 30, 2018, 121,527 shares of A. Schulman Special Stock were outstanding.

At the acquisition date, the fair value was estimated using the Black Derman Toy binomial lattice technique, which models the decision to redeem or hold by considering the maximum of the redemption value and the hold value throughout the term of the instrument and chooses the action that maximizes the return to the holder. This model requires assumptions on credit spread, yield volatility and risk-free rates.

Acquisition Costs—We incurred approximately \$30 million of acquisition-related transaction costs in connection with the acquisition of A. Schulman during the nine months ended September 30, 2018. These costs comprising banker, legal and consulting fees were classified in our Consolidated Statements of Income for the three-and-nine months ended September 30, 2018 as selling, general and administrative expenses.

Pro forma Information—Our Consolidated Financial Statements include the operating results of A. Schulman from August 21, 2018 to September 30, 2018, including revenues of \$269 million and loss from continuing operations before income taxes of \$2 million. Pro forma results of operations for this acquisition have not been presented because the effects of the acquisition were not material to our pre-acquisition financial results.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

4. Revenues

Adoption of New Revenue Accounting Guidance—On January 1, 2018, we adopted the accounting standard ASC 606, Revenue from Contracts with Customers and all related amendments using the modified retrospective method applied to those contracts which were not completed as of January 1, 2018. We recognized an \$18 million adjustment to the beginning retained earnings balance for the cumulative effect of initially applying the new standard. Comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods. The impact of the adoption of this new guidance was immaterial for the nine months ended September 30, 2018, and we expect the impact to be immaterial to our Consolidated Financial Statements on an ongoing basis.

Revenue Recognition—Substantially all our revenues are derived from contracts with customers. We account for contracts when both parties have approved the contract and are committed to perform, the rights of the parties and payment terms have been identified, the contract has commercial substance, and collectability is probable. Payments are typically required within a short period following the transfer of control of the product to the customer. We occasionally require customers to prepay purchases to ensure collectability. Such prepayments do not represent financing arrangements, since payment and fulfillment of the performance obligation occurs within a short time frame. We elected to apply the practical expedient not to adjust the promised amount of consideration for the effects of a significant financing component when, at contract inception, we expect that payment will occur in one year or less. Revenue is recognized when obligations under the terms of a contract with our customer are satisfied. This generally occurs at the point in time when performance obligations are fulfilled and control transfers to the customer. In most instances, control transfers upon transfer of risk of loss and title to the customer, which usually occurs when we ship products to the customer from our manufacturing facility. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring goods. Customer incentives are generally based on volumes purchased and recognized over the period earned. Sales, value added, and other taxes that we collect concurrent with revenue-producing activities are excluded from the transaction price as they represent amounts collected on behalf of third parties. Incidental costs incurred to obtain a contract are immaterial in the context of the contract and are recognized as expense. We have elected the practical expedient to recognize the incremental costs of obtaining a contract as an expense when incurred if the amortization period of the asset that we otherwise would have recognized is one year or less. Shipping and handling costs are treated as a fulfillment cost and not a separate performance obligation.

Contract Balances—Contract balances typically arise when a difference in timing between the transfer of control to the customer and receipt of consideration occurs. Our contract liabilities, which are reflected in our Consolidated Financial Statements as Accrued liabilities and Other liabilities, consist primarily of customer payments for products or services received before the transfer of control to the customer occurs. These contract liabilities were \$89 million as of September 30, 2018. Revenue recognized in the reporting period included in the contract liability balance at the beginning of the period was immaterial.

Disaggregation of Revenues—We participate globally across the petrochemical value chain and are an industry leader in many of our product lines. Our chemical businesses consist primarily of large processing plants that convert large volumes of liquid and gaseous hydrocarbon feedstocks into plastic resins and other chemicals. Our chemical products tend to be basic building blocks for other chemicals and plastics, while our plastic products are typically used in large volume applications. Our refining business consists of our Houston refinery, which processes crude oil into refined products such as gasoline, diesel and jet fuel.

Petrochemical products generally follow global price trends of crude oil, natural gas liquids and/or natural gas. Price volatility significantly affects our revenues, as our sales contracts are tied to global commodity indexes. Other factors such as global industry capacities and operating rates, foreign exchange rates and worldwide geopolitical trends also affect our revenues.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

The following table presents our revenues disaggregated by key products for the three and nine months ended September 30, 2018:

Millions of dollars	Three Months Ended September 30, 2018	Nine Months Ended September 30, 2018
Sales and other operating revenues:		
Olefins & co-products	\$ 1,021	\$ 2,987
Polyethylene	1,830	5,765
Polypropylene	1,414	4,405
PO & derivatives	642	1,949
Oxyfuels and related products	934	2,670
Intermediate chemicals	866	2,635
Compounding and solutions	797	1,990
Advanced polymers	240	718
Refined products	2,236	6,536
Other	175	473
Total	\$ 10,155	\$ 30,128

The following table presents our revenues disaggregated by geography, based upon the location of the customer, for the three and nine months ended September 30, 2018:

Millions of dollars	Three Months Ended September 30, 2018	Nine Months Ended September 30, 2018
Sales and other operating revenues:		
United States	\$ 5,011	\$ 14,528
Germany	741	2,326
Italy	376	1,203
France	371	1,118
Mexico	627	1,705
The Netherlands	259	835
Other	2,770	8,413
Total	\$ 10,155	\$ 30,128

Transaction Price Allocated to the Remaining Performance Obligations—We have elected to exclude contracts which have an initial term of one year or less from this disclosure. Our contracts with customers are commodity supply arrangements that settle based on market prices at future delivery dates; therefore, transaction prices are entirely variable. Transaction prices are known at the time revenue is recognized since they are generally determined by the commodity price index at a specific date, at month-end or at the month average once products are shipped to our customers. Future estimates of transaction prices for disclosure purposes are substantially constrained as they are highly susceptible to factors outside our influence, including volatility in commodity markets, industry production capacities and operating rates, planned and unplanned industry operating interruptions, foreign exchange rates and worldwide geopolitical trends.

5. Accounts Receivable

Our allowance for doubtful accounts receivable, which is reflected in the Consolidated Balance Sheets as a reduction of accounts receivable, totaled \$16 million and \$17 million at September 30, 2018 and December 31, 2017, respectively.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

6. Inventories

Inventories consisted of the following components:

Millions of dollars	September 30, December 31,	
	2018	2017
Finished goods	\$ 3,056	\$ 2,932
Work-in-process	184	142
Raw materials and supplies	1,356	1,143
Total inventories	\$ 4,596	\$ 4,217

7. Debt

Long-term loans, notes and other long-term debt, net of unamortized discount and debt issuance cost, consisted of the following:

Millions of dollars	September 30, December 31,	
	2018	2017
Senior Notes due 2019, \$1,000 million, 5.0% (\$1 million of debt issuance cost)	\$ 979	\$ 961
Senior Notes due 2021, \$1,000 million, 6.0% (\$6 million of debt issuance cost)	960	981
Senior Notes due 2024, \$1,000 million, 5.75% (\$7 million of debt issuance cost)	993	992
Senior Notes due 2055, \$1,000 million, 4.625% (\$16 million of discount; \$11 million of debt issuance cost)	973	973
Guaranteed Notes due 2022, €750 million, 1.875% (\$2 million of discount; \$3 million of debt issuance cost)	864	894
Guaranteed Notes due 2023, \$750 million, 4.0% (\$5 million of discount; \$3 million of debt issuance cost)	742	740
Guaranteed Notes due 2027, \$1,000 million, 3.5% (\$9 million of discount; \$7 million of debt issuance cost)	931	984
Guaranteed Notes due 2027, \$300 million, 8.1%	300	300
Guaranteed Notes due 2043, \$750 million, 5.25% (\$21 million of discount; \$7 million of debt issuance cost)	722	722
Guaranteed Notes due 2044, \$1,000 million, 4.875% (\$11 million of discount; \$9 million of debt issuance cost)	980	979
Other	11	25
Total	8,455	8,551
Less current maturities	(984) (2
Long-term debt	\$ 7,471	\$ 8,549

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Fair value hedging adjustments associated with the fair value hedge accounting of our fixed-for-floating interest rate swaps for the applicable periods are as follows:

	Inception Year	Gains (Losses)				Cumulative Fair Value Hedging Adjustments Included in Carrying Amount of Debt	
		Three Months Ended		Nine Months Ended		September 30,	December 31,
		September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017	2018	2017
Millions of dollars							
Senior Notes due 2019, 5.0%	2014	\$(7)	\$(4)	\$(16)	\$(46)	\$ 20	\$ 36
Senior Notes due 2021, 6.0%	2016	2	2	22	(1)	34	12
Guaranteed Notes due 2027, 3.5%	2017	12	—	54	(10)	53	(1)
Guaranteed Notes due 2022, 1.875%	2018	1	—	—	—	—	—
Total		\$8	\$(2)	\$60	\$(57)	\$ 107	\$ 47

The cumulative fair value hedging adjustments remaining at September 30, 2018 and December 31, 2017 associated with our Senior Notes due 2019 included \$13 million and \$31 million, respectively, for hedges that have been discontinued. The \$46 million loss in the nine months ended September 30, 2017 included a \$44 million charge for the write-off of the cumulative fair value hedging adjustment related to our 5% Senior Notes due 2019 described below. These fair value adjustments are recognized in Interest expense in the Consolidated Statements of Income.

Short-term loans, notes, and other short-term debt consisted of the following:

Millions of dollars	September 30, 2018	December 31, 2017
\$2,500 million Senior Revolving Credit Facility	\$ —	\$ —
\$900 million U.S. Receivables Facility	—	—
Commercial paper	140	—
Precious metal financings	70	64
Other	4	4
Total short-term debt	\$ 214	\$ 68

Long-Term Debt

Guaranteed Notes due 2027—In March 2017, LYB International Finance II B.V. (“LYB Finance II”), a direct, 100% owned finance subsidiary of LyondellBasell Industries N.V., as defined in Rule 3-10(b) of Regulation S-X, issued \$1,000 million of 3.5% guaranteed notes due 2027 at a discounted price of 98.968%.

Senior Notes due 2019—In March 2017, we redeemed \$1,000 million aggregate principal amount of our outstanding 5% senior notes due 2019, and paid \$65 million in make-whole premiums. In conjunction with the redemption of these notes, we recognized non-cash charges of \$4 million for the write-off of unamortized debt issuance costs and \$44 million for the write-off of the cumulative fair value hedge accounting adjustment related to the redeemed notes. The remaining balance of these notes is due in April 2019 and is reflected in our Consolidated Balance Sheets in Current maturities of long-term debt.

Short-Term Debt

Senior Revolving Credit Facility—Our \$2,500 million revolving credit facility, which expires in June 2022, may be used for dollar and euro denominated borrowings, has a \$500 million sublimit for dollar and euro denominated letters of credit, a \$1,000 million uncommitted accordion feature, and supports our commercial paper program. The aggregate

balance of outstanding borrowings, including amounts outstanding under our commercial paper program, and letters of credit under this facility may

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

not exceed \$2,500 million at any given time. Borrowings under the facility bear interest at a Base Rate or LIBOR, plus an applicable margin. Additional fees are incurred for the average daily unused commitments.

The facility contains customary covenants and warranties, including specified restrictions on indebtedness and liens.

In addition, we are required to maintain a leverage ratio at the end of every fiscal quarter of 3.50 to 1.00 or less for the period covering the most recent four quarters. We are in compliance with these covenants as of September 30, 2018.

Commercial Paper Program—We have a commercial paper program under which we may issue up to \$2,500 million of privately placed, unsecured, short-term promissory notes (“commercial paper”). This program is backed by our \$2,500 million senior revolving credit facility. Proceeds from the issuance of commercial paper may be used for general corporate purposes, including dividends and share repurchases. Interest rates on the commercial paper outstanding at September 30, 2018 are based on the terms of the notes and range from 230 to 240 basis points.

U.S. Receivables Facility—In July 2018, we amended our U.S. accounts receivable facility to, among other things, extend the term of the facility to July 2021. The facility has a purchase limit of \$900 million in addition to a \$300 million uncommitted accordion feature. This facility provides liquidity through the sale or contribution of trade receivables by certain of our U.S. subsidiaries to a wholly owned, bankruptcy-remote subsidiary on an ongoing basis and without recourse. The bankruptcy-remote subsidiary may then, at its option and subject to a borrowing base of eligible receivables, sell undivided interests in the pool of trade receivables to financial institutions participating in the facility. In the event of liquidation, the bankruptcy-remote subsidiary’s assets will be used to satisfy the claims of its creditors prior to any assets or value in the bankruptcy-remote subsidiary becoming available to us. We are responsible for servicing the receivables. This facility also provides for the issuance of letters of credit up to \$200 million. The term of the facility may be extended in accordance with the terms of the agreement. The facility is also subject to customary warranties and covenants, including limits and reserves and the maintenance of specified financial ratios. We are required to maintain a leverage ratio at the end of every fiscal quarter of 3.50 to 1.00 or less for the period covering the most recent four quarters. Performance obligations under the facility are guaranteed by the parent company. Additional fees are incurred for the average daily unused commitments.

At September 30, 2018, there were no borrowings or letters of credit under the facility.

Weighted Average Interest Rate—At September 30, 2018 and December 31, 2017, our weighted average interest rate on outstanding short-term debt was 3.0% and 1.8%, respectively.

Debt Discount and Issuance Costs—For the nine months ended September 30, 2018 and 2017, amortization of debt discounts and debt issuance costs resulted in amortization expense of \$11 million and \$16 million, respectively, which is included in Interest expense in the Consolidated Statements of Income.

Other Information—On December 28, 2016, LYB International Finance III, LLC was formed as a private company with limited liability in Delaware. LYB International Finance III, LLC is a direct, 100% owned finance subsidiary of LyondellBasell N.V., as defined in Rule 3-10(b) of Regulation S-X. Any debt securities issued by LYB International Finance III, LLC will be fully and unconditionally guaranteed by LyondellBasell N.V.

