

OLIN CORP
Form 10-Q
October 31, 2017
Table of Contents

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended September 30, 2017
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 1-1070

Olin Corporation
(Exact name of registrant as specified in its charter)

Virginia 13-1872319
(State or other jurisdiction of incorporation or organization) (I.R.S. Employer Identification No.)
190 Carondelet Plaza, Suite 1530, Clayton, MO 63105
(Address of principal executive offices) (Zip Code)

(314) 480-1400
(Registrant's telephone number, including area code)

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," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer (Do not check if a smaller reporting company)

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

As of September 30, 2017, 166,446,950 shares of the registrant's common stock were outstanding.

1

Table of Contents

TABLE OF CONTENTS

<u>Part I — FINANCIAL INFORMATION</u>		<u>Page</u>
Item 1.	<u>Financial Statements</u>	<u>3</u>
	<u>Condensed Balance Sheets</u>	<u>3</u>
	<u>Condensed Statements of Operations</u>	<u>4</u>
	<u>Condensed Statements of Comprehensive Income (Loss)</u>	<u>5</u>
	<u>Condensed Statements of Shareholders' Equity</u>	<u>6</u>
	<u>Condensed Statements of Cash Flows</u>	<u>7</u>
	<u>Notes to Condensed Financial Statements</u>	<u>8</u>
Item 2.	<u>Management's Discussion and Analysis of Financial Condition and Results of Operations</u>	<u>39</u>
	<u>Business Background</u>	<u>39</u>
	<u>Executive Summary</u>	<u>39</u>
	<u>Consolidated Results of Operations</u>	<u>40</u>
	<u>Segment Results</u>	<u>43</u>
	<u>Outlook</u>	<u>47</u>
	<u>Environmental Matters</u>	<u>49</u>
	<u>Legal Matters and Contingencies</u>	<u>50</u>
	<u>Liquidity, Investment Activity and Other Financial Data</u>	<u>51</u>
Item 3.	<u>Quantitative and Qualitative Disclosures about Market Risk</u>	<u>57</u>
Item 4.	<u>Controls and Procedures</u>	<u>57</u>
	<u>Cautionary Statement Regarding Forward-Looking Statements</u>	<u>58</u>
<u>Part II — OTHER INFORMATION</u>		
Item 1.	<u>Legal Proceedings</u>	<u>60</u>
Item 1A.	<u>Risk Factors</u>	<u>60</u>
Item 2.	<u>Unregistered Sales of Equity Securities and Use of Proceeds</u>	<u>60</u>
Item 3.	<u>Defaults Upon Senior Securities</u>	<u>60</u>
Item 4.	<u>Mine Safety Disclosures</u>	<u>60</u>
Item 5.	<u>Other Information</u>	<u>60</u>
Item 6.	<u>Exhibits</u>	<u>61</u>
<u>SIGNATURES</u>		<u>62</u>

Table of Contents

Part I — Financial Information

Item 1. Financial Statements.

OLIN CORPORATION AND CONSOLIDATED SUBSIDIARIES

Condensed Balance Sheets

(In millions, except per share data)

(Unaudited)

	September 30, 2017	December 31, 2016	September 30, 2016
ASSETS			
Current assets:			
Cash and cash equivalents	\$ 255.9	\$ 184.5	\$ 127.0
Receivables, net	729.5	675.0	744.1
Income taxes receivable	15.9	25.5	49.0
Inventories	689.5	630.4	617.0
Other current assets	27.1	30.8	16.1
Total current assets	1,717.9	1,546.2	1,553.2
Property, plant and equipment (less accumulated depreciation of \$2,222.8, \$1,891.6 and \$1,788.6)	3,579.2	3,704.9	3,713.9
Deferred income taxes	141.1	119.5	112.2
Other assets	1,215.6	644.4	640.3
Intangible assets, net	592.9	629.6	653.8
Goodwill	2,119.8	2,118.0	2,119.4
Total assets	\$ 9,366.5	\$ 8,762.6	\$ 8,792.8
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current liabilities:			
Current installments of long-term debt	\$ 81.7	\$ 80.5	\$ 80.3
Accounts payable	613.5	570.8	509.7
Income taxes payable	9.6	7.5	13.3
Accrued liabilities	294.5	263.8	291.5
Total current liabilities	999.3	922.6	894.8
Long-term debt	3,663.5	3,537.1	3,597.5
Accrued pension liability	618.7	638.1	597.7
Deferred income taxes	1,055.5	1,032.5	1,036.6
Other liabilities	731.0	359.3	335.5
Total liabilities	7,068.0	6,489.6	6,462.1
Commitments and contingencies			
Shareholders' equity:			
Common stock, par value \$1 per share: authorized, 240.0 shares; issued and outstanding, 166.4, 165.4 and 165.3 shares	166.4	165.4	165.3
Additional paid-in capital	2,267.7	2,243.8	2,242.8
Accumulated other comprehensive loss	(470.0)	(510.0)	(466.7)
Retained earnings	334.4	373.8	389.3
Total shareholders' equity	2,298.5	2,273.0	2,330.7
Total liabilities and shareholders' equity	\$ 9,366.5	\$ 8,762.6	\$ 8,792.8

