

ARMSTRONG WORLD INDUSTRIES INC  
Form 10-Q  
July 31, 2018

UNITED STATES

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 June 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 1-2116

ARMSTRONG WORLD INDUSTRIES, INC.

(Exact name of registrant as specified in its charter)

Pennsylvania  
(State or other jurisdiction of

incorporation or organization)

2500 Columbia Avenue, Lancaster, Pennsylvania  
(Address of principal executive offices)

Registrant's telephone number, including area code (717) 397-0611

23-0366390  
(I.R.S. Employer

Identification No.)

17603  
(Zip Code)

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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 (§232.405 of this chapter) during the preceding 12 months (or for such shorter time 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, a smaller reporting company, or an emerging growth company. See the definitions of “large accelerated filer,” “accelerated filer,” “smaller reporting company” and “emerging growth company” in Rule 12b-2 of the Exchange Act:

Large accelerated filer      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

Number of shares of Armstrong World Industries, Inc.’s common stock outstanding as of July 25, 2018 – 51,663,627.

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When we refer to “AWI,” the “Company,” “we,” “our” or “us,” we are referring to Armstrong World Industries, Inc. and its subsidiaries.

#### CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain statements in this Quarterly Report on Form 10-Q and the documents incorporated by reference herein may constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Those forward-looking statements are subject to various risks and uncertainties and include all statements that are not historical statements of fact and those regarding our intent, belief or expectations, including, but not limited to, our expectations concerning our residential and commercial markets and their effect on our operating results; our expectations regarding the payment of dividends; and our ability to increase revenues, earnings and EBITDA (as such terms are defined by documents incorporated by reference herein). Words such as “anticipate,” “expect,” “intend,” “plan,” “target,” “project,” “predict,” “believe,” “may,” “will,” “would,” “could,” “should,” “seek,” “estimate” and similar expressions identify such forward-looking statements. These statements are based on management’s current expectations and beliefs and are subject to a number of factors that could lead to actual results materially different from those described in the forward-looking statements. Although we believe that the assumptions underlying the forward-looking statements are reasonable, we can give no assurance that our expectations will be attained. Factors that could have a material adverse effect on our financial condition, liquidity, results of operations or future prospects or which could cause actual results to differ materially from our expectations include, but are not limited to:

- economic conditions;
- construction activity;
- the announced sale of our Europe, Middle East and Africa (including Russia) (“EMEA”) and Pacific Rim businesses is subject to various risks and uncertainties and may not be completed in accordance with the expected plans or anticipated timeline, or at all, and will involve significant time and expense, which could disrupt or adversely affect our business;
- competition;
- key customers;
- availability and costs of raw materials and energy;
- Worthington Armstrong Venture (“WAVE”), our joint venture with Worthington Industries, Inc;
- environmental matters;
- covenants in our debt agreements;
- our indebtedness;
- our liquidity;
- international operations;
- strategic transactions;
- negative tax consequences;
- the tax consequences of the separation of our flooring business from our ceilings business;
- defined benefit plan obligations;
- cybersecurity breaches, claims and litigation;
- labor;
- intellectual property rights;
- costs savings and productivity initiatives; and
- other risks detailed from time to time in our filings with the Securities and Exchange Commission (the “SEC”), press releases and other communications, including those set forth under “Risk Factors” included in our Annual Report on Form 10-K and in the documents incorporated by reference.

Such forward-looking statements speak only as of the date they are made. We expressly disclaim any obligation to release publicly any updates or revisions to any forward-looking statements to reflect any change in our expectations with regard thereto or change in events, conditions or circumstances on which any forward-looking statement is based.



## PART I - FINANCIAL INFORMATION

## ITEM 1. FINANCIAL STATEMENTS

Armstrong World Industries, Inc., and Subsidiaries

Condensed Consolidated Statements of Earnings and Comprehensive Income

(amounts in millions, except per share data)

Unaudited

	Three Months Ended June 30, 2018	Three Months Ended June 30, 2017	Six Months Ended June 30, 2018	Six Months Ended June 30, 2017
Net sales	\$ 248.6	\$ 225.6	\$ 475.9	\$ 445.4
Cost of goods sold	165.9	140.4	322.4	281.9
Gross profit	82.7	85.2	153.5	163.5
Selling, general and administrative expenses	40.9	35.7	78.4	75.0
Equity earnings from joint venture	(24.2 )	(19.7 )	(40.5 )	(38.0 )
Operating income	66.0	69.2	115.6	126.5
Interest expense	9.8	8.9	19.0	17.8
Other non-operating (income), net	(9.1 )	(8.3 )	(18.1 )	(17.2 )
Earnings from continuing operations before income taxes	65.3	68.6	114.7	125.9
Income tax expense	17.7	24.9	25.9	46.7
Earnings from continuing operations	47.6	43.7	88.8	79.2
Net earnings (loss) from discontinued operations, net of tax expense				
of \$0.2, \$3.7, \$1.7 and \$6.5	5.5	(2.2 )	9.4	(6.9 )
(Loss) from disposal of discontinued business, net of tax expense (benefit) of \$0.1, \$0.2, (\$0.3) and \$0.5	(5.8 )	(0.2 )	(23.1 )	(0.6 )
Net (loss) from discontinued operations	(0.3 )	(2.4 )	(13.7 )	(7.5 )
Net earnings	\$ 47.3	\$ 41.3	\$ 75.1	\$ 71.7
Other comprehensive income, net of tax:				
Foreign currency translation adjustments	(20.8 )	2.8	(14.9 )	13.9
Derivative gain (loss), net	2.0	(1.8 )	5.8	(1.7 )
Pension and postretirement adjustments	3.1	2.0	4.9	4.5
Total other comprehensive (loss) income	(15.7 )	3.0	(4.2 )	16.7
Total comprehensive income	\$ 31.6	\$ 44.3	\$ 70.9	\$ 88.4
Earnings per share of common stock, continuing operations:				
Basic	\$ 0.91	\$ 0.82	\$ 1.69	\$ 1.47
Diluted	\$ 0.90	\$ 0.81	\$ 1.66	\$ 1.46
(Loss) per share of common stock, discontinued operations:				
Basic	\$ (0.01 )	\$ (0.05 )	\$ (0.26 )	\$ (0.14 )
Diluted	\$ (0.01 )	\$ (0.04 )	\$ (0.26 )	\$ (0.14 )

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Net earnings per share of common stock:

Basic	\$ 0.90	\$ 0.77	\$ 1.43	\$ 1.33
Diluted	\$ 0.89	\$ 0.77	\$ 1.40	\$ 1.32
Average number of common shares outstanding:				
Basic	51.9	53.3	52.5	53.7
Diluted	52.6	53.7	53.2	54.1

See accompanying notes to Condensed Consolidated Financial Statements beginning on page 8.