8. Financial Instruments and Fair Value Measurements

We are exposed to market risks, such as changes in commodity pricing, currency exchange rates and interest rates. To manage the volatility related to these exposures, we selectively enter into derivative transactions pursuant to our risk management policies.

A summary of our financial instruments, risk management policies, derivative instruments, hedging activities and fair value measurement can be found in Notes 2 and 14 to our Consolidated Financial Statements included in our Annual Report on Form 10-K for the year ended December 31, 2017. If applicable, updates have been included in the respective sections below.

At September 30, 2018 and December 31, 2017, we had marketable securities classified as cash and cash equivalents of \$189 million and \$1,035 million, respectively.

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Foreign Currency Gain (Loss)—Other income, net, in the Consolidated Statements of Income reflected foreign currency gains of \$6 million and \$14 million for the three and nine months ended September 30, 2018, respectively, and foreign currency losses of less than \$1 million and \$6 million for the three and nine months ended September 30, 2017, respectively.

Financial Instruments Measured at Fair Value on a Recurring Basis—The following table summarizes financial instruments outstanding as of September 30, 2018 and December 31, 2017 that are measured at fair value on a recurring basis:

Millions of dollars	September 30, 2018		December 31, 2017		Balance Sheet Classification
	Notional Amount	Fair Value	Notional Amount	Fair Value	
Assets—					
Derivatives designated as hedges:					
Commodities	\$49	\$21	\$—	\$—	Prepaid expenses and other current assets
Commodities	1	—	—	—	Other assets
Foreign currency	236	55	—	26	Prepaid expenses and other current assets
Foreign currency	2,000	58	2,000	25	Other assets
Interest rates	1,000	82	—	20	Prepaid expenses and other current assets
Interest rates	647	15	650	1	Other assets
Derivatives not designated as hedges:					
Commodities	151	12	77	20	Prepaid expenses and other current assets
Foreign currency	1,164	10	19	—	Prepaid expenses and other current assets
Non-derivatives:					
Available-for-sale debt securities	586	586	960	960	Short-term investments
Equity securities	350	358	350	347	Short-term investments
Total	\$6,184	\$1,197	\$4,056	\$1,399	
Liabilities—					
Derivatives designated as hedges:					
Commodities	\$—	\$—	\$97	\$8	Accrued liabilities
Commodities	—	—	5	—	Other liabilities
Foreign currency	—	34	139	29	Accrued liabilities
Foreign currency	950	101	950	140	Other liabilities
Interest rates	1,000	10	—	5	Accrued liabilities
Interest rates	2,000	86	3,350	58	Other liabilities
Derivatives not designated as hedges:					
Commodities	8	3	108	29	Accrued liabilities
Foreign currency	213	1	995	11	Accrued liabilities
Non-derivatives:					
Performance share awards	32	32	23	23	Accrued liabilities
Performance share awards	2	2	27	27	Other liabilities
Total	\$4,205	\$269	\$5,694	\$330	

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All derivatives and available-for-sale debt securities in the tables above are classified as Level 2. Our limited partnership investments included in our equity securities discussed below, are measured at fair value using the net asset value (“NAV”) per share (or its equivalent) practical expedient and have not been classified in the fair value hierarchy.

At September 30, 2018, our outstanding foreign currency and commodity contracts not designated as hedges mature from October 2018 to August 2019 and from October 2018 to December 2018, respectively.

Financial Instruments Not Measured at Fair Value on a Recurring Basis—The following table presents the carrying value and estimated fair value of our financial instruments that are not measured at fair value on a recurring basis as of September 30, 2018 and December 31, 2017. Short-term loans receivable, which represent our repurchase agreements, and short-term and long-term debt are recorded at amortized cost in the Consolidated Balance Sheets. The carrying and fair values of short-term and long-term debt exclude capital leases and commercial paper.

Millions of dollars	September 30, 2018		December 31, 2017	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Non-derivatives:				
Assets:				
Short-term loans receivable	\$550	\$550	\$570	\$570
Liabilities:				
Short-term debt	\$70	\$67	\$64	\$75
Long-term debt	8,444	8,772	8,526	9,442
Total	\$8,514	\$8,839	\$8,590	\$9,517

All financial instruments in the table above are classified as Level 2. There were no transfers between Level 1 and Level 2 for any of our financial instruments during the nine months ended September 30, 2018 and the year ended December 31, 2017.

Net Investment Hedges—In 2018, we entered into €800 million of foreign currency contracts that were designated as net investment hedges.

On June 15, 2018, €400 million of these foreign currency contracts expired, resulting in €400 million (\$473 million at the expiry spot rate) settlement payment to and \$498 million receipt from our counterparties, respectively.

On September 10, 2018, €325 million of our foreign currency contracts expired, resulting in €325 million (\$377 million at the expiry spot rate) settlement payment to and \$374 million receipt from our counterparties, respectively.

In 2017, we entered into €617 million of foreign currency contracts that were designated as net investment hedges.

In 2016, we issued euro denominated notes payable due 2022 with notional amounts totaling €750 million that were designated as a net investment hedge. In May 2018, we dedesignated and redesignated a €125 million tranche of our euro denominated notes payable due 2022 as a net investment hedge.

At September 30, 2018 and December 31, 2017, we had outstanding foreign currency contracts with an aggregate notional value of €817 million (\$886 million) and €742 million (\$789 million), respectively, designated as net investment hedges. In addition, at September 30, 2018 and December 31, 2017 we had outstanding foreign-currency denominated debt, with notional amount totaling €750 million (\$869 million) and €750 million (\$899 million), respectively, designated as a net investment hedge.

There was no ineffectiveness recorded during the three and nine months ended September 30, 2017 related to these hedging relationships.

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Cash Flow Hedges—The following table summarizes our cash flow hedges outstanding at September 30, 2018 and December 31, 2017:

Millions of dollars	September	December	Expiration Date
	30, 2018	31, 2017	
	Notional Value	Notional Value	
Foreign currency	\$ 2,300	\$ 2,300	2021 to 2027
Interest rates	1,500	1,000	2019 to 2021
Commodities	50	102	2018 to 2019

There was less than \$1 million of ineffectiveness recorded during the three months ended September 30, 2017 and \$1 million of ineffectiveness recorded during the nine months ended September 30, 2017 related to these hedging relationships.

In June 2018 and July 2018, we entered into forward-starting interest rate swaps with a total notional amount of \$300 million and \$200 million, respectively, to mitigate the risk of variability in interest rates for an expected debt issuance by November 2021. These swaps were designated as cash flow hedges and will be terminated upon debt issuance. As of September 30, 2018, \$1 million is scheduled to be reclassified as a decrease to interest expense and \$21 million is scheduled to be reclassified as a decrease to cost of sales over the next twelve months.

Fair Value Hedges—In May 2018, we entered into a euro fixed-for-floating interest rate swap to mitigate the change in the fair value of €125 million (\$147 million) of our €750 million notes payable due 2022 associated with the risk of variability in the 6-month EURIBOR rate (the benchmark interest rate). The fixed-rate and variable-rate are settled annually and semi-annually, respectively.

In February 2017, we entered into U.S. dollar fixed-for-floating interest rate swaps to mitigate changes in the fair value of our \$1,000 million 3.5% guaranteed notes due 2027 associated with the risk of variability in the 3 Month USD LIBOR rate (the benchmark interest rate). The fixed-rate and variable-rate are settled semi-annually and quarterly, respectively.

In March 2017, concurrent with the redemption of \$1,000 million of our outstanding 5% senior notes due 2019, we dedesignated the related \$2,000 million fair value hedge and terminated swaps in the notional amount of \$1,000 million. At the same time, we redesignated the remaining \$1,000 million notional amount of swaps as a fair value hedge of the remaining \$1,000 million of 5% senior notes outstanding.

We had outstanding interest rate contracts with aggregate notional amounts of \$3,147 million and \$3,000 million at September 30, 2018 and December 31, 2017, respectively, designated as fair value hedges. Our interest rate contracts outstanding at September 30, 2018 mature from 2019 to 2027.

There was \$4 million and \$11 million of ineffectiveness recorded for the three and nine months ended September 30, 2017, respectively, related to these hedging relationships.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Impact on Earnings and Other Comprehensive Income—The following table summarizes the pre-tax effect of derivative instruments and non-derivative instruments on Other comprehensive income and earnings for the three and nine months ended September 30, 2018 and 2017:

	Effect of Financial Instruments						Classification
	Three Months Ended September 30,						
	Gain (Loss) Recognized in AOCI		Gain (Loss) Reclassified from AOCI to Income		Gain (Loss) Recognized in Income		
Millions of dollars	2018	2017	2018	2017	2018	2017	
Derivatives designated as net investment hedges:							
Foreign currency	\$4	\$(57)	\$—	\$—	\$8	\$—	Interest expense
Derivatives designated as cash flow hedges:							
Commodities	30	3	(11)	—	—	—	Cost of sales
Foreign currency	11	(98)	(13)	74	11	9	Other income, net; Interest expense
Interest rates	48	(5)	—	—	—	—	Interest expense
Derivatives designated as fair value hedges:							
Interest rates	—	—	—	—	(12)	3	Interest expense
Derivatives not designated as hedges:							
Commodities	—	—	—	—	2	(6)	Sales and other operating revenues
Commodities	—	—	—	—	7	6	Cost of sales
Foreign currency	—	—	—	—	12	(6)	Other income, net
Non-derivatives designated as net investment hedges:							
Long-term debt	5	(30)	—	—	—	—	Other income, net
Total	\$98	\$(187)	\$(24)	\$74	\$28	\$6	

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

	Effect of Financial Instruments						Income Statement Classification
	Nine Months Ended September 30,						
	Gain (Loss) Recognized in AOCI		Gain (Loss) Reclassified from AOCI to Income		Gain (Loss) Recognized in Income		
Millions of dollars	2018	2017	2018	2017	2018	2017	
Derivatives designated as net investment hedges:							
Foreign currency	\$65	\$(170)	\$—	\$—	\$21	\$—	Interest expense
Derivatives designated as cash flow hedges:							
Commodities	36	(4)	(7)	—	—	—	Cost of sales
Foreign currency	37	(233)	(75)	232	29	32	Other income, net; Interest expense
Interest rates	115	(23)	—	—	—	(1)	Interest expense
Derivatives designated as fair value hedges:							
Interest rates	—	—	—	—	(74)	21	Interest expense
Derivatives not designated as hedges:							
Commodities	—	—	—	—	1	(9)	Sales and other operating revenues
Commodities	—	—	—	—	16	(31)	Cost of sales
Foreign currency	—	—	—	—	28	(7)	Other income, net
Non-derivatives designated as net investment hedges:							
Long-term debt	31	(95)	—	—	—	—	Other income, net
Total	\$284	\$(525)	\$(82)	\$232	\$21	\$5	

The derivative amounts excluded from effectiveness testing for foreign currency contracts designated as net investment hedges recognized in other comprehensive income for the three and nine months ended September 30, 2018 were losses of \$1 million and gains of \$14 million, respectively. The derivative amounts excluded from effectiveness testing for foreign currency contracts designated as net investment hedges recognized in interest expense for the three and nine months ended September 30, 2018 were gains of \$8 million and \$21 million, respectively. For the three and nine months ended September 30, 2018, losses of \$13 million and \$75 million, respectively, for our foreign currency contracts designated as cash flow hedges were reclassified from AOCI to Other income, net. The pre-tax effect of the periodic receipt of fixed interest and payment of variable interest associated with our fixed-for-floating interest rate swaps resulted in interest expense losses of \$3 million and \$1 million during the three and nine months ended September 30, 2018, respectively; and, resulted in interest expense gains of \$5 million and \$18 million during the three and nine months ended September 30, 2017, respectively. These gains and losses are not included in the tables above.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Investments in Available-for-Sale Debt Securities—The following table summarizes the amortized cost, gross unrealized gains and losses, and fair value of our available-for-sale debt securities that are outstanding as of September 30, 2018 and December 31, 2017:

Millions of dollars	September 30, 2018			
	Cost	Gross	Gross	Fair Value
		Unrealized Gains	Unrealized Losses	
Available-for-sale debt securities:				
Bonds	\$586	\$ 1	\$ (1)	\$ 586
Total available-for-sale debt securities	\$586	\$ 1	\$ (1)	\$ 586

Millions of dollars	December 31, 2017			
	Cost	Gross	Gross	Fair Value
		Unrealized Gains	Unrealized Losses	
Available-for-sale securities:				
Commercial paper	\$180	\$ —	\$ —	\$180
Bonds	630	—	—	630
Certificates of deposit	150	—	—	150
Limited partnership investments	350	2	(5)	347
Total available-for-sale securities	\$1,310	\$ 2	\$ (5)	\$1,307

No losses related to other-than-temporary impairments of our available-for-sale debt securities have been recorded in Accumulated other comprehensive loss during the three and nine months ended September 30, 2018 and the year ended December 31, 2017.

As of September 30, 2018, bonds classified as available-for-sale debt securities had maturities between two and twenty-five months.

The proceeds from maturities and sales of our available-for-sale debt securities during the three and nine months ended September 30, 2018 and 2017 are summarized in the following table:

Millions of dollars	Three Months Ended		Nine Months Ended	
	September 30, 2017		September 30, 2018	
	2017	2018	2017	2018
Proceeds from maturities of securities	\$ —	\$ 12	\$410	\$499
Proceeds from sales of securities	—	—	—	—

No gain or loss was realized in connection with the sales of our available-for-sale debt securities during the three and nine months ended September 30, 2018 and 2017.