The accompanying notes to condensed financial statements are an integral part of the condensed financial statements.

Table of Contents

OLIN CORPORATION AND CONSOLIDATED SUBSIDIARIES

Condensed Statements of Operations

(In millions, except per share data)

(Unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2017	2016	2017	2016
Sales	\$1,554.9	\$1,452.7	\$4,648.5	\$4,164.9
Operating expenses:				
Cost of goods sold	1,345.6	1,284.4	4,143.4	3,696.7
Selling and administration	86.4	82.0	254.6	249.4
Restructuring charges	9.2	5.2	25.9	106.2
Acquisition-related costs	1.1	13.1	12.5	39.6
Other operating (expense) income	—	(0.2)	(0.1)	10.5
Operating income	112.6	67.8	212.0	83.5
Earnings of non-consolidated affiliates	0.5	0.5	1.5	1.1
Interest expense	53.1	47.5	158.0	143.6
Interest income	0.4	0.5	1.0	1.3
Income (loss) before taxes	60.4	21.3	56.5	(57.7)
Income tax provision (benefit)	7.7	3.8	(3.7)	(36.3)
Net income (loss)	\$52.7	\$17.5	\$60.2	\$(21.4)
Net income (loss) per common share:				
Basic	\$0.32	\$0.11	\$0.36	\$(0.13)
Diluted	\$0.31	\$0.11	\$0.36	\$(0.13)
Dividends per common share	\$0.20	\$0.20	\$0.60	\$0.60
Average common shares outstanding:				
Basic	166.3	165.2	166.0	165.2
Diluted	168.5	166.5	168.2	165.2

The accompanying notes to condensed financial statements are an integral part of the condensed financial statements.

Table of Contents

OLIN CORPORATION AND CONSOLIDATED SUBSIDIARIES

Condensed Statements of Comprehensive Income (Loss)

(In millions)

(Unaudited)

	Three Months Ended September 30, 2017		Nine Months Ended September 30, 2016	
	2017	2016	2017	2016
Net income (loss)	\$52.7	\$17.5	\$60.2	\$(21.4)
Other comprehensive income, net of tax:				
Foreign currency translation adjustments, net	9.8	4.6	31.7	9.3
Unrealized gains (losses) on derivative contracts, net	1.3	2.6	(4.4)	3.8
Pension and postretirement liability adjustments, net	—	3.1	—	3.1
Amortization of prior service costs and actuarial losses, net	4.3	2.3	12.7	9.6
Total other comprehensive income, net of tax	15.4	12.6	40.0	25.8
Comprehensive income	\$68.1	\$30.1	\$100.2	\$4.4

The accompanying notes to condensed financial statements are an integral part of the condensed financial statements.

Table of Contents

OLIN CORPORATION AND CONSOLIDATED SUBSIDIARIES

Condensed Statements of Shareholders' Equity

(In millions, except per share data)

(Unaudited)