## Armstrong World Industries, Inc., and Subsidiaries

## Condensed Consolidated Balance Sheets

(amounts in millions, except share and per share data)

	Unaudited	
	June 30, 2018	December 31, 2017
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 129.0	\$ 159.6
Accounts and notes receivable, net	81.6	90.8
Inventories, net	61.7	53.8
Current assets of discontinued operations	297.9	306.1
Income tax receivable	5.9	30.7
Other current assets	6.9	7.9
Total current assets	583.0	648.9
Property, plant, and equipment, less accumulated depreciation and amortization of		
\$396.0 and \$361.4, respectively	484.8	499.9
Prepaid pension costs	111.2	88.3
Investment in joint venture	111.8	107.3
Goodwill and intangible assets, net	443.7	441.1
Deferred income taxes	16.6	19.6
Income taxes receivable	4.1	4.1
Other non-current assets	69.5	64.3
Total assets	\$ 1,824.7	\$ 1,873.5
<b>Liabilities and Shareholders' Equity</b>		
Current liabilities:		
Current installments of long-term debt	\$ 40.0	\$ 32.5
Accounts payable and accrued expenses	103.8	108.4
Current liabilities of discontinued operations	114.9	128.5
Income tax payable	1.2	0.5
Total current liabilities	259.9	269.9
Long-term debt, less current installments	795.0	817.7
Postretirement benefit liabilities	76.1	79.2
Pension benefit liabilities	56.0	57.2
Other long-term liabilities	33.0	35.5
Income taxes payable	55.2	53.0
Deferred income taxes	145.4	141.7
Total non-current liabilities	1,160.7	1,184.3
Shareholders' equity:		
Common stock, \$0.01 par value per share, 200 million shares authorized, 61,434,462	0.6	0.6
shares issued and 51,638,049 shares outstanding as of June 30, 2018 and		



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60,782,736, shares issued and 52,772,139 shares outstanding as of December 31, 2017		
Additional paid-in capital	535.7	516.8
Retained earnings	762.8	633.4
Treasury stock, at cost, 9,796,413 shares as of June 30, 2018 and 8,010,597 shares as of December 31, 2017	(490.6 )	(385.6 )
Accumulated other comprehensive (loss)	(404.4 )	(345.9 )
Total shareholders' equity	404.1	419.3
Total liabilities and shareholders' equity	\$ 1,824.7	\$ 1,873.5

See accompanying notes to Condensed Consolidated Financial Statements beginning on page 8.

Armstrong World Industries, Inc., and Subsidiaries

Condensed Consolidated Statements of Shareholders' Equity

(amounts in millions, except share data)

Unaudited

	Six Months Ended June 30, 2018						Accumulated	
	Common Stock Shares	Stock Amount	Additional Paid-In Capital	Retained Earnings	Treasury Stock Shares	Treasury Stock Amount	Other Comprehensive (Loss)	Total
Balance at beginning of period	52,772,139	\$ 0.6	\$ 516.8	\$ 633.4	8,010,597	\$(385.6)	\$ (345.9)	\$ 419.3
Cumulative effect impact of ASU 2018-02 adoption				54.3			(54.3)	-
Stock issuance	651,726							
Share-based employee compensation			18.9					18.9
Net earnings				75.1				75.1
Other comprehensive (loss)							(4.2)	(4.2)
Acquisition of treasury stock	(1,785,816)				1,785,816	(105.0)		(105.0)
Balance at end of period	51,638,049	\$ 0.6	\$ 535.7	\$ 762.8	9,796,413	\$(490.6)	\$ (404.4)	\$ 404.1

	Six Months Ended June 30, 2017						Accumulated	
	Common Stock Shares	Stock Amount	Additional Paid-In Capital	Retained Earnings	Treasury Stock Shares	Treasury Stock Amount	Other Comprehensive (Loss)	Total
Balance at beginning of period	54,428,233	\$ 0.6	\$ 504.9	\$ 469.9	6,168,907	\$(305.2)	\$ (403.8)	\$ 266.4
Cumulative effect impact of ASU 2016-09 adoption				8.7				8.7
Stock issuance	112,176							
Share-based employee compensation			3.8					3.8
Net earnings				71.7				71.7
Separation of Armstrong Flooring, Inc.			0.9					0.9
							16.7	16.7

Other comprehensive income								
Acquisition of treasury stock	(1,659,452 )				1,659,452	(70.9 )		(70.9 )
Balance at end of period	52,880,957	\$ 0.6	\$ 509.6	\$ 550.3	7,828,359	\$(376.1)	\$( 387.1 )	\$297.3

See accompanying notes to Condensed Consolidated Financial Statements beginning on page 8.

Armstrong World Industries, Inc., and Subsidiaries

Condensed Consolidated Statements of Cash Flows

(amounts in millions)

Unaudited

	Six Months Ended June 30,	
	2018	2017
<b>Cash flows from operating activities:</b>		
Net earnings	\$75.1	\$71.7
<b>Adjustments to reconcile net earnings to net cash provided by operating activities:</b>		
Depreciation and amortization	44.3	38.6
Deferred income taxes	(1.0 )	36.4
Share-based compensation	5.3	5.1
Loss on disposal of discontinued operations	23.4	0.1
Equity earnings from joint venture	(40.5 )	(38.0 )
U.S. pension (credit)	(13.1 )	(12.4 )
Other non-cash adjustments, net	1.1	(0.4 )
<b>Changes in operating assets and liabilities:</b>		
Receivables	7.4	(26.5 )
Inventories	(22.1 )	(1.8 )
Other current assets	4.6	2.2
Other non-current assets	(0.4 )	(2.8 )
Accounts payable and accrued expenses	(10.3 )	(39.6 )
Income taxes payable	26.9	15.2
Other long-term liabilities	(9.0 )	(5.5 )
Other, net	(2.7 )	0.1
Net cash provided by operating activities	89.0	42.4
<b>Cash flows from investing activities:</b>		
Purchases of property, plant and equipment	(25.6 )	(44.8 )
Return of investment from joint venture	35.9	35.0
Cash paid for acquisitions	(11.6 )	(31.4 )
Other investing activities	-	0.5
Net cash (used for) investing activities	(1.3 )	(40.7 )
<b>Cash flows from financing activities:</b>		
Proceeds from revolving credit facility and other short-term debt	-	93.0
Payments of revolving credit facility and other short-term debt	-	(78.0 )
Payments of long-term debt	(16.3 )	(8.7 )
Financing costs	-	(0.6 )
Proceeds from exercised stock options	15.5	0.6
Payment for treasury stock acquired	(105.0)	(70.9 )
Net cash (used for) financing activities	(105.8)	(64.6 )
Effect of exchange rate changes on cash and cash equivalents	(2.5 )	0.7
Net (decrease) in cash and cash equivalents	(20.6 )	(62.2 )

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Cash and cash equivalents at beginning of year	159.6	141.9
Cash and cash equivalents at end of period	139.0	79.7
Cash and cash equivalents at end of period of discontinued operations	10.0	-
Cash and cash equivalents at end of period of continuing operations	\$129.0	\$79.7
Supplemental Cash Flow Disclosures:		
Interest paid	\$15.3	\$15.4
Income tax payments, net	1.4	2.2
Amounts in accounts payable for capital expenditures	0.8	2.8

See accompanying notes to Condensed Consolidated Financial Statements beginning on page 8.