During the nine months ended September 30, 2017, we had maturities of our held-to-maturity securities of \$75 million.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

The following table summarizes the fair value and unrealized losses related to available-for-sale debt securities that were in a continuous unrealized loss position for less than and greater than twelve months as of September 30, 2018 and December 31, 2017:

Millions of dollars	September 30, 2018			
	Less than 12 months		Greater than 12 months	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available-for-sale debt securities:				
Bonds	\$ 155	\$ (1)	\$ —	\$ —

Millions of dollars	December 31, 2017			
	Less than 12 months		Greater than 12 months	
	Fair Value	Unrealized Loss	Fair Value	Unrealized Loss
Available-for-sale securities:				
Limited partnership investments	\$ 117	\$ (5)	\$ —	\$ —

Investments in Equity Securities—Our equity securities primarily consist of our limited partnership investments, which include investments in, among other things, equities and equity related securities, debt securities, credit instruments, global interest rate products, currencies, commodities, futures, options, warrants and swaps. These investments may be redeemed at least monthly with advance notice ranging up to ninety days. These investments had a notional amount of \$350 million and a fair value of \$358 million at September 30, 2018.

The following table summarizes the portion of unrealized gains and losses for the equity securities that are outstanding as of September 30, 2018:

Millions of dollars	
Net gains recognized during the period	\$1
Less: Net gains recognized during the period on securities sold	2
Unrealized losses recognized during the period	\$(1)

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

9. Pension and Other Postretirement Benefits

Net periodic pension benefits included the following cost components for the periods presented:

	U.S. Plans			
	Three Months Ended September 30, 2018		Nine Months Ended September 30, 2017	
Millions of dollars	2018	2017	2018	2017
Service cost	\$13	\$11	\$38	\$35
Interest cost	15	15	45	45
Expected return on plan assets	(30)	(30)	(91)	(91)
Actuarial and investment loss amortization	5	5	16	16
Net periodic benefit costs	\$3	\$1	\$8	\$5

	Non-U.S. Plans			
	Three Months Ended September 30, 2018		Nine Months Ended September 30, 2017	
Millions of dollars	2018	2017	2018	2017
Service cost	\$8	\$9	\$25	\$28
Interest cost	8	5	24	16
Expected return on plan assets	(6)	(4)	(18)	(13)
Settlement loss	—	—	1	—
Actuarial and investment loss amortization	3	4	8	11
Net periodic benefit costs	\$13	\$14	\$40	\$42

Net periodic other postretirement benefits included the following cost components for the periods presented:

	U.S. Plans			
	Three Months Ended September 30, 2018		Nine Months Ended September 30, 2017	
Millions of dollars	2018	2017	2018	2017
Service cost	\$1	\$—	\$2	\$2
Interest cost	2	3	7	7
Net periodic benefit costs	\$3	\$3	\$9	\$9

	Non-U.S. Plans			
	Three Months Ended September 30, 2018		Nine Months Ended September 30, 2017	
Millions of dollars	2018	2017	2018	2017
Service cost	\$1	\$—	\$2	\$2
Interest cost	2	3	7	7
Net periodic benefit costs	\$3	\$3	\$9	\$9

Millions of dollars	2018	2017	2018	2017
Service cost	\$—	\$ 1	\$ 1	\$ 2
Interest cost	—	—	1	1
Actuarial loss amortization	1	1	1	2
Net periodic benefit costs	\$1	\$ 2	\$ 3	\$ 5

The components of net periodic benefit cost other than the service cost component are included in Other income, net in the Consolidated Statements of Income.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

10. Income Taxes

Our effective income tax rate for the three months ended September 30, 2018 was 17.2% compared with 26.4% for the three months ended September 30, 2017. For the nine months ended September 30, 2018, the effective income tax rate was 11.4% compared with 27.8% for the nine months ended September 30, 2017. Our effective income tax rate fluctuates based on, among other factors, changes in statutory tax rates, changes in pretax income in countries with varying statutory tax rates, changes in valuation allowances, changes in foreign exchange gains/losses, the amount of exempt income and changes in unrecognized tax benefits associated with uncertain tax positions.

Compared with the three months ended September 30, 2017, the lower effective tax rate for the three months ended September 30, 2018 was primarily attributable to the impact of the reduction to the U.S. federal statutory tax rate as a result of the Tax Act, changes in pretax income in countries with varying statutory tax rates, increases in exempt income, and changes in foreign exchange gains/losses. Compared with the nine months ended September 30, 2017, the lower effective tax rate for the nine months ended September 30, 2018 was primarily attributable to changes in unrecognized tax benefits associated with uncertain tax positions, the impact of the reduction to the U.S. federal statutory tax rate as a result of the Tax Act and increases in exempt income, partially offset by the repeal of the U.S. domestic production activity deduction.

We operate in multiple jurisdictions throughout the world, and our tax returns are periodically audited or subjected to review by tax authorities. We are currently under examination in a number of tax jurisdictions. As a result, there is an uncertainty in income taxes recognized in our financial statements. Positions challenged by the tax authorities may be settled or appealed by us. During the nine months ended September 30, 2018, we entered into an audit settlement impacting specific uncertain tax positions. This audit settlement resulted in a \$346 million non-cash benefit to our effective tax rate consisting of the recognition of \$288 million of previously unrecognized tax benefits as a reduction for tax positions of prior years and the release of \$58 million of previously accrued interest. This non-cash reduction in unrecognized tax benefits is reflected on our Consolidated Balance Sheet in Other liabilities and on our Consolidated Statement of Cash Flows in Other operating activities. Tax benefits totaling \$262 million and \$544 million were unrecognized as of September 30, 2018 and December 31, 2017, respectively. It is reasonably possible that, within the next twelve months, due to the settlement of uncertain tax positions with various tax authorities and the expiration of statutes of limitations, unrecognized tax benefits could decrease by up to approximately \$180 million.

We recognize interest associated with unrecognized tax benefits in income tax expense. Income tax expense includes a benefit of interest totaling \$46 million in the nine months ended September 30, 2018, and interest expense totaling \$16 million in the year ended December 31, 2017. We accrued approximately \$17 million and \$63 million for interest and penalties as of September 30, 2018 and December 31, 2017, respectively.

We monitor income tax developments in countries where we conduct business. On December 22, 2017, the Tax Act was enacted with some provisions effective as early as 2017 while others were delayed until 2018. This change in U.S. tax law included a reduction in the federal corporate tax rate from 35% to 21% for years beginning after 2017, which resulted in the remeasurement of our U.S. net deferred income tax liabilities. Our 2017 income tax provision included a provisional estimate of \$819 million income tax benefit related to the remeasurement of our U.S. net deferred income tax liabilities. The impact of the Tax Act may differ from this reasonable estimate due to additional guidance that may be issued, changes in assumptions made, and the finalization of certain U.S. income tax positions with the filing of our 2017 U.S. income tax return which will allow for the ability to conclude whether any further adjustments are necessary to our deferred tax assets and liabilities. Any adjustments to these provisional amounts will be reported as a component of income tax expense in the reporting period in which any such adjustments are identified

which will be no later than the fourth quarter of 2018.

11. Commitments and Contingencies

Financial Assurance Instruments—We have obtained letters of credit, performance and surety bonds and have issued financial and performance guarantees to support trade payables, potential liabilities and other obligations. Considering the frequency of claims made against the financial instruments we use to support our obligations, and the magnitude of those financial instruments in light of our current financial position, management does not expect that any claims against or draws on these instruments would have a material adverse effect on our Consolidated Financial Statements. We have not experienced any unmanageable difficulty in obtaining the required financial assurance instruments for our current operations.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Environmental Remediation—Our accrued liability for future environmental remediation costs at current and former plant sites and other remediation sites totaled \$92 million and \$102 million as of September 30, 2018 and December 31, 2017, respectively. At September 30, 2018, the accrued liabilities for individual sites range from less than \$1 million to \$17 million. The remediation expenditures are expected to occur over a number of years, and not to be concentrated in any single year. In our opinion, it is reasonably possible that losses in excess of the liabilities recorded may have been incurred. However, we cannot estimate any amount or range of such possible additional losses. New information about sites, new technology or future developments such as involvement in investigations by regulatory agencies, could require us to reassess our potential exposure related to environmental matters. The following table summarizes the activity in our accrued environmental liability included in “Accrued liabilities” and “Other liabilities:”

	Nine Months Ended September 30,	
Millions of dollars	2018	2017
Beginning balance	\$102	\$95
Changes in estimates	1	3
Amounts paid	(9)	(7)
Foreign exchange effects	(2)	8
Ending balance	\$92	\$99

Access Indemnity Demand—In December 2010, one of our subsidiaries received demand letters from affiliates of Access Industries (collectively, “Access Entities”), a more than five percent shareholder of the Company, demanding indemnity for losses, including attorney’s fees and expenses, arising out of a 2007 management agreement and a pending lawsuit styled Edward S. Weisfelner, as Litigation Trustee of the LB Litigation Trust v. Leonard Blavatnik, et al., Adversary Proceeding No. 09-1375 (REG), in the United States Bankruptcy Court, Southern District of New York. In the Weisfelner lawsuit, the plaintiffs sought recovery from Access all amounts earned by the Access Entities related to their purchase of shares of Lyondell Chemical Company (“Lyondell Chemical”) prior to its acquisition by Basell AF S.C.A.; distributions by Basell AF S.C.A. to its shareholders before it acquired Lyondell Chemical; and management and transaction fees and expenses.

The Access Entities also demanded \$100 million in management fees under the management agreement between an Access affiliate and the predecessor of LyondellBasell AF, as well as other unspecified amounts relating to advice purportedly given in connection with financing and other strategic transactions.

In June 2009, an Access affiliate filed a proof of claim in Bankruptcy Court against LyondellBasell AF seeking “no less than \$723,963.65” for the amounts allegedly owed under the 2007 management agreement.

We did not believe that the 2007 management agreement was in effect or that the Company or any Company-affiliated entity owed any obligation under the management agreement, including for management fees or for indemnification. We defended our position in proceedings and against any claims or demands that were asserted. In April 2011, Lyondell Chemical filed an objection to the claim and brought a declaratory judgment action for a determination that the demands were not valid and the declaratory judgment action was stayed per the parties’ agreement pending the outcome of the Weisfelner lawsuit.

The Weisfelner lawsuit went to trial in October 2016. In April 2017, the trial court awarded \$12.6 million to the plaintiffs and denied all other relief, and in May 2017 the court issued its Final Judgment reflecting this ruling. The plaintiffs filed an appeal to the Federal District Court for the Southern District of New York, which largely affirmed

the Final Judgment on January 24, 2018.

In April 2018, the Company and the Access Entities agreed to settle all claims, including under the 2009 Proof of Claim and 2007 Management Agreement, described in the April 2011 declaratory judgment action and the Access Entities' December 2010

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

demand letters. No payments were required by either side under the settlement agreement; the declaratory judgment action was dismissed and the Proof of Claim was withdrawn.

Indemnification—We are parties to various indemnification arrangements, including arrangements entered into in connection with acquisitions, divestitures and the formation and dissolution of joint ventures. Pursuant to these arrangements, we provide indemnification to and/or receive indemnification from other parties in connection with liabilities that may arise in connection with the transactions and in connection with activities prior to completion of the transactions. These indemnification arrangements typically include provisions pertaining to third party claims relating to environmental and tax matters and various types of litigation. As of September 30, 2018, we had not accrued any significant amounts for our indemnification obligations, and we are not aware of other circumstances that would likely lead to significant future indemnification obligations. We cannot determine with certainty the potential amount of future payments under the indemnification arrangements until events arise that would trigger a liability under the arrangements.

As part of our technology licensing contracts, we give indemnifications to our licensees for liabilities arising from possible patent infringement claims with respect to certain proprietary licensed technologies. Such indemnifications have a stated maximum amount and generally cover a period of five to ten years.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

12. Stockholders' Equity

Dividend Distributions—The following table summarizes the dividends paid in the periods presented:

Millions of dollars, except per share amounts	Dividend Per Ordinary Share	Aggregate Dividends Paid	Date of Record
March	\$ 1.00	\$ 395	March 5, 2018
June	1.00	392	June 11, 2018
September	1.00	389	September 5, 2018
	\$ 3.00	\$ 1,176	

Share Repurchase Programs—In June 2018, our shareholders approved a proposal to authorize us to repurchase up to 57,844,016 of our ordinary shares through December 1, 2019 (“June 2018 Share Repurchase Program”), which superseded the remaining authorization under our May 2017 Share Repurchase Program. The timing and amount of these repurchases, which are determined based on our evaluation of market conditions and other factors, may be executed from time to time through open market or privately negotiated transactions. The repurchased shares, which are recorded at cost, are classified as Treasury stock and may be retired or used for general corporate purposes, including for various employee benefit and compensation plans.

The following table summarizes our share repurchase activity for the periods presented:

Millions of dollars, except shares and per share amounts	Nine Months Ended September 30, 2018		
	Shares Repurchased	Average Purchase Price	Total Purchase Price, Including Commissions
May 2017 Share Repurchase Program	4,004,753	\$ 106.05	\$ 425
June 2018 Share Repurchase Program	3,674,062	107.89	396
	7,678,815	\$ 106.93	\$ 821

Millions of dollars, except shares and per share amounts	Nine Months Ended September 30, 2017		
	Shares Repurchased	Average Purchase Price	Total Purchase Price, Including Commissions
May 2016 Share Repurchase Program	3,501,084	\$ 85.71	\$ 300
May 2017 Share Repurchase Program	6,516,917	83.54	545
	10,018,001	\$ 84.30	\$ 845

Due to the timing of settlements, total cash paid for share repurchases for the nine months ended September 30, 2018 and 2017 was \$801 million and \$866 million, respectively.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Ordinary Shares—The changes in the outstanding amounts of ordinary shares are as follows:

	Nine Months Ended September 30,	
	2018	2017
Ordinary shares outstanding:		
Beginning balance	394,512,054	404,046,331
Share-based compensation	285,186	343,663
Warrants exercised	—	4,184
Employee stock purchase plan	82,758	81,964
Purchase of ordinary shares	(7,702,222)	(10,018,001)
Ending balance	387,177,776	394,458,141

Treasury Shares—The changes in the amounts of treasury shares held by the Company are as follows:

	Nine Months Ended September 30,	
	2018	2017
Ordinary shares held as treasury shares:		
Beginning balance	183,928,109	174,389,139
Share-based compensation	(285,186)	(343,663)
Warrants exercised	—	509
Employee stock purchase plan	(82,758)	(81,964)
Purchase of ordinary shares	7,702,222	10,018,001
Treasury shares canceled	(178,229,883)	—
Ending balance	13,032,504	183,982,022

During the three months ended September 30, 2018, following approval by our management and shareholders, we canceled 178,229,883 ordinary shares held in our treasury account in accordance with cancellation requirements under Dutch law.