	Common Stock Shares	Par Value	Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Retained Earnings	Total Shareholders' Equity
Balance at January 1, 2016	165.1	\$165.1	\$ 2,236.4	\$ (492.5)	\$ 509.8	\$ 2,418.8
Net loss	—	—	—	—	(21.4)	(21.4)
Other comprehensive income	—	—	—	25.8	—	25.8
Dividends paid:						
Common stock (\$0.60 per share)	—	—	—	—	(99.1)	(99.1)
Common stock issued for:						
Stock options exercised	—	—	0.4	—	—	0.4
Other transactions	0.2	0.2	2.8	—	—	3.0
Stock-based compensation	—	—	3.2	—	—	3.2
Balance at September 30, 2016	165.3	\$165.3	\$ 2,242.8	\$ (466.7)	\$ 389.3	\$ 2,330.7
Balance at January 1, 2017	165.4	\$165.4	\$ 2,243.8	\$ (510.0)	\$ 373.8	\$ 2,273.0
Net income	—	—	—	—	60.2	60.2
Other comprehensive income	—	—	—	40.0	—	40.0
Dividends paid:						
Common stock (\$0.60 per share)	—	—	—	—	(99.6)	(99.6)
Common stock issued for:						
Stock options exercised	1.0	1.0	17.5	—	—	18.5
Other transactions	—	—	1.7	—	—	1.7
Stock-based compensation	—	—	4.7	—	—	4.7
Balance at September 30, 2017	166.4	\$166.4	\$ 2,267.7	\$ (470.0)	\$ 334.4	\$ 2,298.5

The accompanying notes to condensed financial statements are an integral part of the condensed financial statements.

Table of Contents

OLIN CORPORATION AND CONSOLIDATED SUBSIDIARIES

Condensed Statements of Cash Flows

(In millions)

(Unaudited)

	Nine Months Ended September 30,	
	2017	2016
Operating Activities		
Net income (loss)	\$60.2	\$(21.4)
Adjustments to reconcile net income (loss) to net cash and cash equivalents provided by (used for) operating activities:		
Earnings of non-consolidated affiliates	(1.5)	(1.1)
Losses on disposition of property, plant and equipment	0.4	0.6
Stock-based compensation	6.4	6.1
Depreciation and amortization	411.4	397.4
Deferred income taxes	(17.5)	(34.8)
Write-off of equipment and facility included in restructuring charges	—	76.6
Qualified pension plan contributions	(1.2)	(7.1)
Qualified pension plan income	(20.3)	(27.8)
Change in:		
Receivables	(48.5)	18.2
Income taxes receivable/payable	10.6	(7.8)
Inventories	(46.7)	46.1
Other current assets	3.1	22.7
Accounts payable and accrued liabilities	92.9	(54.1)
Other assets	7.7	0.5
Other noncurrent liabilities	(13.6)	(7.5)
Other operating activities	11.7	0.5
Net operating activities	455.1	407.1
Investing Activities		
Capital expenditures	(210.0)	(199.4)
Business acquired in purchase transaction, net of cash acquired	—	(69.5)
Payments under long-term supply contracts	(209.4)	(175.7)
Proceeds from sale/leaseback of equipment	—	40.4
Proceeds from disposition of property, plant and equipment	0.1	0.4
Proceeds from disposition of affiliated companies	—	6.6
Net investing activities	(419.3)	(397.2)
Financing Activities		
Long-term debt:		
Borrowings	2,035.0	—
Repayments	(1,907.4)	(176.1)
Stock options exercised	18.5	0.4
Dividends paid	(99.6)	(99.1)
Debt issuance costs	(11.2)	(0.8)
Net financing activities	35.3	(275.6)
Effect of exchange rate changes on cash and cash equivalents	0.3	0.7
Net increase (decrease) in cash and cash equivalents	71.4	(265.0)

Edgar Filing: OLIN CORP - Form 10-Q

Cash and cash equivalents, beginning of period	184.5	392.0
Cash and cash equivalents, end of period	\$255.9	\$127.0
Cash paid for interest and income taxes:		
Interest, net	\$138.7	\$126.9
Income taxes, net of refunds	\$11.2	\$16.3
Non-cash investing activities:		
Capital expenditures included in accounts payable and accrued liabilities	\$25.0	\$(3.2)

The accompanying notes to condensed financial statements are an integral part of the condensed financial statements.

7

Table of Contents

OLIN CORPORATION AND CONSOLIDATED SUBSIDIARIES

Notes to Condensed Financial Statements
(Unaudited)

DESCRIPTION OF BUSINESS

Olin Corporation (Olin) is a Virginia corporation, incorporated in 1892, having its principal executive offices in Clayton, MO. We are a manufacturer concentrated in three business segments: Chlor Alkali Products and Vinyls, Epoxy and Winchester. The Chlor Alkali Products and Vinyls segment manufactures and sells chlorine and caustic soda, ethylene dichloride (EDC) and vinyl chloride monomer, methyl chloride, methylene chloride, chloroform, carbon tetrachloride, perchloroethylene, trichloroethylene and vinylidene chloride, hydrochloric acid, hydrogen, bleach products and potassium hydroxide. The Epoxy segment produces and sells a full range of epoxy materials, including allyl chloride, epichlorohydrin, liquid epoxy resins and downstream products such as converted epoxy resins and additives. The Winchester segment produces and sells sporting ammunition, reloading components, small caliber military ammunition and components, and industrial cartridges.