Armstrong World Industries, Inc., and Subsidiaries

Notes to Condensed Consolidated Financial Statements (unaudited)

(dollar amounts in millions, except share data)

#### NOTE 1. BUSINESS AND BASIS OF PRESENTATION

Armstrong World Industries, Inc. (“AWI”) is a Pennsylvania corporation incorporated in 1891. When we refer to “AWI,” the “Company,” “we,” “our” or “us” in these notes, we are referring to AWI and its subsidiaries.

The accounting policies used in preparing the Condensed Consolidated Financial Statements in this Form 10-Q are the same as those used in preparing the Consolidated Financial Statements for the year ended December 31, 2017. These statements should therefore be read in conjunction with the Consolidated Financial Statements and notes that are included in the Form 10-K for the fiscal year ended December 31, 2017. In the opinion of management, all adjustments of a normal recurring nature have been included to provide a fair statement of the results for the reporting periods presented. Operating results for the second quarter and first six months of 2018 and 2017 included in this report are unaudited. Quarterly results are not necessarily indicative of annual earnings, primarily due to the different level of sales in each quarter of the year and the possibility of changes in general economic conditions.

On May 31, 2018, we acquired the business and assets of Plasterform, Inc. (“Plasterform”), based in Mississauga, Ontario, Canada. Plasterform is a manufacturer of architectural cast ceilings, walls, facades, columns and moldings with one manufacturing facility. Plasterform’s operations, and its assets and liabilities, are included as a component of our Architectural Specialties segment. See Note 4 for further information.

On November 17, 2017, we entered into a Share Purchase Agreement (the “Purchase Agreement”) with Knauf International GmbH (“Knauf”), to sell certain subsidiaries comprising our business in Europe, the Middle East and Africa (including Russia) (“EMEA”) and the Pacific Rim, including the corresponding businesses and operations conducted by Worthington Armstrong Venture (“WAVE”), our joint venture with Worthington Industries, Inc., in which AWI holds a 50% interest. The consideration to be paid by Knauf in connection with the sale is \$330.0 million in cash, inclusive of amounts due to WAVE, subject to certain adjustments as provided in the Purchase Agreement, including adjustments based on the economic impact of any required regulatory remedies and a working capital adjustment. The transaction has been notified or is set to be notified for merger control clearance in the European Union (“EU”), Bosnia and Herzegovina, Macedonia, Montenegro, Russia and Serbia. It has so far been cleared unconditionally in Montenegro (February 2018), Serbia (February 2018), Russia (March 2018) and Macedonia (July 2018). Clearance in the remaining jurisdictions (EU and Bosnia and Herzegovina) is currently expected during 2018.

On July 18, 2018, we entered into an amendment to the Purchase Agreement, pursuant to which Knauf agreed to irrevocably and unconditionally pay us (i) \$250 million on August 1, 2018, and (ii) \$80 million on September 15, 2018, if, prior to such date (A) any competition condition has not been satisfied, or (B) the closing has not yet occurred. The amendment also provided for the reduction (from a maximum of \$35 million to a maximum of \$20 million) of potential adjustments to the purchase price consideration for the transaction based on the impact of remedies required to satisfy competition conditions. We continue to work closely with Knauf towards closing and now expect the transaction to close prior to December 31, 2018. The EMEA and Pacific Rim segment historical financial results have been reflected in AWI’s Consolidated Financial Statements as discontinued operations for all periods presented.

In January 2017, we acquired the business and assets of Tectum, Inc. (“Tectum”), based in Newark, Ohio. Tectum is a manufacturer of acoustical ceiling, wall and structural solutions for commercial building applications with two manufacturing facilities. Tectum’s operations, and its assets and liabilities, are included as a component of our

Architectural Specialties segment. See Note 4 for additional information.

These Condensed Consolidated Financial Statements are prepared in accordance with U.S. generally accepted accounting principles (“U.S. GAAP”). The statements include management estimates and judgments, where appropriate. Management utilizes estimates to record many items including certain asset values, allowances for bad debts, inventory obsolescence and lower of cost and net realizable value charges, warranty reserves, workers’ compensation, general liability and environmental claims, and income taxes. When preparing an estimate, management determines the amount based upon the consideration of relevant information. Management may confer with outside parties, including outside counsel. Actual results may differ from these estimates.

Certain prior year amounts have been recast in the Condensed Consolidated Financial Statements to conform to the 2018 presentation.

#### Recently Adopted Accounting Standards

In May 2014, the Financial Accounting Standard Board (“FASB”) issued Accounting Standards Update (“ASU”) 2014-09, “Revenue from Contracts with Customers.” The guidance requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to a customer. The ASU replaces most existing revenue recognition guidance in U.S. GAAP. In March 2016, the FASB issued ASU 2016-08, “Principal versus Agent Considerations (Reporting Gross versus Net),” which clarifies the implementation guidance relating to principle versus agent considerations. In April 2016, the FASB issued ASU

Armstrong World Industries, Inc., and Subsidiaries

Notes to Condensed Consolidated Financial Statements (unaudited)

(dollar amounts in millions, except share data)

2016-10, "Identifying Performance Obligations and Licensing," which clarifies the implementation guidance relating to the identification of performance obligations in a contract, including how entities should account for shipping and handling services it provides after control of goods transfers to a customer. In May 2016, the FASB issued ASU 2016-12, "Narrow-Scope Improvements and Practical Expedients," which clarifies the guidance related to the presentation of sales taxes, noncash consideration, and completed contracts and contract modifications. In December 2016, the FASB issued ASU 2016-20, "Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers," which clarifies the scope and application of the adoption of the new revenue recognition standard.

Effective January 1, 2018, we adopted these standards using the modified retrospective transition method and have applied all practical expedients related to completed contracts upon adoption. Substantially all of our revenues from contracts with customers are recognized from the sale of products with standard shipping terms, sales discounts and warranties. This adoption did not have a material impact to our financial condition, results of operations or cash flows as the amount and timing of substantially all of our revenues will continue to be recognized at a point in time. As required by the revenue recognition Accounting Standards Codification ("ASC") updates, we have expanded our disclosure of revenues from contracts with customers. See Note 3 for additional information.