Purchase of ordinary shares during the three months ended September 30, 2018 includes 23,407 shares that were returned to us at no cost resulting from unclaimed distributions to creditors.

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Accumulated Other Comprehensive Income (Loss)—The components of, and after-tax changes in, Accumulated other comprehensive loss as of and for the nine months ended September 30, 2018 and 2017 are presented in the following table:

Millions of dollars	Financial Derivatives	Unrealized Gains (Losses) on Available -for-Sale Debt Securities	Unrealized Gains on Equity Securities and Equity Securities Held by Equity Investees	Defined Benefit Pension and Other Postretirement Benefit Plans	Foreign Currency Translation Adjustments	Total
Balance – January 1, 2018	\$ (120)	\$ —	\$ 17	\$ (421)	\$ (761)	\$(1,285)
Adoption of accounting standards	(2)	—	(17)	(51)	—	(70)
Other comprehensive income (loss) before reclassifications	186	—	—	—	(48)	138
Tax expense before reclassifications	(36)	—	—	—	(15)	(51)
Amounts reclassified from accumulated other comprehensive income (loss)	(81)	—	—	26	—	(55)
Tax (expense) benefit	20	—	—	(6)	—	14
Net other comprehensive income (loss)	89	—	—	20	(63)	46
Balance – September 30, 2018	\$ (33)	\$ —	\$ —	\$ (452)	\$ (824)	\$(1,309)

Millions of dollars	Financial Derivatives	Unrealized Gains (Losses) on Available -for-Sale Debt Securities	Unrealized Gains on Equity Securities and Equity Securities Held by Equity Investees	Defined Benefit Pension and Other Postretirement Benefit Plans	Foreign Currency Translation Adjustments	Total
Balance – January 1, 2017	\$ (75)	\$ 1	\$ —	\$ (498)	\$ (939)	\$(1,511)
Other comprehensive income (loss) before reclassifications	(260)	(1)	8	—	112	(141)
Tax benefit before reclassifications	73	—	2	—	31	106
Amounts reclassified from accumulated other comprehensive income (loss)	232	—	—	29	—	261
Tax expense	(65)	—	—	(9)	—	(74)
Net other comprehensive income (loss)	(20)	(1)	10	20	143	152
Balance – September 30, 2017	\$ (95)	\$ —	\$ 10	\$ (478)	\$ (796)	\$(1,359)

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

The amounts reclassified out of each component of Accumulated other comprehensive loss are as follows:

	Three		Nine		Affected Line Item on the Consolidated Statements of Income
	Months Ended September 30, 2018	Months Ended September 30, 2017	Months Ended September 30, 2018	Months Ended September 30, 2017	
Millions of dollars					
Reclassification adjustments for:					
Financial derivatives – Foreign currency	\$(13)	\$ 74	\$(75)	\$232	Other income, net
Financial derivatives – Commodities	(10)	—	(6)	—	Cost of sales
Income tax expense (benefit)	(5)	18	(20)	65	Provision for income taxes
Financial derivatives, net of tax	(18)	56	(61)	167	
Amortization of defined pension items:					
Actuarial loss	9	10	25	29	
Settlement loss	—	—	1	—	
Income tax expense	3	3	6	9	
Defined pension items, net of tax	6	7	20	20	
Total reclassifications, before tax	(14)	84	(55)	261	
Income tax expense (benefit)	(2)	21	(14)	74	Provision for income taxes
Total reclassifications, after tax	\$(12)	\$ 63	\$(41)	\$187	Amount included in net income

Amortization of prior service cost and actuarial loss is included in the computation of net periodic pension and other postretirement benefit costs (see Note 9).

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NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

13. Per Share Data

Basic earnings per share are based upon the weighted average number of shares of common stock outstanding during the periods. Diluted earnings per share includes the effect of certain stock option awards and other equity-based compensation awards. We have unvested restricted stock units that are considered participating securities for earnings per share.

Earnings per share data and dividends declared per share of common stock are as follows:

Millions of dollars	Three Months Ended September 30,			
	2018		2017	
	Continuing Operations	Discontinued Operations	Continuing Operations	Discontinued Operations
Net income (loss)	\$1,115	\$ (2)	\$1,058	\$ (2)
Less: net loss attributable to non-controlling interests	—	—	1	—
Net income (loss) attributable to the Company shareholders	1,115	(2)	1,059	(2)
Net income attributable to participating securities	(2)	—	(1)	—
Net income (loss) attributable to ordinary shareholders – basic and diluted	\$1,113	\$ (2)	\$1,058	\$ (2)
Millions of shares, except per share amounts				
Basic weighted average common stock outstanding	389	389	395	395
Effect of dilutive securities:				
PSU awards	1	1	—	—
Potential dilutive shares	390	390	395	395
Earnings (loss) per share:				
Basic	\$2.86	\$ —	\$2.67	\$ —
Diluted	\$2.85	\$ —	\$2.67	\$ —
Millions of shares, except per share amounts				
Participating securities	0.5	0.5	0.4	0.4
Dividends declared per share of common stock	\$1.00	\$ —	\$0.90	\$ —

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LYONDELLBASELL INDUSTRIES N.V.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Millions of dollars	Nine Months Ended September 30,			
	2018		2017	
	Continuing Operations	Discontinued Operations	Continuing Operations	Discontinued Operations
Net income (loss)	\$4,001	\$ (3)	\$2,997	\$ (14)
Less: net loss attributable to non-controlling interests	—	—	2	—
Net income (loss) attributable to the Company shareholders	4,001	(3)	2,999	(14)
Net income attributable to participating securities	(4)	—	(3)	—
Net income (loss) attributable to ordinary shareholders – basic and diluted	\$3,997	\$ (3)	\$2,996	\$ (14)
Millions of shares, except per share amounts				
Basic weighted average common stock outstanding	391	391	400	400
Effect of dilutive securities:				
PSU awards	1	1	—	—
Potential dilutive shares	392	392	400	400
Earnings (loss) per share:				
Basic	\$10.21	\$ (0.01)	\$7.49	\$ (0.03)
Diluted	\$10.19	\$ (0.01)	\$7.49	\$ (0.03)
Millions of shares, except per share amounts				
Participating securities	0.5	0.5	0.4	0.4
Dividends declared per share of common stock	\$3.00	\$ —	\$2.65	\$ —

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LYONDELLBASELL INDUSTRIES N.V.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

14. Segment and Related Information

In conjunction with our acquisition of A. Schulman, we formed the Advanced Polymer Solutions business management function for the product lines acquired in the acquisition. In addition, the responsibility for business decisions relating to polypropylene compounding, Catalloy and polybutene-1, previously reflected in our O&P-EAI and O&P-Americas segments, were moved to our new Advanced Polymer Solutions business management function. These products are now reflected in our new Advanced Polymer Solutions segment. All comparable periods presented have been revised to reflect this change.

We disclose the results of each of our operating segments in accordance with ASC 280, Segment Reporting. Each of our six operating segments is managed by a senior executive reporting directly to our Chief Executive Officer, the chief operating decision maker. Discrete financial information is available for each of the segments, and our Chief Executive Officer uses the operating results of each of the operating segments for performance evaluation and resource allocation. The activities of each of our segments from which they earn revenues and incur expenses are described below:

• Olefins and Polyolefins-Americas (“O&P-Americas”). Our O&P-Americas segment produces and markets olefins and co-products, polyethylene and polypropylene.

• Olefins and Polyolefins-Europe, Asia, International (“O&P-EAI”). Our O&P-EAI segment produces and markets olefins and co-products, polyethylene, and polypropylene.

• Intermediates and Derivatives (“I&D”). Our I&D segment produces and markets propylene oxide and its co-products and derivatives, oxyfuels and related products and intermediate chemicals such as styrene monomer, acetyls, ethylene oxide and ethylene glycol.

• Advanced Polymer Solutions (“APS”). Our APS segment produces and markets compounding and solutions, such as polypropylene compounds, engineered plastics, masterbatches, engineered composites, colors and powders, and advanced polymers, which includes Catalloy and polybutene-1.

• Refining. Our Refining segment refines heavy, high-sulfur crude oils and other crude oils of varied types and sources available on the U.S. Gulf Coast into refined products, including gasoline and distillates.

• Technology. Our Technology segment develops and licenses chemical and polyolefin process technologies and manufactures and sells polyolefin catalysts.

Our chief operating decision maker uses EBITDA as the primary measure for reviewing our segments’ profitability and therefore, in accordance with ASC 280, Segment Reporting, we have presented EBITDA for all segments. We define EBITDA as earnings before interest, taxes and depreciation and amortization.

“Other” includes intersegment eliminations and items that are not directly related or allocated to business operations, such as foreign exchange gains (losses) and components of pension and other postretirement benefit costs other than service cost. Sales between segments are made primarily at prices approximating prevailing market prices.

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LYONDELLBASELL INDUSTRIES N.V.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Summarized financial information concerning reportable segments is shown in the following table for the periods presented:

Millions of dollars	Three Months Ended September 30, 2018							Total
	O&P- Americas	O&P- EAI	I&D	APS	Refining	Technology	Other	
Sales and other operating revenues:								
Customers	\$1,843	\$2,434	\$2,463	\$1,038	\$2,236	\$141	\$—	\$10,155
Intersegment	927	209	46	1	263	30	(1,476)	—
	2,770	2,643	2,509	1,039	2,499	171	(1,476)	10,155
Income from equity investments	18	69	2	—	—	—	—	89
EBITDA	704	262	504	70	84	98	10	1,732
	Three Months Ended September 30, 2017							
Millions of dollars	O&P- Americas	O&P- EAI	I&D	APS	Refining	Technology	Other	Total
Sales and other operating revenues:								
Customers	\$1,731	\$2,451	\$2,043	\$731	\$1,491	\$69	\$—	\$8,516
Intersegment	616	189	34	—	179	29	(1,047)	—
	2,347	2,640	2,077	731	1,670	98	(1,047)	8,516
Income from equity investments	8	69	4	—	—	—	—	81
EBITDA	591	599	402	124	58	47	—	1,821
	Nine Months Ended September 30, 2018							
Millions of dollars	O&P- Americas	O&P- EAI	I&D	APS	Refining	Technology	Other	Total
Sales and other operating revenues:								
Customers	\$5,324	\$7,866	\$7,314	\$2,709	\$6,536	\$379	\$—	\$30,128
Intersegment	2,634	637	122	1	789	89	(4,272)	—
	7,958	8,503	7,436	2,710	7,325	468	(4,272)	30,128
Income from equity investments	50	199	4	—	—	—	—	253
EBITDA	2,131	1,036	1,632	314	251	267	24	5,655
	Nine Months Ended September 30, 2017							
Millions of dollars	O&P- Americas	O&P- EAI	I&D	APS	Refining	Technology	Other	Total
Sales and other operating revenues:								
Customers	\$5,383	\$7,083	\$6,142	\$2,194	\$4,306	\$241	\$—	\$25,349
Intersegment	1,917	553	99	—	430	84	(3,083)	—
	7,300	7,636	6,241	2,194	4,736	325	(3,083)	25,349
Income from equity investments	33	202	5	—	—	—	—	240
EBITDA	2,130	1,638	1,080	356	53	155	(4)	5,408

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LYONDELLBASELL INDUSTRIES N.V.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS-(Continued)

Our O&P–Americas results for the first nine months of 2017 included a \$31 million gain on the first quarter sale of a portion of our Lake Charles, Louisiana site. EBITDA for our O&P–EAI segment in the first nine months of 2017 included a \$108 million gain on the third quarter 2017 sale of our 27% interest in Geosel and the beneficial impact of a \$21 million non-cash gain stemming from the elimination of an obligation associated with a lease. Our APS segment results for the third quarter and first nine months of 2018 included \$49 million of transaction and integration costs associated with our acquisition of A. Schulman in August 2018. Our I&D segment results for the first nine months of 2017 included charges approximating \$40 million primarily related to the settlement of precious metal financings. A reconciliation of EBITDA to Income from continuing operations before income taxes is shown in the following table for each of the periods presented:

Millions of dollars	Three Months		Nine Months	
	Ended		Ended	
	September 30,	September 30,	September 30,	September 30,
	2018	2017	2018	2017
EBITDA:				
Total segment EBITDA	\$1,722	\$1,821	\$5,631	\$5,412
Other EBITDA	10	—	24	(4)
Less:				
Depreciation and amortization expense	(309)	(294)	(908)	(876)
Interest expense	(90)	(94)	(272)	(396)
Add:				
Interest income	14	5	40	15
Income from continuing operations before income taxes	\$1,347	\$1,438	\$4,515	\$4,151

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Item 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

GENERAL

This discussion and analysis should be read in conjunction with the information contained in our Consolidated Financial Statements and the accompanying notes elsewhere in this report. When we use the terms "we," "us," "our" or similar words in this discussion, unless the context otherwise requires, we are referring to LyondellBasell Industries N.V. and its consolidated subsidiaries.