We have prepared the condensed financial statements included herein, without audit, pursuant to the rules and regulations of the U.S. Securities and Exchange Commission (SEC). The preparation of the financial statements requires estimates and assumptions that affect amounts reported and disclosed in the financial statements and related notes. In our opinion, these financial statements reflect all adjustments (consisting only of normal accruals), which are necessary to present fairly the results for interim periods. Certain information and footnote disclosures normally included in financial statements prepared in accordance with generally accepted accounting principles have been condensed or omitted pursuant to such rules and regulations; however, we believe that the disclosures are appropriate. We recommend that you read these condensed financial statements in conjunction with the financial statements, accounting policies and the notes thereto and Management's Discussion and Analysis of Financial Condition and Results of Operations included in our Annual Report on Form 10-K for the year ended December 31, 2016. Certain reclassifications were made to prior year amounts to conform to the 2017 presentation.

ACQUISITION

On October 5, 2015 (the Closing Date), we completed the acquisition (the Acquisition) from The Dow Chemical Company (TDCC) of its U.S. Chlor Alkali and Vinyl, Global Chlorinated Organics and Global Epoxy businesses (collectively, the Acquired Business), whose operating results are included in the accompanying financial statements since the Closing Date.

We incurred costs related to the integration of the Acquired Business which consisted of advisory, legal, accounting and other professional fees of \$1.1 million and \$13.1 million for the three months ended September 30, 2017 and 2016, respectively, and \$12.5 million and \$39.6 million for the nine months ended September 30, 2017 and 2016, respectively.

For the nine months ended September 30, 2016, payments of \$69.5 million were made related to certain acquisition-related liabilities, including the final working capital adjustment.

RESTRUCTURING CHARGES

On March 21, 2016, we announced that we had made the decision to close a combined total of 433,000 tons of chlor alkali capacity across three separate locations. Associated with this action, we have permanently closed our Henderson, NV chlor alkali plant with 153,000 tons of capacity and have reconfigured the site to manufacture bleach and distribute caustic soda and hydrochloric acid. Also, the capacity of our Niagara Falls, NY chlor alkali plant has been reduced from 300,000 tons to 240,000 tons and the chlor alkali capacity at our Freeport, TX facility was reduced

by 220,000 tons. This 220,000 ton reduction was entirely from diaphragm cell capacity. For the three months ended September 30, 2017 and 2016, we recorded pretax restructuring charges of \$8.8 million and \$4.9 million, respectively, for employee relocation costs, facility exit costs and lease and other contract termination costs related to these actions. For the nine months ended September 30, 2017 and 2016, we recorded pretax restructuring charges of \$23.7 million and \$105.0 million, respectively, for the write-off of equipment and facility costs, lease and other contract termination costs, employee severance and related benefit costs, employee relocation costs and facility exit costs related to these actions. We expect to incur additional restructuring charges through 2020 of approximately \$25 million related to these capacity reductions. This estimate of additional restructuring charges does not include any additional charges related to a contract termination that is currently in dispute. The other party to the contract has filed an Amended Demand for Arbitration alleging, among other things, that Olin breached the contract and claims damages in excess of the amount Olin believes it is obligated for under the contract. The arbitration hearing is scheduled for the fourth

Table of Contents

quarter 2017. Any additional losses related to this contract dispute are not currently estimable because of unresolved questions of fact and law but, if resolved unfavorably to Olin, they could have a material effect on our financial results.

On December 12, 2014, we announced that we had made the decision to permanently close the portion of the Becancour, Canada chlor alkali facility that has been shut down since late June 2014. This action reduced the facility's chlor alkali capacity by 185,000 tons. Subsequent to the shut down, the plant predominantly focuses on bleach and hydrochloric acid, which are value-added products, as well as caustic soda. For the three months ended September 30, 2017 and 2016, we recorded pretax restructuring charges of \$0.4 million and less than \$0.1 million, respectively, for lease and other contract termination costs and facility exit costs related to these actions. For the nine months ended September 30, 2017 and 2016, we recorded pretax restructuring charges of \$2.2 million and \$0.4 million, respectively, for lease and other contract termination costs and facility exit costs related to these actions. We expect to incur additional restructuring charges through 2018 of approximately \$4 million related to the shut down of this portion of the facility.