In January 2016, the FASB issued ASU 2016-01, "Recognition and Measurement of Financial Assets and Financial Liabilities," which addresses certain aspects of recognition, measurement, presentation, and disclosure of financial instruments. This new guidance requires 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. Effective January 1, 2018, our adoption of this standard had no material impact on our financial condition, results of operations or cash flows.

In August 2016, the FASB issued ASU 2016-15, "Classification of Certain Cash Receipts and Cash Payments." This guidance clarifies how entities should classify certain cash receipts and cash payments on the statement of cash flows. Effective January 1, 2018, our adoption of this guidance had no material impact on our cash flows.

In March 2017, the FASB issued ASU 2017-07, "Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost," which requires companies to report the service cost component of net benefit cost in the same line item or items as other compensation costs arising from services rendered by the pertinent employees during the period. The other components of net benefit cost are required to be presented in the income statement separately from the service cost component and outside a subtotal of income from operations, if one is presented. Effective January 1, 2018, we have adopted this guidance for all periods presented. Upon adoption of this standard we reclassified all non-service cost components of net benefit costs for our defined benefit pension and health and welfare plans. For the first six months of 2017, this reclassification resulted in an increase of \$10.2 million in cost of goods sold and \$5.6 million in Selling General and Administrative ("SG&A") expenses, offset by an increase of \$15.8 million in other non-operating income, net on the Condensed Consolidated Statement of Earnings. See Note 12 for details related to our components of net benefit costs.

In February 2018, the FASB issued ASU 2018-02, "Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income." On December 22, 2017, the U.S. federal government enacted the Tax Cuts and Jobs Act of 2017 (the "Tax Act of 2017"), which, in addition to numerous other provisions, lowered the Corporate statutory tax rate



from 35% to 21%. Under U.S. GAAP, all deferred tax assets and liabilities are required to be adjusted for the effect of a change in tax laws or rates, with the effect included in income from continuing operations in the reporting period that includes the enactment date. This standard allows entities to record a reclassification from Accumulated Other Comprehensive Income (“AOCI”) to retained earnings for the purpose of appropriately including the tax effect of items within AOCI at the newly enacted 21% U.S. federal tax rate. This new guidance is effective for annual periods beginning after December 15, 2018. Effective January 1, 2018 we early adopted the guidance and recorded a \$54.3 million reduction to AOCI with a corresponding increase to retained earnings.

#### Recently Issued Accounting Standards

In February 2016, the FASB issued ASU 2016-02, “Leases,” which amends accounting for leases, most notably by requiring a lessee to recognize the assets and liabilities that arise from a lease agreement. Specifically, this new guidance will require lessees to recognize a liability to make lease payments and a right-of-use asset representing its right to use the underlying asset for the lease term, with limited exceptions. The accounting applied by a lessor is largely unchanged from that applied under existing U.S. GAAP. This guidance is effective for annual reporting periods beginning after December 15, 2018 and must be adopted under a modified retrospective basis. We are currently evaluating the impact the adoption of this standard will have on our financial condition, results of operations and cash flows.

Armstrong World Industries, Inc., and Subsidiaries

Notes to Condensed Consolidated Financial Statements (unaudited)

(dollar amounts in millions, except share data)

In August 2017, the FASB issued ASU 2017-12, “Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities,” which amends the financial reporting of hedging relationships in order to better portray the economic results of an entity’s risk management activities in its financial statements. In addition, the guidance simplifies the application of current hedge accounting guidance. This guidance is effective for annual periods beginning after December 15, 2018. We are currently evaluating the impact the adoption of this standard will have on our financial condition, results of operations and cash flows.

NOTE 2. SEGMENT RESULTS

In connection with the announced sale of our EMEA and Pacific Rim businesses, our former EMEA and Pacific Rim segments have been excluded from our results of continuing operations and segment assets. As a result, our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate.

	Three Months Ended June 30, 2018		Six Months Ended June 30, 2017	
Net sales				
Mineral Fiber	\$206.7	\$190.1	\$397.4	\$379.9
Architectural Specialties	41.9	35.5	78.5	65.5
Total net sales	\$248.6	\$225.6	\$475.9	\$445.4

	Three Months Ended June 30, 2018		Six Months Ended June 30, 2017	
Segment operating income (loss)				
Mineral Fiber	\$59.5	\$64.1	\$103.2	\$119.6
Architectural Specialties	8.6	8.1	16.9	12.9
Unallocated Corporate	(2.1 )	(3.0 )	(4.5 )	(6.0 )
Total consolidated operating income	\$66.0	\$69.2	\$115.6	\$126.5

	Three Months Ended June 30,	Six Months Ended June 30,
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	2018	2017	2018	2017
Total consolidated operating income	\$66.0	\$69.2	\$115.6	\$126.5
Interest expense	9.8	8.9	19.0	17.8
Other non-operating (income), net	(9.1)	(8.3)	(18.1)	(17.2)
Earnings from continuing operations before income taxes	\$65.3	\$68.6	\$114.7	\$125.9

Segment assets	June 30,	
	2018	December 31, 2017
Mineral Fiber	\$1,166.5	\$ 1,193.5
Architectural Specialties	63.6	53.2
Unallocated Corporate	296.7	320.7
Total consolidated assets	\$1,526.8	\$ 1,567.4

In connection with the closing of our St. Helens, Oregon mineral fiber manufacturing facility in the second quarter of 2018, we recorded \$4.3 million and \$12.0 million in the three and six months ended June 30, 2018 in cost of goods sold related to accelerated depreciation of machinery and equipment. During the fourth quarter of 2017, we recorded \$4.0 million in cost of goods sold related to accelerated depreciation of machinery and equipment.

### NOTE 3. REVENUE

#### Revenue Recognition

We recognize revenue upon transfer of control of our products to the customer, which typically occurs upon shipment. Our main performance obligation to our customers is the delivery of products in accordance with purchase orders. Each purchase order defines the transaction price for the products purchased under the arrangement. Direct sales to distributors, home centers, direct customers, and retailers represent the majority of our sales. Our standard sales terms are Free On Board (“FOB”) shipping point. We have some

Armstrong World Industries, Inc., and Subsidiaries

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(dollar amounts in millions, except share data)

sales terms that are FOB destination. At the point of shipment, the customer is required to pay under normal sales terms. Our normal payment terms in most cases are 45 days or less and our sales arrangements do not have any material financing components. In addition, our customer arrangements do not produce contract assets or liabilities that are material to our consolidated financial statements. Within our Architectural Specialties segment, the majority of revenues are project driven, which includes a minority of revenues derived from the sale of customer-specified customized products that have no alternative use to us. The manufacturing cycle for these custom products is short.

Incremental costs to fulfill our customer arrangements are expensed as incurred, as the amortization period is less than one year.