OVERVIEW

Our resilient global portfolio continued to deliver strong profitability in the third quarter of 2018. Our olefins and polyolefins business in North America achieved improvements in chain margins and volumes that overcame third quarter headwinds from rising feedstock costs and new supply to drive increased profitability for our O&P–Americas segment. Robust global demand supported attractive margins and earnings for our Intermediates and Derivatives segment. In our Technology segment, increased licensing of our polyolefins technologies generated strong results for the third quarter and first nine months of 2018 while our focus on operational improvements at our refinery continued to positively impact results.

Significant items that affected our results during the third quarter and first nine months of 2018 relative to the corresponding periods in 2017 include:

O&P–Americas results improved in the third quarter of 2018 with strong polyethylene margins and increased volumes, partly offset by lower olefins margins as ethylene prices declined. Results in the first nine months of 2018 were unchanged with higher polyolefins margins offset by lower olefins margins and increased fixed costs;

Lower O&P–EAI results with margin and volume declines in Europe, partly offset in the first nine months of 2018 by favorable foreign exchange impacts;

I&D segment results improved with increased margins and volumes;

APS segment results declined as lower margins and the impact of acquisition-related transaction and integration costs were partly offset by the contribution of results from of A. Schulman Inc. ("A. Schulman") product lines following the August 21, 2018 acquisition;

- Refining segment results improved with higher refining margins and better yields and in the first nine months of 2018, by higher crude oil processing rates; and

Technology segment results increased due mostly to higher licensing and services revenue.

Other noteworthy items since the beginning of the year include the following:

Completion of the \$1.9 billion acquisition of A. Schulman Inc., a leading global supplier of high-performance plastic compounds, composites and powders, on August 21, 2018;

Groundbreaking of our new \$2.4 billion PO/TBA plant at our Channelview, Texas facility on August 22, 2018;

Non-cash income tax benefit of \$346 million related to an audit settlement associated with specific uncertain tax positions recognized in the first nine months of 2018;

Acquired a 50% interest in Quality Circular Polymers, a high standard plastics recycling company in Sittard-Geleen, Netherlands on March 14, 2018; and

Increased quarterly dividend from \$0.90 cents to \$1.00 in February 2018.

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Results of operations for the periods discussed are presented in the table below:

	Three Months		Nine Months	
	Ended		Ended	
Millions of dollars	September 30,	September 30,	September 30,	September 30,
	2018	2017	2018	2017
Sales and other operating revenues	\$10,155	\$8,516	\$30,128	\$25,349
Cost of sales	8,499	6,939	24,801	20,531
Selling, general and administrative expenses	309	218	803	622
Research and development expenses	30	27	87	77
Operating income	1,317	1,332	4,437	4,119
Interest expense	(90)	(94)	(272)	(396)
Interest income	14	5	40	15
Other income, net	17	114	57	173
Income from equity investments	89	81	253	240
Provision for income taxes	232	380	514	1,154
Income from continuing operations	1,115	1,058	4,001	2,997
Loss from discontinued operations, net of tax	(2)	(2)	(3)	(14)
Net income	\$1,113	\$1,056	\$3,998	\$2,983

RESULTS OF OPERATIONS

Revenues—Revenues increased by \$1,639 million, or 19%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$4,779 million, or 19%, in the first nine months of 2018 compared to the first nine months of 2017.

Average sales prices in the third quarter and first nine months of 2018 were higher for most of our products as sales prices generally correlate with crude oil prices, which increased significantly relative to the corresponding periods in 2017. These higher prices led to revenue increases of 20% and 14% in the third quarter and first nine months of 2018, respectively. In the third quarter of 2018, lower sales volumes in our O&P–EAI and O&P–Americas segments were partly offset by increased Refining and I&D segment sales volumes resulting in a revenue decrease of 4% relative to the third quarter of 2017. A revenue increase of 1% in the first nine months of 2018 reflects an improvement in Refining and I&D segment sales volumes, which was largely offset by lower sales volumes for our O&P–Americas and O&P–EAI segments. Favorable foreign exchange impacts in the first nine months of 2018 resulted in a revenue increase of 3% relative to the corresponding prior year period. The operations of A. Schuman contributed \$269 million of revenues following the acquisition which accounts for the remaining improvement in revenues for the third quarter and first nine months of 2018.

Cost of Sales—Cost of sales increased by \$1,560 million, or 22%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$4,270 million, or 21%, in the first nine months of 2018 compared to the first nine months of 2017. These increases in cost of sales are primarily due to increases in feedstock and energy costs.

SG&A Expenses—Selling, general and administrative (“SG&A”) expenses increased by \$91 million in the third quarter of 2018 compared to the third quarter of 2017 and by \$181 million in the first nine months of 2018 compared to the first nine months of 2017.

We incurred \$53 million of cost associated with the acquisition and integration of A. Schulman in the third quarter of 2018. Higher employee-related expenses and activities related to the evaluation and pre-project planning of certain growth projects each accounted for approximately 8% of the increased third quarter expense.

In the first nine months of 2018, employee-related expenses and activities related to the evaluation and pre-project planning of certain growth projects accounted for 29% and 15%, respectively, of the higher expense. The remaining increase includes costs related to the acquisition and integration of A. Schulman.

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Operating Income—Operating income decreased by \$15 million in the third quarter of 2018 compared to the third quarter of 2017 and increased by \$318 million in the first nine months of 2018 compared to the first nine months of 2017.

Operating income for our O&P–EAI and APS segments declined by \$226 million and \$69 million, respectively, relative to the third quarter of 2017. These decreases were offset in part by increased operating income in our I&D, O&P–Americas, Technology and Refining segments of \$102 million, \$99 million, \$52 million and \$28 million, respectively.

In the first nine months of 2018, operating income for our I&D, Refining and Technology segments increased by \$540 million, \$192 million and \$109 million, respectively, over the first nine months of 2017. These improvements in operating income were partly offset by declines in operating income of \$476 million and \$57 million in our O&P–EAI and APS segments, respectively.

Results for each of our business segments are discussed further in the “Segment Analysis” section below.

Interest Expense—Interest expense decreased by \$124 million in the first nine months of 2018 compared to the first nine months of 2017, which included \$113 million of charges related to the redemption of \$1,000 million of our outstanding 5% senior notes due 2019. These charges included \$65 million of prepayment premiums, \$44 million for adjustments associated with fair value hedges and \$4 million for the write-off of associated unamortized debt issuance costs.

Other Income, Net—Other income, net decreased by \$97 million in the third quarter of 2018 compared to the third quarter of 2017 and by \$116 million in the first nine months of 2018 compared to the first nine months of 2017. We recognized gains in 2017 of \$108 million on the sale of our O&P–EAI segment’s interest in its Geosel joint venture in the third quarter and \$31 million on the sale of a portion of our O&P–Americas segment’s Lake Charles, Louisiana site in the first quarter. We also recognized a \$21 million non-cash gain in our O&P–EAI segment related to the elimination of an obligation related to a lease in the second quarter of 2017. In the first nine months of 2018, we recognized higher income of approximately \$40 million, primarily related to unrealized foreign exchange gains, gains on investments, and higher dividend income.

Income Taxes—Our effective income tax rate for the third quarter of 2018 was 17.2% compared with 26.4% for the third quarter of 2017, and for the first nine months of 2018 was 11.4% compared with 27.8% for the first nine months of 2017. Our effective income tax rate fluctuates based on, among other factors, changes in statutory tax rates, changes in pretax income in countries with varying statutory tax rates, changes in valuation allowances, changes in foreign exchange gains/losses, the amount of exempt income, and changes in unrecognized tax benefits associated with uncertain tax positions.

Our exempt income primarily includes interest income, export incentives, and equity earnings of joint ventures. The interest income is earned by certain of our European subsidiaries through intercompany financings and is either untaxed or taxed at rates lower than the U.S. statutory rate. The export incentives relate to tax benefits derived from elections and structures available for U.S. exports. The equity earnings are attributable to our joint ventures and these earnings when paid through dividends to certain European subsidiaries are eligible for participation exemptions, which exempt the dividend payments from all or portions of normal statutory income tax rates. We currently anticipate the favorable treatment for the interest income and dividends to continue in the near term; however, this treatment is based on current law and tax rulings, which could change. The foreign exchange gains/losses have a permanent impact on our effective income tax rate that can cause unpredictable movement in our effective income tax rate.

Compared with the third quarter of 2017, the lower effective tax rate for the third quarter of 2018 was primarily attributable to the impact of the reduction to the U.S. federal statutory tax rate as a result of the U.S.-enacted “H.R.1,” also known as the “Tax Cuts and Jobs Act” (the “Tax Act”) (-5.1%), changes in pretax income in countries with varying statutory tax rates (-1.1%), increases in exempt income (-0.9%), and changes in foreign exchange gains/losses (-0.8%). Compared with the first nine months of 2017, the lower effective tax rate for the first nine months of 2018 was primarily attributable to changes in unrecognized tax benefits associated with uncertain tax positions (-7.7%), the impact of the reduction to the U.S. federal statutory tax rate as a result of the Tax Act (-6.2%) and increases in exempt income (-1.4%), partially offset by the repeal of the U.S. domestic production activity deduction (1.0%).

During the second quarter of 2018, we entered into an audit settlement impacting specific uncertain tax positions. This audit settlement resulted in a \$346 million non-cash benefit to our effective tax rate consisting of the recognition of \$288 million of previously unrecognized tax benefits as a reduction for tax positions of prior years and the release of \$58 million of previously accrued interest. Tax benefits totaling \$262 million and \$544 million were unrecognized as of September 30, 2018 and

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December 31, 2017, respectively. We had accrued approximately \$17 million and \$63 million for interest and penalties as of September 30, 2018 and December 31, 2017, respectively.

We monitor income tax developments in countries where we conduct business. On December 22, 2017, the Tax Act was enacted with some provisions effective as early as 2017 while others were delayed until 2018. This change in U.S. tax law included a reduction in the federal corporate tax rate from 35% to 21% for years beginning after 2017, which resulted in the remeasurement of our U.S. net deferred income tax liabilities. Our 2017 income tax provision included a provisional estimate of \$819 million income tax benefit related to the remeasurement of our U.S. net deferred income tax liabilities. The impact of the Tax Act may differ from this reasonable estimate due to additional guidance that may be issued, changes in assumptions made, and the finalization of certain U.S. income tax positions with the filing of our 2017 U.S. income tax return which will allow for the ability to conclude whether any further adjustments are necessary to our deferred tax assets and liabilities. Any adjustments to these provisional amounts will be reported as a component of income tax expense in the reporting period in which any such adjustments are identified which will be no later than the fourth quarter of 2018.

Comprehensive Income—Comprehensive income increased by \$90 million in the third quarter of 2018 compared to the third quarter of 2017 and by \$909 million in the nine months of 2018 compared to the first nine months of 2017.

These improvements reflect higher net income and the favorable impacts of financial derivative instruments primarily driven by periodic changes in benchmark interest rates, partly offset by the net unfavorable impact of unrealized changes in foreign currency translation adjustments.

The net losses attributable to unrealized changes in foreign currency translations impacts include pre-tax gains of \$9 million and \$96 million in the third quarter and first nine months of 2018, respectively, which represent the effective portion of our net investment hedges.

In the third quarter and first nine months of 2018, the cumulative after-tax effects of our derivatives designated as cash flow hedges were net gains of \$51 million and \$89 million, respectively. The strengthening of the U.S. dollar against the euro in the third quarter and first nine months of 2018 and periodic changes in benchmark interest rates resulted in pre-tax gains of \$11 million and \$37 million, respectively, related to our cross-currency swaps. Pre-tax losses of \$13 million and \$75 million related to our cross-currency swaps were reclassification adjustments included in Other income, net in the third quarter and first nine months of 2018. Pre-tax gains of \$48 million and \$115 million related to forward-starting interest rate swaps were driven by changes in benchmark interest rates in the third quarter and first nine months of 2018. Pre-tax gains of \$30 million and \$36 million related to our commodity hedges were recognized in the third quarter and first nine months of 2018. Pre-tax losses of \$11 million and \$7 million related to our commodity hedges were reclassification adjustments included in Cost of sales in the third quarter and first nine months of 2018.

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Segment Analysis

We use earnings before interest, income taxes, and depreciation and amortization (“EBITDA”) as our measure of profitability for segment reporting purposes. This measure of segment operating results is used by our chief operating decision maker to assess the performance of and allocate resources to our operating segments. Intersegment eliminations and items that are not directly related or allocated to business operations, such as foreign exchange gains or losses and components of pension and other postretirement benefits other than service costs are included in “Other.” For additional information related to our operating segments, as well as a reconciliation of EBITDA to its nearest GAAP measure, Income from continuing operations before income taxes, see Note 14, Segment and Related Information, to our Consolidated Financial Statements.

Following our acquisition of A. Schulman, our continuing operations are managed through six reportable segments: O&P–Americas; O&P–EAI; I&D; APS; Refining; and Technology.

Our new APS segment produces and markets compounding and solutions, such as polypropylene compounds, engineered plastics, masterbatches, engineered composites, colors and powders; and advanced polymers, which includes Catalloy and polybutene-1. Polypropylene compounding, Catalloy and polybutene-1 were previously reported in our O&P–EAI and O&P–Americas segments. Accordingly, the historical results of our O&P–EAI and O&P–Americas segments have been recast for all comparable periods presented. For additional information related to our segments, see Footnotes 3 and 14 to the Consolidated Financial Statements.