On November 3, 2010, we announced that we made the decision to relocate the Winchester centerfire pistol and rifle ammunition manufacturing operations from East Alton, IL to Oxford, MS. Consistent with this decision in 2010, we initiated an estimated \$110 million five-year project, which included approximately \$80 million of capital spending. The capital spending was partially financed by \$31 million of grants provided by the State of Mississippi and local governments. During 2016, the final rifle ammunition production equipment relocation was completed. For the three and nine months ended September 30, 2016, we recorded pretax restructuring charges of \$0.3 million and \$0.8 million, respectively, for employee relocation costs and facility exit costs related to these actions.

The following table summarizes the 2017 and 2016 activities by major component of these restructuring actions and the remaining balances of accrued restructuring costs as of September 30, 2017 and 2016:

	Employee severance and job related benefits	Lease and other contract termination costs	Employee relocation costs	Facility exit costs	Write-off of equipment and facility	Total
	(\$ in millions)					
Balance at January 1, 2016	\$4.6	\$ 2.1	\$ —	\$ —	\$ —	\$6.7
Restructuring charges:						
First quarter	3.9	9.2	0.2	2.9	76.6	92.8
Second quarter	0.2	—	0.8	7.2	—	8.2
Third quarter	—	—	0.9	4.3	—	5.2
Amounts utilized	(4.9)	(5.6)	(1.9)	(12.1)	(76.6)	(101.1)
Currency translation adjustments	—	0.1	—	—	—	0.1
Balance at September 30, 2016	\$3.8	\$ 5.8	\$ —	\$ 2.3	\$ —	\$11.9
Balance at January 1, 2017	\$3.4	\$ 7.5	\$ —	\$ 1.8	\$ —	\$12.7
Restructuring charges:						
First quarter	—	5.7	0.2	2.3	—	8.2
Second quarter	—	5.8	0.1	2.6	—	8.5
Third quarter	—	7.0	—	2.2	—	9.2
Amounts utilized	(3.0)	(4.6)	(0.3)	(8.8)	—	(16.7)
Balance at September 30, 2017	\$0.4	\$ 21.4	\$ —	\$ 0.1	\$ —	\$21.9

Table of Contents

The following table summarizes the cumulative restructuring charges of these 2016, 2014 and 2010 restructuring actions by major component through September 30, 2017:

	Chlor Alkali Products and Vinyls	Capacity Reductions	Winchester	Total
	Becancour			
	(\$ in millions)			
Write-off of equipment and facility	\$3.5	\$ 76.6	\$ —	\$80.1
Employee severance and job related benefits	2.7	5.1	13.1	20.9
Facility exit costs	3.5	19.6	2.3	25.4
Pension and other postretirement benefits curtailment	—	—	4.1	4.1
Employee relocation costs	—	1.7	6.0	7.7
Lease and other contract termination costs	5.3	32.0	—	37.3
Total cumulative restructuring charges	\$15.0	\$ 135.0	\$ 25.5	\$175.5

As of September 30, 2017, we have incurred cash expenditures of \$68.2 million and non-cash charges of \$84.6 million related to these restructuring actions. The remaining balance of \$21.9 million is expected to be paid out through 2020.

ACCOUNTS RECEIVABLES

On December 20, 2016, we entered into a three year, \$250.0 million Receivables Financing Agreement with PNC Bank, National Association, as administrative agent (Receivables Financing Agreement). Under the Receivables Financing Agreement, our eligible trade receivables are used for collateralized borrowings and continue to be serviced by us. As of September 30, 2017, \$363.0 million of our trade receivables were pledged as collateral and we had \$250.0 million drawn under the agreement. For the three months ended September 30, 2017, we borrowed \$40.0 million under the Receivables Financing Agreement and used the proceeds to fund a portion of the payment to TDCC associated with a long-term ethylene supply contract to reserve additional ethylene at producer economics. As of September 30, 2017, we had no additional borrowing capacity under the Receivables Financing Agreement. As of December 31, 2016, \$282.3 million of our trade receivables were pledged as collateral and \$210.0 million was drawn under the agreement. For the year ended December 31, 2016, the proceeds of the Receivables Financing Agreement were used to repay \$210.0 million of the \$800.0 million Sumitomo term loan facility (the Sumitomo Credit Facility). In addition, the Receivables Financing Agreement incorporates the leverage and coverage covenants that are contained in the senior revolving credit facilities.