Our products are sold with normal and customary return provisions. We provide limited warranties for defects in materials or factory workmanship, sagging and warping, and certain other manufacturing defects and are not sold separately to customers. Our product warranties place certain requirements on the purchaser, including installation and maintenance in accordance with our written instructions. In addition to our warranty program, under certain limited circumstances, we will occasionally and at our sole discretion, provide a customer accommodation repair or replacement. Warranty repairs and replacements are most commonly made by professional installers employed by or affiliated with our independent distributors. Reimbursement for cost associated with warranty repairs are provided to our independent distributors through a credit against accounts receivable from the distributor to us. Sales returns and warranty claims have historically not been material and do not constitute separate performance obligations.

We often enter into agreements with our customers to offer incentive programs, primarily volume rebates and promotions. The majority of our rebates are designated as a percentage of annual customer purchases. We estimate the amount of rebate based on actual sales for the period and accrue for the projected incentive programs costs. We record the costs of the rebate accruals as a reduction to our revenue. In addition, other sales discounts, including early pay promotions, are deducted immediately from the sales invoice.

#### Shipping and Handling

We account for product shipping and handling costs as fulfillment activities and present the associated costs in costs of goods sold in the period in which we sell our product.

## Disaggregation of Revenues

Our Mineral Fiber and Architectural Specialties operating segments both manufacture and sell ceiling systems (primarily mineral fiber, fiberglass wool and metal) throughout the Americas. We disaggregate revenue based on our product-based segments and major customer grouping as these categories represent the most appropriate depiction of how the nature, amount, and timing of revenues and cash flows are affected by economic factors. Net sales by major customer group are as follows:

Distributors – represents net sales to building materials distributors, who re-sell our products to contractors, subcontractors’ alliances, large architect and design firms, and major facility owners. Geographically, this category includes sales throughout the U.S., Canada, and Latin America.

Home centers – represents net sales to home centers such as Lowe’s Companies, Inc. and The Home Depot, Inc.

Direct customers – represents net sales sold directly to contractors, subcontractors’ alliances, large architect and design firms, and major facility owners. Only sales to U.S. customers are reported within this customer group.

Retailers and other – represents net sales to independent retailers and certain national account customers, including wholesalers who re-sell our products to dealers who service builders, contractors and consumers. Geographically, this category includes sales throughout the U.S., Canada, and Latin America.

Armstrong World Industries, Inc., and Subsidiaries

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(dollar amounts in millions, except share data)

The following tables provide net sales by major customer group within the Mineral Fiber and Architectural Specialties segments for the three and six months ended June 30, 2018 and 2017:

	Three months ended		Six months ended	
	June 30		June 30	
	2018	2017	2018	2017
Mineral Fiber				
Distributors	\$156.7	\$141.6	\$294.4	\$277.8
Home centers	20.5	18.7	44.5	44.4
Direct customers	16.8	16.8	30.5	31.7
Retailers and other	12.7	13.0	28.0	26.0
Total	\$206.7	\$190.1	\$397.4	\$379.9

	Three months ended		Six months ended	
	June 30		June 30	
	2018	2017	2018	2017
Architectural Specialties				
Distributors	\$33.4	\$28.0	\$61.8	\$51.4
Direct customers	7.5	6.5	15.4	12.1
Retailers and other	1.0	1.0	1.3	2.0
Total	\$41.9	\$35.5	\$78.5	\$65.5

The classification of 2017 customers within each group have been modified slightly from what was reported in our first quarter Form 10-Q.

NOTE 4. ACQUISITION AND DISCONTINUED OPERATIONS

Acquisition of Plasterform

On May 31, 2018, we acquired the business and assets of Plasterform. The \$11.6 million purchase price, which is subject to customary working capital adjustments, was allocated to the assets acquired and the liabilities assumed based on their estimated fair values, with the remaining amount recorded as goodwill. The total fair value of tangible assets acquired, less liabilities assumed, was \$2.0 million. The total fair value of identifiable intangible assets

acquired, comprised of amortizable customer relationships was \$4.0 million, resulting in \$5.6 million of goodwill. These amounts are subject to adjustment as our purchase accounting analysis is completed.

#### Acquisition of Tectum

In January 2017, we acquired the business and assets of Tectum. The \$31.2 million purchase price was allocated to the tangible and intangible assets acquired and the liabilities assumed based on their estimated fair values, with the remaining unallocated amount recorded as goodwill. The total fair value of tangible assets acquired, less liabilities assumed, was \$4.4 million. The total fair value of intangible assets acquired, comprised of amortizable customer relationships and non-amortizing brand names, was \$16.0 million, resulting in \$10.8 million of goodwill.

#### EMEA AND PACIFIC RIM BUSINESSES

On November 17, 2017, we agreed to sell certain subsidiaries comprising our businesses in EMEA and the Pacific Rim to Knauf. Pursuant to the Purchase Agreement, prior to the closing, we and Knauf will enter into (i) an agreement relating to the mutual supply of certain products after the closing, (ii) an agreement relating to the use of certain intellectual property by Knauf after the closing, including the Armstrong trade name and (iii) an agreement relating to certain transition services to be provided by AWI to Knauf after closing for a period of up to one year. WAVE and Knauf will also enter into similar agreements for such purposes.

As of June 30, 2018, based on anticipated net sales proceeds to be received from Knauf, the fair value of EMEA and Pacific Rim net assets are less than their carrying value. As a result, we recorded impairment charges of \$5.7 million and \$23.4 million during the three and six months ended June 30, 2018. Impairment charges for the three and six months ended June 30, 2018 included \$19.1 million and \$13.9 million, respectively, of unfavorable AOCI adjustments, in addition to increases in EMEA and Pacific Rim net assets since December 31, 2017. During the fourth quarter of 2017 we recorded an impairment charge of \$74.0 million, which included \$51.4 million of AOCI adjustments. These AOCI adjustments related to accumulated foreign currency translation amounts that will be subsequently reclassified to earnings from discontinued operations upon sale of our EMEA and Pacific Rim businesses.

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## FLOORING BUSINESSES

### Separation and Distribution of AFI

On April 1, 2016, in connection with the separation and distribution of AFI, we entered into several agreements with AFI that, together with a plan of division, provide for the separation and allocation between AWI and AFI of the flooring assets, employees, liabilities and obligations of AWI and its subsidiaries attributable to periods prior to, at and after AFI's separation from AWI, and govern the relationship between AWI and AFI subsequent to the completion of the separation and distribution. These agreements include a Transition Services Agreement, a Tax Matters Agreement, an Employee Matters Agreement, a Trademark License Agreement, a Transition Trademark License Agreement and a Campus Lease Agreement. Under the Transition Services Agreement, AWI and AFI provided various services to each other during a transition period that expired on December 31, 2017.

### European Resilient Flooring

On December 4, 2014, our Board of Directors approved the cessation of funding to our DLW subsidiary, which at that time was our European flooring business. As a result, DLW management filed for insolvency in Germany on December 11, 2014. The German insolvency court subsequently appointed an administrator (the "Administrator") to oversee DLW operations.