Revenues and the components of EBITDA for the periods presented are reflected in the table below:

Millions of dollars	Three Months		Nine Months	
	Ended September 30, 2018	2017	Ended September 30, 2018	2017
Sales and other operating revenues:				
O&P–Americas segment	\$2,770	\$2,347	\$7,958	\$7,300
O&P–EAI segment	2,643	2,640	8,503	7,636
I&D segment	2,509	2,077	7,436	6,241
APS segment	1,039	731	2,710	2,194
Refining segment	2,499	1,670	7,325	4,736
Technology segment	171	98	468	325
Other, including intersegment eliminations	(1,476)	(1,047)	(4,272)	(3,083)
Total	\$10,155	\$8,516	\$30,128	\$25,349
Operating income (loss):				
O&P–Americas segment	\$572	473	\$1,744	\$1,730
O&P–EAI segment	141	367	667	1,143
I&D segment	431	329	1,408	868
APS Segment	48	117	274	331
Refining segment	38	10	111	(81)
Technology segment	88	36	234	125
Other, including intersegment eliminations	(1)	—	(1)	3
Total	\$1,317	\$1,332	\$4,437	\$4,119
Depreciation and amortization:				
O&P–Americas segment	\$111	\$104	\$326	\$326
O&P–EAI segment	50	54	158	156
I&D segment	71	69	216	206
APS segment	22	7	39	25
Refining segment	45	49	137	133
Technology segment	10	11	32	30
Total	\$309	\$294	\$908	\$876

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Millions of dollars	Three Months		Nine Months	
	Ended		Ended	
	September 30,		September 30,	
	2018	2017	2018	2017
Income (loss) from equity investments:				
O&P–Americas segment	\$18	\$8	\$50	\$33
O&P–EAI segment	69	69	199	202
I&D segment	2	4	4	5
Total	\$89	\$81	\$253	\$240
Other income (expense), net:				
O&P–Americas segment	\$3	\$6	\$11	\$41
O&P–EAI segment	2	109	12	137
I&D segment	—	—	4	1
APS segment	—	—	1	—
Refining segment	1	(1)	3	1
Technology segment	—	—	1	—
Other, including intersegment eliminations	11	—	25	(7)
Total	\$17	\$114	\$57	\$173
EBITDA:				
O&P–Americas segment	\$704	\$591	\$2,131	\$2,130
O&P–EAI segment	262	599	1,036	1,638
I&D segment	504	402	1,632	1,080
APS segment	70	124	314	356
Refining segment	84	58	251	53
Technology segment	98	47	267	155
Other, including intersegment eliminations	10	—	24	(4)
Total	\$1,732	\$1,821	\$5,655	\$5,408

Olefins and Polyolefins–Americas Segment

Overview—EBITDA improved in the third quarter of 2018 but was relatively unchanged in the first nine months of 2018 compared to the third quarter and first nine months of 2017. Higher polyethylene and polypropylene margins and ethylene volumes in the third quarter of 2018 were partly offset by lower ethylene margins. In the first nine months of 2018, higher polyethylene and polypropylene margins were largely offset by a decline in ethylene margins relative to the first nine months of 2017, which included a \$31 million gain on the sale of a portion of our Lake Charles, Louisiana, site.

Ethylene Raw Materials—Although prices of crude-based liquids and natural gas liquids are generally related to crude oil and natural gas prices, during specific periods the relationships among these materials and benchmarks may vary significantly. We have significant flexibility to vary the raw material mix and process conditions in our U.S. olefins plants in order to maximize profitability as market prices for both feedstocks and products change.

As in recent years, strong supplies from the U.S. shale gas/oil boom resulted in ethane being a preferred feedstock in our U.S. plants in 2018. Increased ethane production from the U.S. shale gas/oil boom continues in 2018. Ethane remains the preferred U.S. feedstock for ethylene despite higher recent prices driven by increased demand from newly-constructed U.S. olefins units and supply constraints in the Gulf Coast NGL fractionation and pipeline systems. We produced approximately 82% of our ethylene from ethane in the third quarter and first nine months of 2018, compared to approximately 74% in the third quarter and first nine months of 2017.

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The following table sets forth selected financial information for the O&P–Americas segment including Income from equity investments, which is a component of EBITDA:

	Three Months		Nine Months	
	Ended		Ended	
Millions of dollars	September 30,		September 30,	
	2018	2017	2018	2017
Sales and other operating revenues	\$2,770	\$2,347	\$7,958	\$7,300
Income from equity investments	18	8	50	33
EBITDA	704	591	2,131	2,130

Revenues—Revenues for our O&P–Americas segment increased by \$423 million, or 18%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$658 million, or 9%, in the first nine months of 2018 compared to the first nine months of 2017.

Average polyethylene and polypropylene sales prices, supported globally by higher crude oil prices, were higher in the third quarter and first nine months of 2018, compared to the corresponding periods in 2017. The impact of these higher prices was partly offset in the third quarter and first nine months of 2018 by per pound decreases in ethylene prices of 4 cents and 6 cents, respectively, as supply lengthened due to ethylene capacity increases. Higher sales prices were responsible for revenue increases of 22% and 12%, respectively, in the third quarter and first nine months of 2018.

Segment volumes declined in the third quarter and first nine months of 2018 with lower ethylene co-product sales volumes and lower sales of purchased feedstock. Approximately 15% and 50%, respectively, of these volume decreases were offset in the third quarter and first nine months of 2018, by higher ethylene volumes compared to the corresponding periods of 2017, which were negatively impacted by Hurricane Harvey. Revenue decreases of 4% and 3% in the third quarter and first nine months of 2018 relative to the same periods in 2017 were attributable to the decline in sales volumes.

EBITDA—EBITDA increased by \$113 million, or 19%, in the third quarter of 2018 compared to the third quarter of 2017 and was relatively unchanged in the first nine months of 2018 compared to the first nine months of 2017.

Third quarter 2018 EBITDA increased 6% due to higher margins relative to the third quarter of 2017. This improvement was driven by higher polyethylene and polypropylene margins, which reflect per pound increases in price spreads over ethylene and propylene, respectively, of 6 cents and 3 cents. This improvement was partly offset by an approximate 2 cents per pound decrease in olefins margins due primarily to lower ethylene sales prices with increased industry supply from new capacity. Higher average polyethylene sales prices and lower ethylene feedstock costs resulted in the improvement in polyethylene margins due to a combination of strong demand and operating issues at new and existing polyethylene plants. The increase in third quarter 2018 ethylene sales volumes discussed above resulted in an additional 11% increase in EBITDA. Higher income from our equity investments contributed another 2% to EBITDA in the third quarter of 2018.

Higher polyethylene and polypropylene margins in the first nine months of 2018 were substantially offset by lower olefins margins and increased fixed costs. Polyethylene margins reflect a 10 cents per pound increase in polyethylene price spreads over ethylene driven by higher sales prices and lower ethylene feedstock cost. In the first nine months of 2018, polypropylene margins reflected a 3 cents per pound increase in polypropylene price spreads over propylene stemming from higher sales prices that more than offset increases in propylene feedstock costs due to strong demand and industry supply constraints. Olefins margins in the first nine months of 2018 decreased by 5 cents per pound largely due to the decline in ethylene prices. Volumes in the first nine months of 2018 had less than a 1% impact on EBITDA.

Higher income from our equity investments resulted in a 1% increase in EBITDA in the first nine months of 2018. This increase was offset by a similar decrease relative to the first nine months of 2017 related to the gain on sale of a portion of our Lake Charles, Louisiana site discussed above.

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Olefins and Polyolefins—Europe, Asia, International Segment

Overview—EBITDA for the third quarter and first nine months of 2018 declined largely as a result of lower margins and volumes in Europe compared to the strong third quarter and first nine months of 2017, partly offset by the favorable impacts of foreign exchange in the first nine months of 2018. EBITDA in the first nine months of 2017 included a \$108 million gain on the third quarter 2017 sale of our 27% interest in Geosel and the beneficial impact of \$21 million related to the elimination of an obligation associated with a lease.

The following table sets forth selected financial information for the O&P—EAI segment including Income from equity investments, which is a component of EBITDA:

	Three Months		Nine Months	
	Ended		Ended	
	September 30,		September 30,	
Millions of dollars	2018	2017	2018	2017
Sales and other operating revenues	\$2,643	\$2,640	\$8,503	\$7,636
Income from equity investments	69	69	199	202
EBITDA	262	599	1,036	1,638

Revenues—Revenues were relatively unchanged in the third quarter of 2018 compared to the third quarter of 2017 and increased by \$867 million, or 11%, in the first nine months of 2018 compared to the first nine months of 2017.

Average sales prices in the third quarter and first nine months of 2018 were higher across most products as sales prices generally correlate with crude oil prices, which were significantly higher compared to the third quarter and first nine months of 2017. These higher average sales prices were responsible for revenue increases of 15% and 7%, respectively, in the third quarter and first nine months of 2018. Turnaround activity and more pronounced summer seasonality compared to the third quarter and first nine months of 2017, led to lower sales volumes across most products. These decreased volumes resulted in revenue decreases of 14% and 2%, respectively, in the third quarter and first nine months of 2018.

Foreign exchange impacts that, on average, were unfavorable for the third quarter of 2018 resulted in a 1% revenue decrease compared to the third quarter of 2017. In the first nine months of 2018, foreign exchange impacts, which were favorable on average, led to a revenue increase of 6% compared to the first nine months of 2017.

EBITDA—EBITDA in the third quarter of 2018 decreased by \$337 million, or 56%, compared to the third quarter of 2017 and by \$602 million, or 37%, in the first nine months of 2018 compared to the first nine months of 2017.

Olefins and polyolefins margins in Europe declined in the third quarter and first nine months of 2018. Olefins margins declined as the improvement in ethylene prices lagged a 13 cents per pound increase in the weighted average cost of ethylene production in each of the third quarter and first nine months of 2018 due to higher prices for naphtha and other olefin feedstocks. Polyethylene margins declined in the third quarter and first nine months of 2018 with per pound decreases in price spreads over ethylene of 3 cents and 2 cents, respectively. Polypropylene margins also declined in the third quarter and first nine months of 2018 due to lower per pound price spreads over propylene of 3 cents and 1 cent, respectively. These lower margins were due to weaker supply/demand balances in Europe driven by global capacity increases and shifting trade patterns, and led to declines in EBITDA of 25% and 30%, respectively, in comparison to the strong third quarter and first nine months of 2017. The impact of the lower volumes discussed above also reduced EBITDA by 12% and 5% in the third quarter and first nine months of 2018, respectively.

EBITDA also reflected declines of 18% and 8% relative to the third quarter and first nine months of 2017, respectively, which included the favorable impacts from the gain on sale of our interest in Geosel and the elimination of an obligation associated with a lease discussed above.

Foreign exchange impacts, which on average were unfavorable in the third quarter of 2018, led to decrease in EBITDA of 1%, while favorable foreign exchange impacts in the first nine months of 2018 led to an increase in EBITDA of 6%.

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Intermediates and Derivatives Segment

Overview—EBITDA for our I&D segment was higher in the third quarter and first nine months of 2018 compared to the third quarter and first nine months of 2017 as margins benefited from industry supply constraints and strong demand. EBITDA for the first nine months of 2017 included a negative impact of approximately \$40 million related to precious metal catalysts.

The following table sets forth selected financial information for the I&D segment including Income from equity investments, which is a component of EBITDA:

	Three Months		Nine Months	
	Ended		Ended	
Millions of dollars	September 30,		September 30,	
	2018	2017	2018	2017
Sales and other operating revenues	\$2,509	\$2,077	\$7,436	\$6,241
Income from equity investments	2	4	4	5
EBITDA	504	402	1,632	1,080

Revenues—Revenues increased by \$432 million, or 21%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$1,195 million, or 19%, in the first nine months of 2018 compared to the first nine months of 2017.

Higher average sales prices in the third quarter and first nine months of 2018 for most products, which reflect the impacts of higher feedstock and energy costs and recent industry supply constraints, were responsible for revenue increases of 18% and 13%, respectively. Higher sales volumes resulted in revenue increases of 3% and 4% in the third quarter and first nine months of 2018, respectively, primarily due to hurricane Harvey impacts and major turnarounds at our Botlek, Netherlands and Channelview, Texas facilities in the corresponding periods of 2017. Foreign exchange impacts that, on average, were favorably higher relative to the first nine months of 2017 resulted in a revenue increase of 2%.

EBITDA—EBITDA increased \$102 million, or 25%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$552 million, or 51%, in the first nine months of 2018 compared to the first nine months of 2017.

Higher margins led to improvements of 20% and 36% in EBITDA in the third quarter and first nine months of 2018, respectively, relative to the third quarter and first nine months of 2017. Industry outages and other supply constraints for several intermediate chemicals products, along with strong seasonal demand for PO and derivatives products, led to tight supplies and higher sales prices. Intermediate chemicals products accounted for approximately 90% and 60% of the margin improvement in the third quarter and first nine months of 2018, respectively, as most intermediate chemical products benefited from lower ethylene raw material costs. PO and derivatives and oxyfuels and related products each accounted for approximately half of the remaining increase in margins in the first nine months of 2018. Prices for oxyfuels and related products benefited from per barrel crude oil price increases of \$23 and \$20 in the third quarter and first nine months of 2018, respectively, relative to the same periods in 2017. These higher prices more than offset the higher cost of feedstocks.

The impact of higher volumes as discussed above added 5% and 9% to EBITDA in the third quarter and first nine months of 2018, respectively, while favorable foreign exchange impacts added 2% to EBITDA in the first nine months of 2018. An additional 4% increase in EBITDA in the first nine months of 2018, as compared to the corresponding prior year period, stems from the absence of the first quarter 2017 unfavorable impact associated with precious metal catalysts.

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Advanced Polymer Solutions Segment

Overview—EBITDA for our APS segment was lower in the third quarter and first nine months of 2018 compared to the third quarter and first nine months of 2017 primarily due to lower margins and \$49 million of acquisition-related transaction and integration costs, partly offset by \$17 million of EBITDA stemming from the acquisition of A. Schulman.

The following table sets forth selected financial information for the APS segment including Income from equity investments, which is a component of EBITDA:

	Three Months Ended September 30,		Nine Months Ended September 30,	
Millions of dollars	2018	2017	2018	2017
Sales and other operating revenues	\$1,039	\$731	\$2,710	\$2,194
EBITDA	70	124	314	356

Revenues—Revenues increased by \$308 million, or 42%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$516 million, or 24%, in the first nine months of 2018 compared to the first nine months of 2017.