On June 29, 2016, we entered into a trade accounts receivable factoring arrangement and, on December 22, 2016, we entered into a separate trade accounts receivable factoring arrangement, which were both subsequently amended (collectively the AR Facilities). Pursuant to the terms of the AR Facilities, certain of our subsidiaries may sell their accounts receivable up to

Table of Contents

a maximum of \$293.0 million. We will continue to service such accounts. These receivables qualify for sales treatment under Accounting Standards Codification (ASC) 860 “Transfers and Servicing” (ASC 860) and, accordingly, the proceeds are included in net cash provided by operating activities in the condensed statements of cash flows. The gross amount of receivables sold for the three months ended September 30, 2017 and 2016 totaled \$446.5 million and \$209.9 million, respectively, and for the nine months ended September 30, 2017 and 2016 totaled \$1,224.1 million and \$236.7 million, respectively. The factoring discount paid under the AR Facilities is recorded as interest expense on the condensed statements of operations. The factoring discount was \$1.4 million and \$0.5 million for the three months ended September 30, 2017 and 2016, respectively, and \$2.9 million and \$0.7 million for the nine months ended September 30, 2017 and 2016, respectively. The agreements are without recourse and therefore no recourse liability has been recorded as of September 30, 2017. As of September 30, 2017, December 31, 2016 and September 30, 2016, \$187.3 million, \$126.1 million and \$85.0 million, respectively, of receivables qualifying for sales treatment were outstanding and will continue to be serviced by us.

ALLOWANCE FOR DOUBTFUL ACCOUNTS RECEIVABLES

We evaluate the collectibility of accounts receivable based on a combination of factors. We estimate an allowance for doubtful accounts as a percentage of net sales based on historical bad debt experience. This estimate is periodically adjusted when we become aware of a specific customer’s inability to meet its financial obligations (e.g., bankruptcy filing) or as a result of changes in the overall aging of accounts receivable. While we have a large number of customers that operate in diverse businesses and are geographically dispersed, a general economic downturn in any of the industry segments in which we operate could result in higher than expected defaults, and, therefore, the need to revise estimates for the provision for doubtful accounts could occur.

Allowance for doubtful accounts receivable consisted of the following:

	September 30,	
	2017	2016
	(\$ in millions)	
Balance at beginning of year	\$ 10.1	\$ 6.4
Provisions charged	1.3	3.6
Write-offs, net of recoveries	—	(0.8)
Balance at end of period	\$ 11.4	\$ 9.2

Provisions (credited) charged to operations were \$(0.8) million and \$1.4 million for the three months ended September 30, 2017 and 2016, respectively.

INVENTORIES

Inventories consisted of the following:

	September 30,		September 30,
	2017	2016	2016
	(\$ in millions)		
Supplies	\$60.3	\$ 58.1	\$ 58.1
Raw materials	85.4	72.6	79.1
Work in process	120.6	110.7	114.7
Finished goods	470.7	424.9	405.9
	737.0	666.3	657.8
LIFO reserve	(47.5)	(35.9)	(40.8)
Inventories, net	\$689.5	\$ 630.4	\$ 617.0

Inventories are valued at the lower of cost and net realizable value. For U.S. inventories, inventory costs are determined principally by the last-in, first-out (LIFO) method of inventory accounting while for international inventories, inventory costs are determined principally by the first-in, first-out (FIFO) method of inventory accounting. Cost for other inventories has been determined principally by the average-cost method (primarily operating supplies, spare parts and maintenance parts). Elements of costs in inventories included raw materials, direct labor and manufacturing overhead. Inventories under the LIFO method are based on annual estimates of quantities and costs as of year-end; therefore, the condensed financial statements at September 30, 2017 reflect certain estimates relating to inventory quantities and costs at December 31, 2017. The replacement cost of our inventories would have been approximately \$47.5 million, \$35.9 million and \$40.8 million higher than reported at September 30, 2017, December 31, 2016 and September 30, 2016, respectively.

Table of Contents