In April 2017, we entered into a settlement agreement and mutual release with the Administrator on behalf of the DLW estate to settle all claims of the Administrator related to the insolvency for a cash payment of \$11.8 million.

### Summarized Financial Information of Discontinued Operations

The following tables detail the businesses and line items that comprise discontinued operations on the Condensed Consolidated Statements of Earnings and Comprehensive Income.

	EMEA and Pacific Rim Businesses	Flooring Businesses	Total
Three months ended June 30, 2018:			
Net sales	\$ 114.6	\$ -	\$ 114.6
Cost of goods sold	87.3	-	87.3
Gross profit	27.3	-	27.3
Selling, general and administrative expenses	19.7	-	19.7
Operating income	7.6	-	7.6



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Interest expense	0.5	-	0.5
Other non-operating expense, net	1.4	-	1.4
Earnings from discontinued operations before income tax	5.7	-	5.7
Income tax expense	0.2	-	0.2
Net earnings from discontinued operations, net of tax	\$ 5.5	\$ -	\$5.5
(Loss) on disposal of discontinued businesses, before			
income tax	\$ (5.7 )	\$ -	\$(5.7 )
Income tax expense	-	0.1	0.1
(Loss) on disposal of discontinued businesses, net of tax	\$ (5.7 )	\$ (0.1 )	\$(5.8 )
Net (loss) from discontinued operations	\$ (0.2 )	\$ (0.1 )	\$(0.3 )

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Notes to Condensed Consolidated Financial Statements (unaudited)

(dollar amounts in millions, except share data)

	EMEA and Pacific Rim Businesses	Flooring Businesses	Total
<b>Six months ended June 30, 2018:</b>			
Net sales	\$ 219.0	\$ -	\$219.0
Cost of goods sold	165.1	-	165.1
Gross profit	53.9	-	53.9
Selling, general and administrative expenses	41.7	-	41.7
Operating income	12.2	-	12.2
Interest expense	0.9	-	0.9
Other non-operating expense, net	0.2	-	0.2
Earnings from discontinued operations before income tax	11.1	-	11.1
Income tax expense	1.7	-	1.7
Net earnings from discontinued operations, net of tax	\$ 9.4	\$ -	\$9.4
<b>(Loss) on disposal of discontinued businesses, before</b>			
income tax	\$ (23.4 )	\$ -	\$(23.4 )
Income tax (benefit)	-	(0.3 )	(0.3 )
(Loss) on disposal of discontinued businesses, net of tax	\$ (23.4 )	\$ 0.3	\$(23.1 )
<b>Net (loss) income from discontinued operations</b>	<b>\$ (14.0 )</b>	<b>\$ 0.3</b>	<b>\$(13.7 )</b>

	EMEA and Pacific Rim Businesses	Flooring Businesses	Total
<b>Three months ended June 30, 2017:</b>			
Net sales	\$ 105.2	\$ -	\$105.2
Cost of goods sold	84.4	-	84.4
Gross profit	20.8	-	20.8
Selling, general and administrative expenses	19.5	-	19.5
Operating income	1.3	-	1.3
Interest expense	0.3	-	0.3
Other non-operating (income), net	(0.5 )	-	(0.5 )
Earnings from discontinued operations before income tax	1.5	-	1.5
Income tax expense	3.7	-	3.7

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(Loss) from discontinued operations, net of tax	\$ (2.2 )	\$ -	\$(2.2 )
(Loss) on disposal of discontinued businesses, before income tax	\$ -	\$ -	\$-
Income tax expense	-	0.2	0.2
(Loss) on disposal of discontinued business, net of tax	\$ -	\$ (0.2 )	\$(0.2 )
Net (loss) from discontinued operations	\$ (2.2 )	\$ (0.2 )	\$(2.4 )

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## Armstrong World Industries, Inc., and Subsidiaries

## Notes to Condensed Consolidated Financial Statements (unaudited)

(dollar amounts in millions, except share data)

	EMEA and Pacific Rim Businesses	Flooring Businesses	Total
Six months ended June 30, 2017:			
Net sales	\$ 200.8	\$ -	\$200.8
Cost of goods sold	164.1	-	164.1
Gross profit	36.7	-	36.7
Selling, general and administrative expenses	37.6	-	37.6
Operating (loss)	(0.9 )	-	(0.9 )
Interest expense	0.6	-	0.6
Other non-operating (income), net	(1.1 )	-	(1.1 )
(Loss) from discontinued operations before income tax	(0.4 )	-	(0.4 )
Income tax expense	6.5	-	6.5
(Loss) from discontinued operations, net of tax	\$ (6.9 )	\$ -	\$(6.9 )
(Loss) on disposal of discontinued businesses, before income tax	\$ -	\$ (0.1 )	\$(0.1 )
Income tax expense	-	0.5	0.5
(Loss) on disposal of discontinued business, net of tax	\$ -	\$ (0.6 )	\$(0.6 )
Net (loss) from discontinued operations	\$ (6.9 )	\$ (0.6 )	\$(7.5 )

## Armstrong World Industries, Inc., and Subsidiaries

## Notes to Condensed Consolidated Financial Statements (unaudited)

(dollar amounts in millions, except share data)

The following is a summary of the carrying amount of major classes of assets and liabilities classified as assets and liabilities of discontinued operations as of June 30, 2018 and December 31, 2017 related to our EMEA and Pacific Rim businesses.

	June 30, 2018	December 31, 2017
Assets		
Current assets:		
Cash and cash equivalents	\$10.0	\$ -
Accounts and notes receivable, net	62.4	61.4
Inventories, net	71.0	59.2
Income tax receivable	5.3	3.1
Other current assets	8.8	12.9
Total current assets discontinued operations	157.5	136.6
Property, plant, and equipment, less accumulated depreciation and amortization <sup>(1) (2)</sup>	103.4	131.3
Prepaid pension costs <sup>(1)</sup>	26.2	26.1
Goodwill and intangible assets, net <sup>(1)</sup>	7.1	7.2
Deferred income taxes <sup>(1)</sup>	2.7	4.0
Other non-current assets <sup>(1)</sup>	1.0	0.9
Total non-current assets of discontinued operations <sup>(1)</sup>	140.4	169.5
Total assets of discontinued operations <sup>(1)</sup>	\$297.9	\$ 306.1
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	\$70.6	\$ 78.6
Income tax payable	2.8	1.3
Total current liabilities	73.4	79.9
Pension benefit liabilities <sup>(3)</sup>	34.4	34.7
Other long-term liabilities <sup>(3)</sup>	1.7	1.8
Deferred income taxes <sup>(3)</sup>	5.4	12.1
Total non-current liabilities of discontinued operations <sup>(3)</sup>	41.5	48.6
Total liabilities of discontinued operations <sup>(3)</sup>	\$114.9	\$ 128.5

(1) Presented as Current assets of discontinued operations on the Condensed Consolidated Balance Sheets.