The acquisition of A. Schulman contributed \$269 million to revenues of the APS segment, which accounts for revenue increases in the third quarter and first nine months of 2018 of approximately 36% and 13%, respectively, relative to the corresponding periods of 2017. Higher average sales prices, which were driven by the increased cost of raw materials, also led to revenue increases of 10% and 5% in the third quarter and first nine months of 2018, respectively. A decline in compounding and solutions product volumes in the third quarter and first nine months of 2018 stemming from lower automotive production in Europe was substantially offset in the first nine months of 2018 by higher advanced polymers product volumes due to strong demand in Europe and North America. The lower volumes in the third quarter of 2018 led to a revenue decrease of 3%.

Foreign exchange impacts, which on average, were unfavorable in the third quarter of 2018 resulted in a revenue decrease of 1%, while favorable foreign exchange impacts in the first nine months of 2018 resulted in a revenue increase of 6%.

EBITDA—EBITDA decreased \$54 million, or 44%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$42 million, or 12%, in the first nine months of 2018 compared to the first nine months of 2017.

EBITDA declined by 40% and 14% in the third quarter and first nine months of 2018, respectively, as a result of the \$49 million of costs associated with the acquisition and integration of A. Schulman.

The operations of A. Schulman following the acquisition contributed \$17 million of EBITDA to the results of the APS segment leading to increases in EBITDA of 14% and 5% in the third quarter and first nine months of 2018, respectively.

Margins for compounding and solutions products declined in both 2018 periods due primarily to increases in raw material costs in North America and Asia that outpaced increases in average sales prices. EBITDA decreased by 14% and 8% in the third quarter and the first nine months of 2018, respectively, as a result of these lower margins. The volume-driven changes discussed above resulted in a 4% decrease in EBITDA in the third quarter of 2018. Favorable foreign exchange impacts led to a 4% increase in EBITDA for the first nine months of 2018. The remaining change in EBITDA for the first nine months of 2018 was attributable to volumes.

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Refining Segment

Overview—EBITDA for our Refining segment benefited in the third quarter and first nine months of 2018 from improved refining margins and, in the first nine months of 2018, by increased heavy crude oil processing rates. The following table sets forth selected financial information and heavy crude oil processing rates for the Refining segment and the U.S. refining market margins for the applicable periods. Light Louisiana Sweet, is a light, sweet crude oil, while “Maya” is a heavy, sour crude oil. References to industry benchmarks for refining market margins are to industry prices reported by Platts, a division of S&P Global.

	Three Months		Nine Months	
	Ended		Ended	
	September 30,	September 30,	September 30,	September 30,
Millions of dollars	2018	2017	2018	2017
Sales and other operating revenues	\$2,499	\$1,670	\$7,325	\$4,736
EBITDA	84	58	251	53
Heavy crude oil processing rates, thousands of barrels per day	232	240	248	233
Market margins, dollars per barrel				
Light crude oil – 2-1-1	\$13.15	\$16.71	\$13.60	\$13.94
Light crude – Maya differential	8.28	5.10	9.10	6.71
Total Maya 2-1-1	\$21.43	\$21.81	\$22.70	\$20.65

Revenues—Revenues increased by \$829 million, or 50%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$2,589 million, or 55%, in the first nine months of 2018 compared to the first nine months of 2017.

Higher product prices led to revenue increases of 43% and 38% relative to the third quarter and first nine months of 2017, respectively, due to per barrel increases in average crude oil prices of approximately \$21 and \$19 in the third quarter and first nine months of 2018, respectively.

Heavy crude oil processing rates declined 3% relative to the third quarter of 2017 due to planned maintenance in the latter part of the third quarter which exceeded the impact of downtime in the third quarter of 2017. Rates in the first nine months of 2018 increased 6% relative to the first nine months of 2017, which was impacted by a major first quarter turnaround. Although crude oil processing rates declined in the third quarter, sales volumes increased in both the third quarter and first nine months of 2018 leading to revenue increases of 7% and 17%, respectively, compared to the corresponding 2017 periods.

EBITDA—EBITDA increased by \$26 million, or 45%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$198 million, or 374%, in the first nine months of 2018 compared to the first nine months of 2017.

Refining margins were higher in the first nine months of 2018 due to an improvement in the benchmark Maya 2-1-1 market margin driven by a higher light-to-heavy crude price differential. Better yields relative to the first nine months of 2017, which was negatively impacted by planned turnaround activity on our fluid catalytic cracking unit equally contributed to the margin improvement. Refining margins also improved in the third quarter of 2018 primarily driven by better refinery yields reflecting higher rates on the fluid catalytic cracker unit relative to the corresponding period in 2017 and lower costs related to renewable identification numbers (“RINs”). These higher margins accounted for approximately 115% and 85% of the EBITDA improvement in the third quarter and first nine months of 2018, respectively.

Higher heavy crude oil processing rates in the first nine months of 2018 accounted for the remaining 15% increase in EBITDA relative to the first nine months of 2017, which was negatively impacted by downtime at one of our crude oil units. A decrease in heavy crude oil processing rates in the third quarter of 2018 accounted for the remaining 15% decrease in EBITDA compared to the third quarter of 2017.

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Technology Segment

Overview—EBITDA for the Technology segment improved in the third quarter and first nine months of 2018 compared to the third quarter and first nine months of 2017 primarily due to higher licensing and services revenues.

The following table sets forth selected financial information for the Technology segment:

	Three Months Ended September 30, 2018		Nine Months Ended September 30, 2017	
Millions of dollars	2018	2017	2018	2017
Sales and other operating revenues	\$ 171	\$ 98	\$ 468	\$ 325
EBITDA	98	47	267	155

Revenues—Revenues increased by \$73 million, or 74%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$143 million, or 44%, in the first nine months of 2018 compared to the first nine months of 2017.

Higher licensing and services revenues were responsible for revenue increases of 58% and 34% in the third quarter and first nine months of 2018, respectively, relative to the corresponding periods in 2017.

Higher average sales prices for catalysts led to a revenue increase of 3% in the third quarter of 2018. Higher customer demand led to increased catalyst volumes in the third quarter and first nine months of 2018 resulting in revenue increases of 14% and 3%, respectively.

Favorable foreign exchange impacts in the first nine months of 2018 led to an additional revenue increase of 7%, while unfavorable foreign exchange impacts in the third quarter of 2018 led to a revenue decrease of 1%.

EBITDA—EBITDA increased by \$51 million, or 109%, in the third quarter of 2018 compared to the third quarter of 2017 and by \$112 million, or 72%, in the first nine months of 2018 compared to the first nine months of 2017.

Higher licensing and services revenues were responsible for an 81% improvement in third quarter 2018 EBITDA as several licensing agreements signed in 2017, primarily in China, were recognized in revenue. The third quarter 2018 increase in catalyst volumes discussed above led to a 28% improvement in EBITDA.

Higher licensing and services revenues and favorable foreign exchange impacts in the first nine months of 2018 resulted in EBITDA improvements of 61% and 6%, respectively, for the first nine months of 2018. The catalyst sales volume increase in the first nine months of 2018 discussed above was responsible for an additional increase of 5% in EBITDA.

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FINANCIAL CONDITION

Operating, investing and financing activities, which are discussed below, are presented in the following table:

	Nine Months Ended September 30,	
Millions of dollars	2018	2017
Source (use) of cash:		
Operating activities	\$4,174	\$3,724
Investing activities	(2,901)	(1,254)
Financing activities	(2,242)	(2,191)

Operating Activities—Cash of \$4,174 million generated by operating activities in the first nine months of 2018 reflected an increase in earnings adjusted for non-cash items, offset by payments for taxes and employee bonuses, and cash consumed by the main components of working capital—accounts receivable, inventories and accounts payable. A \$346 million non-cash reduction in unrecognized tax benefits is reflected in Other operating activities for the first nine months of 2018. For additional information on this matter, see Note 10 to the Consolidated Financial Statements.

In the first nine months of 2018, the main components of working capital consumed \$73 million of cash. Inventories increased primarily due to a build in inventory in preparation for turnaround activity at our O&P–EAI segment’s Wesseling, Germany facility. Higher accounts receivable due primarily to higher sales prices in our O&P–Americas and O&P–EAI segments and higher I&D segment sales volumes were more than offset by an increase in accounts payable reflecting higher feedstock costs.

The main components of working capital consumed \$376 million of cash in the first nine months of 2017. Higher sales prices and increased volumes in our O&P–EAI segment led to the increase in accounts receivable, which was partially offset by an increase in accounts payable in the first nine months of 2017 due to higher feedstock pricing. Higher olefin co-product and propylene prices in our O&P–Americas segment in the first nine months of 2017, which were partially offset by an inventory drawdown during turnaround activities at our I&D segment’s Botlek, Netherlands facility, led to the increase in inventories.

Investing Activities—In August 2018, we acquired A. Schulman for \$1,776 million, which is net of \$81 million of cash acquired and a liability deemed as a component of the purchase price. For additional information on this transaction, see Note 3.

We invest cash in investment-grade and other high-quality instruments that provide adequate flexibility to redeploy funds as needed to meet our cash flow requirements while maximizing yield.

In the first nine months of 2018 and 2017, we invested \$50 million and \$653 million, respectively, in debt securities that are deemed available-for-sale. We also invested \$64 million in equity securities in the first nine months of 2018. Our investments in available-for-sale debt securities and equity securities are classified as Short-term investments. In the first nine months of 2017, we also invested \$512 million in tri-party repurchase agreements, which are classified as short-term loans receivable.

We received proceeds of \$410 million and \$499 million in the first nine months of 2018 and 2017, respectively, upon the sale and maturity of certain of our available-for-sale debt securities. In the first nine months of 2018, we received proceeds of \$64 million on the sale of a portion of our investments in equity securities. In the first nine months of 2017, we also received proceeds of \$381 million and \$75 million, respectively, upon maturity of certain of our repurchase agreements and held-to-maturity securities.

Upon expiration in June 2018 and September of 2018, we settled foreign currency contracts, with notional values totaling €725 million, which were designated as net investment hedges of our investments in foreign subsidiaries. Payments to and proceeds from our counterparties resulted in a net cash inflow of \$22 million.

Upon expiration in September 2017 and August 2017, we settled foreign currency contracts, each with notional values totaling €275 million, which were designated as net investment hedges of our investments in foreign subsidiaries. Payments to and proceeds from our counterparties resulted in a net cash outflow of \$49 million.

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In September 2017, we sold our 27% interest in our Geosel joint venture and received proceeds of \$155 million. See Note 8 to the Consolidated Financial Statements for additional information regarding these investments.

Capital Expenditures—The following table summarizes capital expenditures for the periods presented:

Millions of dollars	Nine Months Ended September 30,	
	2018	2017
Capital expenditures by segment:		
O&P–Americas	\$800	\$540
O&P–EAI	156	95
I&D	248	263
APS	41	34
Refining	128	184
Technology	29	21
Other	5	9
Consolidated capital expenditures	\$1,407	\$1,146

In the first nine months of 2018 and 2017, our capital expenditures included construction related to our new Hyperzone polyethylene plant at our La Porte, Texas facility and our new PO/TBA plant at our Channelview, Texas facility, turnaround activities at several sites, debottlenecks of certain assets to enhance production as well as other plant improvement projects. The higher level of capital expenditures for our O&P–Americas segment in the first nine months of 2018 relative to the same period in 2017 is largely due to the construction of our new Hyperzone polyethylene plant. Capital expenditures for our Refining segment reflect a lower level of turnaround activities in the first nine months of 2018 relative to the same period in 2017.

Financing Activities—In the first nine months of 2018 and 2017, we made payments of \$801 million and \$866 million to acquire approximately 8 million and 10 million, respectively, of our outstanding ordinary shares. We also made dividend payments totaling \$1,176 million and \$1,060 million during the first nine months of 2018 and 2017, respectively. For additional information related to our share repurchases and dividend payments, see Note 12 to the Consolidated Financial Statements.

In September 2018, we repaid the \$375 million 6.875% Senior Notes due June 2023 assumed in the acquisition of A. Schulman for a price of 105.156% of par.

In March 2017, we issued \$1,000 million of 3.5% guaranteed notes due 2027 and received net proceeds of \$990 million. The proceeds from these notes, together with available cash, were used to repay \$1,000 million of our outstanding 5% senior notes due 2019. We paid \$65 million in premiums related to this prepayment.

Additional information related to these notes can be found in the Liquidity and Capital Resources section below and in Note 7 to the Consolidated Financial Statements.

Liquidity and Capital Resources—As of September 30, 2018, we had \$1,465 million of unrestricted cash and cash equivalents and marketable securities classified as Short-term investments and held \$550 million of tri-party repurchase agreements classified as Prepaid expenses and other current assets. For additional information related to our purchases of marketable securities see “Investing Activities” above and Note 8 to the Consolidated Financial Statements.

At September 30, 2018, we held \$495 million of cash in jurisdictions outside of the U.S., principally in the United Kingdom. There are currently no legal or economic restrictions that materially would impede our transfers of cash. We also had total unused availability under our credit facilities of \$3,260 million at September 30, 2018, which included the following:

- \$2,360 million under our \$2,500 million revolving credit facility, which backs our \$2,500 million commercial paper program. Availability under this facility is net of outstanding borrowings, outstanding letters of credit provided under

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the facility and notes issued under our commercial paper program. A small portion of our availability under this facility is impacted by changes in the euro/U.S. dollar exchange rate. At September 30, 2018, we had \$140 million of outstanding commercial paper, no outstanding letters of credit and no outstanding borrowings under the facility; and \$900 million under our \$900 million U.S. accounts receivable facility. Availability under this facility is subject to a borrowing base of eligible receivables, which is reduced by outstanding borrowings and letters of credit, if any. This facility had no outstanding borrowings or letters of credit at September 30, 2018.