(2) Includes pre-tax impairment charge of \$23.4 million recorded in the first six months of 2018 and \$74.0 million recorded in the fourth quarter of 2017.

(3) Presented as Current liabilities of discontinued operations on the Condensed Consolidated Balance Sheets.

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The following is a summary of total depreciation and amortization and capital expenditures presented as discontinued operations and included as components of operating and investing cash flows on our Condensed Consolidated Statements of Cash Flows:

	EMEA and Pacific Rim Businesses
Three months ended June 30, 2018:	
Fixed asset impairment	5.7
Purchases of property, plant and equipment	(2.0 )
Six months ended June 30, 2018:	
Fixed asset impairment	23.4
Purchases of property, plant and equipment	(3.2 )
Three months ended June 30, 2017:	
Depreciation and amortization	5.6
Purchases of property, plant and equipment	(2.9 )
Six months ended June 30, 2017:	
Depreciation and amortization	10.8
Purchases of property, plant and equipment	(6.8 )

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Notes to Condensed Consolidated Financial Statements (unaudited)

(dollar amounts in millions, except share data)

## NOTE 5. ACCOUNTS AND NOTES RECEIVABLE

	June 30, 2018	December 31, 2017
Customer receivables	\$82.4	\$ 62.8
Miscellaneous receivables	3.6	29.9
Less allowance for warranties, discounts and losses	(4.4 )	(1.9 )
Accounts and notes receivable, net	\$81.6	\$ 90.8

We sell our products to select, pre-approved customers whose businesses are affected by changes in economic and market conditions. We consider these factors and the financial condition of each customer when establishing our allowance for losses from doubtful accounts.

Miscellaneous receivables as of December 31, 2017 included \$28.7 million of insurance recoveries related to environmental matters, which were collected during the first quarter of 2018. See Note 17 for additional information.

## NOTE 6. INVENTORIES

	June 30, 2018	December 31, 2017
Finished goods	\$39.0	\$ 33.2
Goods in process	4.1	2.7
Raw materials and supplies	28.3	26.1
Less LIFO reserves	(9.7 )	(8.2 )
Total inventories, net	\$61.7	\$ 53.8

## NOTE 7. EQUITY INVESTMENT

Investment in joint venture reflects our 50% equity interest in WAVE. The WAVE joint venture is reflected within the Mineral Fiber segment in our consolidated financial statements using the equity method of accounting. Condensed income statement data for WAVE is summarized below.

	Three Months Ended June 30, 2018		Six Months Ended June 30, 2018	
	2017	2018	2017	2018
Net sales	\$106.7	\$92.5	\$194.4	\$177.8
Gross profit	61.6	51.9	109.4	100.0
Net earnings	49.2	41.4	84.8	79.2



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NOTE 8. GOODWILL AND INTANGIBLE ASSETS

The following table details amounts related to our goodwill and intangible assets as of June 30, 2018 and December 31, 2017.

	Estimated Useful Life	June 30, 2018		December 31, 2017	
		Carrying Amount	Accumulated Amortization	Carrying Amount	Accumulated Amortization
<b>Amortizing intangible assets</b>					
Customer relationships	20 years	\$180.3	\$ 98.4	\$ 176.3	\$ 93.9
Developed technology	15 years	84.0	63.7	83.7	60.9
Other	Various	5.8	1.1	5.9	1.1
<b>Total</b>		<b>\$270.1</b>	<b>\$ 163.2</b>	<b>\$ 265.9</b>	<b>\$ 155.9</b>
<b>Goodwill and non-amortizing intangible assets</b>					
Trademarks and brand names	Indefinite	319.9		319.8	
Goodwill	Indefinite	16.9		11.3	
<b>Total goodwill and intangible assets</b>		<b>\$606.9</b>		<b>\$ 597.0</b>	

	Six Months Ended June 30,	
	2018	2017
<b>Amortization expense</b>	<b>\$7.3</b>	<b>\$7.3</b>

NOTE 9. ACCOUNTS PAYABLE AND ACCRUED EXPENSES

	June 30, 2018	December 31, 2017
Payables, trade and other	\$71.6	\$ 67.6
Employment costs	14.5	18.0
Current portion of pension and postretirement liabilities	11.6	11.6

Other	6.1	11.2
Total accounts payable and accrued expenses	\$103.8	\$ 108.4

## NOTE 10. INCOME TAX EXPENSE

On December 22, 2017, the U.S. federal government enacted the 2017 Tax Act, resulting in significant changes from existing U.S. tax laws that impact us, including, but not limited to, reducing the U.S. federal corporate income tax rate from 35% to 21%, allowing immediate 100% deduction for the cost of qualified property, eliminating the domestic production activities deduction, and imposing a one-time transition tax on the cumulative earnings and profits of certain foreign subsidiaries that were previously not repatriated and therefore not taxed for U.S. income tax purposes. Our federal income tax expense for periods beginning in 2018 will be based on the new rate.

In December 2017, the Securities and Exchange Commission (“SEC”) issued Staff Accounting Bulletin No. 118 (“SAB 118”), which addresses situations where the accounting is incomplete for the income tax effects of the 2017 Tax Act. SAB 118 directs registrants to consider the impact of the 2017 Tax Act as “provisional” when they do not have the necessary information available, prepared or analyzed (including computations) to finalize the accounting for the change in tax law. Registrants are provided a measurement period of up to one year to obtain, prepare, and analyze information necessary to finalize the accounting for provisional amounts.

During the fourth quarter of 2017, we recorded provisional amounts as a result of the 2017 Tax Act. These amounts are subject to change as we obtain information necessary to complete the calculations. For the three and six months ended June 30, 2018, there were no changes made to the provisional amounts recognized in 2017. We will continue to analyze the effects of the enactment of the 2017 Tax Act and recognize any changes to the provisional amounts as they are identified during the measurement period as provided for in SAB 118. The final impact of the 2017 Tax Act may differ from the provisional amounts that have been recognized due to, among other things, changes in our interpretation of the 2017 Tax Act, legislative or administrative actions to clarify the intent of the statutory language provided that differ from our current interpretation, any changes in accounting standards for income taxes or related interpretations in response to the 2017 Tax Act, or any updates or changes to estimates utilized to calculate the impacts. We expect to complete our analysis of the provisional items during the second half of 2018.

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	Three Months		Six Months	
	Ended		Ended	
	June 30,		June 30,	
	2018	2017	2018	2017
Earnings from continuing operations before income taxes	\$65.3	\$68.6	\$114.7	\$125.9
Income tax expense	17.7	24.9	25.9	46.7
Effective tax rate	27.1 %	36.3 %	22.6 %	37.1 %

The effective tax rate for the second quarter was lower compared to the same period in 2017 due to the changes resulting from the 2017 Tax Act, primarily the reduction in the federal statutory tax rate from 35% to 21%. The effective tax rate for the first six months of 2018 was lower compared to the same period in 2017 due to changes resulting from the 2017 Tax Act, primarily the reduction in the federal statutory tax rate from 35% to 21%, as well as excess tax benefits from stock-based compensation.