At September 30, 2018, we had total debt, including current maturities, of \$8,669 million, and \$240 million of outstanding letters of credit, bank guarantees and surety bonds issued under uncommitted credit facilities.

In accordance with our current interest rate risk management strategy and subject to management's evaluation of market conditions and the availability of favorable interest rates among other factors, we may from time to time enter into interest rate swap agreements to economically convert a portion of our fixed rate debt to variable rate debt or convert a portion of variable rate debt to fixed rate debt.

In July 2018, we amended our \$900 million U.S. accounts receivable facility. This amendment, among other things, extended the term of the facility to July 2021.

For additional information related to our credit facilities discussed above, see Note 7 to the Consolidated Financial Statements.

In June 2018, our shareholders approved a proposal to authorize us to repurchase up to an additional 10%, or 57,844,016, of our ordinary shares through December 2019 ("June 2018 Share Repurchase Program"). As a result, the authorization of the remaining unpurchased shares under the share repurchase program approved by our shareholders in May 2017 ("May 2017 Share Repurchase Program") was superseded. Our share repurchase program does not have a stated dollar amount, and purchases may be made through open market purchases, private market transactions or other structured transactions. Repurchased shares could be retired or used for general corporate purposes, including for various employee benefit and compensation plans. In the first nine months of 2018, we purchased approximately 8 million shares under these programs for approximately \$821 million. As of October 26, 2018, we had approximately 51 million shares remaining under the current authorization. The timing and amounts of additional shares repurchased will be determined based on our evaluation of market conditions and other factors. For additional information related to our share repurchase programs, see Note 12 to the Consolidated Financial Statements.

We may repay or redeem our debt, including purchases of our outstanding bonds in the open market, using cash and cash equivalents, cash from our short-term investments and tri-party repurchase agreements, cash from operating activities, proceeds from the issuance of debt, proceeds from asset divestitures, or a combination thereof. In connection with any repayment or redemption of our debt, we may incur cash and non-cash charges, which could be material in the period in which they are incurred.

In July 2017, we announced our final investment decision to build a world-scale PO/TBA plant in Texas with a capacity of 1 billion pounds of PO and 2.2 billion pounds of TBA. In August 2018, we broke ground on this project, which is estimated to cost approximately \$2.4 billion. We anticipate the project to be completed in the middle of 2021. We plan to fund our ongoing working capital, capital expenditures, debt service and other funding requirements with cash from operations, which could be affected by general economic, financial, competitive, legislative, regulatory, business and other factors, many of which are beyond our control. Cash and cash equivalents, cash from our short-term investments and tri-party repurchase agreements, cash from operating activities, proceeds from the issuance of debt, or a combination thereof, may be used to fund the purchase of shares under our share repurchase program. We intend to continue to declare and pay quarterly dividends, with the goal of increasing the dividend over time, after giving consideration to our cash balances and expected results from operations.

We believe that our current liquidity availability and cash from operating activities provide us with sufficient financial resources to meet our anticipated capital requirements and obligations as they come due.

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CURRENT BUSINESS OUTLOOK

Our feedstock flexibility and balanced portfolio of global businesses provides competitive advantage during periods of increased volatility in energy, natural gas liquids pricing and global trade. We believe we are well-positioned to capture value with expanded access to markets and increased synergies from the integration of A. Schulman and the formation of our new Advanced Polymer Solutions segment. During the fourth quarter, we will advance our U.S. growth projects and expect to drive further operational and business improvements in our Intermediates and Derivatives, Refining and Technology businesses.

ACCOUNTING AND REPORTING CHANGES

For a discussion of the impact of new accounting pronouncements on our consolidated financial statements, see Note 2 to the Consolidated Financial Statements.

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CAUTIONARY STATEMENT FOR THE PURPOSES OF THE “SAFE HARBOR” PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995

This report includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. You can identify our forward-looking statements by the words “anticipate,” “estimate,” “believe,” “continue,” “could,” “intend,” “may,” “plan,” “potential,” “predict,” “should,” “will,” “exp,” “projection,” “forecast,” “goal,” “guidance,” “outlook,” “effort,” “target” and similar expressions.

We based forward-looking statements on our current expectations, estimates and projections of our business and the industries in which we operate. We caution you that these statements are not guarantees of future performance. They involve assumptions about future events that, while made in good faith, may prove to be incorrect, and involve risks and uncertainties we cannot predict. Our actual outcomes and results may differ materially from what we have expressed or forecast in the forward-looking statements. Any differences could result from a variety of factors, including the following:

the cost of raw materials represents a substantial portion of our operating expenses, and energy costs generally follow price trends of crude oil, natural gas liquids and/or natural gas; price volatility can significantly affect our results of operations and we may be unable to pass raw material and energy cost increases on to our customers due to the significant competition that we face, the commodity nature of our products and the time required to implement pricing changes;

our operations in the U.S. have benefited from low-cost natural gas and natural gas liquids; decreased availability of these materials (for example, from their export or regulations impacting hydraulic fracturing in the U.S.) could reduce the current benefits we receive;

if crude oil prices fell materially, or decrease relative to U.S. natural gas prices, we would see less benefit from low-cost natural gas and natural gas liquids and it could have a negative effect on our results of operations;

industry production capacities and operating rates may lead to periods of oversupply and low profitability; for example, substantial capacity expansions are underway in the U.S. olefins industry;

we may face unplanned operating interruptions (including leaks, explosions, fires, weather-related incidents, mechanical failure, unscheduled downtime, supplier disruptions, labor shortages, strikes, work stoppages or other labor difficulties, transportation interruptions, spills and releases and other environmental incidents) at any of our facilities, which would negatively impact our operating results; for example, because the Houston refinery is our only refining operation, we would not have the ability to increase production elsewhere to mitigate the impact of any outage at that facility;

changes in general economic, business, political and regulatory conditions in the countries or regions in which we operate could increase our costs, restrict our operations and reduce our operating results;

our ability to execute our organic growth plans may be negatively affected by our ability to complete projects on time and on budget;

our ability to acquire new businesses and assets and integrate those operations into our existing operations and make cost-saving changes in operations;

any loss or non-renewal of favorable tax treatment under agreements or treaties, or changes in laws, regulations or treaties, may substantially increase our tax liabilities;

uncertainties associated with worldwide economies could create reductions in demand and pricing, as well as increased counterparty risks, which could reduce liquidity or cause financial losses resulting from counterparty default;

the negative outcome of any legal, tax and environmental proceedings or changes in laws or regulations regarding legal, tax and environmental matters may increase our costs or otherwise limit our ability to achieve savings under current regulations;

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we may be required to reduce production or idle certain facilities because of the cyclical and volatile nature of the supply-demand balance in the chemical and refining industries, which would negatively affect our operating results; we rely on continuing technological innovation, and an inability to protect our technology, or others' technological developments could negatively impact our competitive position; we have significant international operations, and fluctuations in exchange rates, valuations of currencies and our possible inability to access cash from operations in certain jurisdictions on a tax-efficient basis, if at all, could negatively affect our liquidity and our results of operations; we are subject to the risks of doing business at a global level, including wars, terrorist activities, political and economic instability and disruptions and changes in governmental policies, which could cause increased expenses, decreased demand or prices for our products and/or disruptions in operations, all of which could reduce our operating results; if we are unable to comply with the terms of our credit facilities, indebtedness and other financing arrangements, those obligations could be accelerated, which we may not be able to repay; and we may be unable to incur additional indebtedness or obtain financing on terms that we deem acceptable, including for refinancing of our current obligations; higher interest rates and costs of financing would increase our expenses. Any of these factors, or a combination of these factors, could materially affect our future results of operations and the ultimate accuracy of the forward-looking statements. Our management cautions against putting undue reliance on forward-looking statements or projecting any future results based on such statements or present or prior earnings levels.

All subsequent written and oral forward-looking statements attributable to us or any person acting on our behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section and any other cautionary statements that may accompany such forward-looking statements. Except as otherwise required by applicable law, we disclaim any duty to update any forward-looking statements.

Item 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our exposure to market and regulatory risks is described in Item 7A of our Annual Report on Form 10-K for the year ended December 31, 2017. Our exposure to such risks has not changed materially in the nine months ended September 30, 2018.

Item 4. CONTROLS AND PROCEDURES

As of September 30, 2018, with the participation of our management, our Chief Executive Officer (principal executive officer) and our Chief Financial Officer (principal financial officer) carried out an evaluation, pursuant to Rule 13a-15(b) of the Securities Exchange Act of 1934, as amended (the Act), of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rule 13a-15(e) of the Act). Based upon that evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures were operating effectively as of September 30, 2018.

As discussed in Note 3 to our Consolidated Financial Statements herein, we completed the acquisition of A. Schulman on August 21, 2018. We are in the process of assessing the internal controls of A. Schulman as part of the post-close integration process but have excluded A. Schulman from our assessment of internal control over financial reporting as of September 30, 2018. The total assets and revenues excluded from management's assessment represent 5% and 1%, respectively, of the related consolidated financial statements as of and for the nine months ended September 30, 2018. There have been no changes to our internal controls over financial reporting, as defined in Rule 13a-15(f) of the Act, in the period covered by this report that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

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PART II. OTHER INFORMATION

Item 1. LEGAL PROCEEDINGS

Information regarding our litigation and other legal proceedings can be found in Note 11, Commitments and Contingencies, to the Consolidated Financial Statements, which is incorporated into this Item 1 by reference. The following is a description of environmental proceedings to which a governmental authority is a party and potential monetary penalties are reasonably likely to be \$100,000 or more:

In January 2018, Houston Refining, LP learned that the Texas Commission on Environmental Quality (“TCEQ”) had referred an environmental matter to the Texas Attorney General’s office (TAGO) for enforcement. The environmental matter referred to TAGO for enforcement stems from air emissions events sustained at the refinery. In June 2018, Houston Refining, LP and TAGO agreed to a settlement involving \$680,000 in penalties, plus attorneys’ fees and certain injunctive relief. To effectuate the settlement, the TAGO filed a complaint along with the proposed agreed final judgment in Travis County Court. The court entered the agreed final judgment in October 2018, and the penalty has been paid in full.

In March 2018, the Morris facility learned that the Illinois EPA referred an environmental matter to the Illinois Attorney General’s Office (IAGO). The matters referred for enforcement relate to air emission events at the facility. In June 2018, the parties agreed to resolve the matter for a penalty of \$125,000, and in August 2018, a consent order requiring the same was entered in Grundy County Court.

In August 2018, the TCEQ issued a proposed agreed order alleging violations of wastewater discharge requirements at our LaPorte, Texas facility, and has proposed a penalty of approximately \$114,000. We are currently in negotiations with TCEQ to resolve this matter.

Additional information about such environmental proceedings can be found in Part I, Item 3 of our 2017 Annual Report on Form 10-K, which is incorporated into this Item 1 by reference.

Item 1A. RISK FACTORS

There have been no material changes from the risk factors disclosed in Item 1A of our 2017 Annual Report on Form 10-K.

Item 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

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 (1)	Maximum Number of Shares That May Yet Be Purchased Under the Plans or Programs (1)
July 1 – July 31	1,022,562	\$108.02	1,022,562	56,338,591
August 1 – August 31	530,996	\$112.62	530,996	55,807,595
September 1 – September 30	1,637,641	\$105.31	1,637,641	54,169,954
Total	3,191,199	\$107.40	3,191,199	54,169,954

(1) On June 1, 2018, we announced a share repurchase program of up to 57,844,016 of our ordinary shares through December 1, 2019, which superseded any prior repurchase authorizations. The maximum number of shares that may yet be purchased is not necessarily an indication of the number of shares that will ultimately be purchased.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

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Item 6. EXHIBITS

- 2.1 Agreement and Plan of Merger, dated as of February 15, 2018, among LyondellBasell Industries N.V., LYB Americas Holdco Inc., and A. Schulman, Inc. (incorporated by reference to Exhibit 2.1 of LyondellBasell Industries N.V.'s Current Report on Form 8-K filed with the SEC on February 15, 2018).
- 2.2 Contingent Value Rights Agreement, dated as of August 21, 2018, among A. Schulman, Inc., John K. Broussard, Jr., Joseph M. Gingo and David Leathers, as the initial committee members, Equiniti Trust Company, as paying agent, and, solely with respect to Sections 8.03, 8.05 through 8.12, and 8.14 thereof, LyondellBasell Industries N.V. (incorporated by reference to Exhibit 2.2 of our Current Report on Form 8-K filed with the SEC on August 21, 2018)
- 10.1 Third Amendment to Receivables Purchase Agreement, dated as of July 24, 2018, among Lyondell Chemical Company, as servicer, LYB Receivables LLC, as seller, the conduit purchasers, related committed purchasers, LC participants and purchaser agents party thereto, the other parties thereto and Mizuho Bank, Ltd., as Administrator and LC Bank (incorporated by reference to Exhibit 10.1 of our Current Report on Form 8-K filed with the SEC on July 27, 2018)
- 31.1* Certification of Principal Executive Officer pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934
- 31.2* Certification of Principal Financial Officer pursuant to Rule 13a-14(a) under the Securities Exchange Act of 1934
- 32* Certifications pursuant to 18 U.S.C. Section 1350
- 101.INS* XBRL Instance Document
- 101.SCH* XBRL Schema Document
- 101.CAL* XBRL Calculation Linkbase Document
- 101.DEF* XBRL Definition Linkbase Document
- 101.LAB* XBRL Labels Linkbase Document
- 101.PRE* XBRL Presentation Linkbase Document

* Filed herewith.

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SIGNATURE

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

LYONDELLBASELL INDUSTRIES N.V.

Date: October 30, 2018 /s/ Jacinth C. Smiley

Jacinth C. Smiley
Vice President and
Chief Accounting Officer
(Principal Accounting Officer)