It is reasonably possible that the amount of unrecognized tax benefits could significantly increase or decrease within the next twelve months. However, an estimate of the range of reasonably possible outcomes cannot be made. Changes to unrecognized tax benefits could result from the completion of ongoing examinations, the expiration of the statute of limitations or other unforeseen circumstances.

## NOTE 11. DEBT

As of June 30, 2018 and December 31, 2017, our long-term debt included borrowings outstanding under our \$1,050.0 million credit facility, which is comprised of a \$200.0 million revolving credit facility (with a \$150.0 million sublimit for letters of credit), a \$600.0 million Term Loan A and a \$250.0 million Term Loan B. As of June 30, 2018 and December 31, 2017, there were no borrowings outstanding on our revolving credit facility. As of June 30, 2018 and December 31, 2017, our outstanding long-term debt included a \$35.0 million variable rate, tax-exempt industrial development bond that financed the construction of a U.S. plant in prior years. We also have a \$25.0 million letter of credit facility, also known as our bi-lateral facility.

We utilize lines of credit and other commercial commitments in order to ensure that adequate funds are available to meet operating requirements. Letters of credit are currently arranged through our revolving credit facility, our bi-lateral facility and our securitization facility. Letters of credit are issued to third party suppliers, insurance institutions and financial institutions and typically can only be drawn upon in the event of AWI's failure to pay its obligations to the beneficiary. The following table presents details related to our letters of credit:

Financing Arrangements	As of June 30, 2018		
	Limit	Used	Available
Accounts receivable securitization facility	\$40.0	\$36.2	\$ 3.8
Bi-lateral facility	25.0	13.4	11.6
Revolving credit facility	150.0	-	150.0
Total	\$215.0	\$49.6	\$ 165.4

As of December 31, 2017, \$6.6 million of letters of credit issued under our accounts receivable securitization facility in excess of our maximum limit were classified as restricted cash and reported as a component of Cash and cash equivalents on our Condensed Consolidated Balance Sheets. As of June 30, 2018, no amounts were classified as restricted cash.

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## NOTE 12. PENSIONS AND OTHER BENEFIT PROGRAMS

Following are the components of net periodic benefit costs (credits):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
<b>U.S. defined-benefit plans:</b>				
<b>Pension benefits</b>				
Service cost of benefits earned during the period	\$1.5	\$2.1	\$2.9	\$4.2
Interest cost on projected benefit obligation	11.6	12.4	23.1	24.9
Expected return on plan assets	(24.0)	(24.8)	(48.0)	(49.6)
Amortization of prior service cost	-	0.3	-	0.7
Amortization of net actuarial loss	5.0	4.3	10.0	8.5
Net periodic pension (credit)	\$(5.9 )	\$(5.7 )	\$(12.0 )	\$(11.3 )
<b>Retiree health and life insurance benefits</b>				
Service cost of benefits earned during the period	\$0.1	\$0.1	\$0.1	\$0.2
Interest cost on projected benefit obligation	0.7	0.8	1.3	1.5
Amortization of net actuarial gain	(1.4 )	(0.9 )	(2.8 )	(1.8 )
Net periodic postretirement (credit)	\$(0.6 )	\$-	\$(1.4 )	\$(0.1 )

We also have an unfunded non-U.S. defined benefit pension plan in Germany, which will not be acquired by Knauf in connection with the announced sale of our EMEA and Pacific Rim segments that is reported as a component of our Unallocated Corporate segment. Net periodic pension cost for this plan was immaterial for the three and six months ended June 30, 2018 and 2017.

As required by ASU 2017-07, "Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost," the service cost component of net benefit cost has been presented in the Condensed Consolidated Statement of Earnings within cost of goods sold and SG&A expenses for all periods presented which are the same line items as other compensation costs arising from services rendered by the pertinent employees during the period. The other components of net benefit cost are presented in the Condensed Consolidated Statements of Earnings separately from the service cost component within other non-operating income, net. The following table presents the components of net periodic pension and postretirement (credits) within our Condensed Consolidated Statement of Earnings:

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	Three Months Ended June 30, 2018		Six Months Ended June 30, 2017	
Service cost of benefits earned represented in cost of goods sold	\$0.9	\$1.3	\$1.8	\$2.6
Service cost of benefits earned represented in SG&A expenses	0.7	0.9	1.2	1.8
Other non-operating expense	(8.1)	(7.9)	(16.4)	(15.8)
Net periodic pension and postretirement (credit)	\$(6.5)	\$(5.7)	\$(13.4)	\$(11.4)

NOTE 13. FINANCIAL INSTRUMENTS

We do not hold or issue financial instruments for trading purposes. The estimated fair values of our financial instruments are as follows:

	June 30, 2018		December 31, 2017	
	Carrying	Estimated	Carrying	Estimated
	amount	fair value	amount	fair value
<b>Assets/(Liabilities), net:</b>				
Total long-term debt, including current portion	\$(835.0)	\$(835.6 )	\$(850.2 )	\$(850.8 )
Foreign currency contracts	0.2	0.2	(0.8 )	(0.8 )
Natural gas contracts	-	-	(0.6 )	(0.6 )
Interest rate swap contracts	13.7	13.7	8.9	8.9

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The carrying amounts of cash and cash equivalents, receivables, accounts payable, accrued expenses, and short-term debt approximate fair value because of the short-term maturity of these instruments. The fair value estimates of long-term debt were derived from quotes from a major financial institution based on recently observed trading levels of our Term Loan A and Term Loan B debt. The fair value estimates of foreign currency contract obligations are estimated from market quotes provided by a well-recognized national market data provider. The fair value estimates of natural gas contracts are estimated using internal valuation models with verification by obtaining quotes from major financial institutions. For natural gas swap transactions, fair value is calculated using NYMEX market quotes provided by a well-recognized national market data provider. For natural gas option based strategies, fair value is calculated using an industry standard Black-Scholes model with market based inputs, including but not limited to, underlying asset price, strike price, implied volatility, discounted risk free rate, and time to expiration, and is provided by a well-recognized national market data provider. The fair value estimates for interest rate swap contracts are estimated by obtaining quotes from major financial institutions with verification by internal valuation models.

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants at the measurement date. Three levels of inputs may be used to measure fair value:

Level 1 — Quoted prices in active markets for identical assets or liabilities;

Level 2 — Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets; quoted prices for identical or similar assets and liabilities in markets that are not active; or other inputs that are observable or can be corroborated by observable market data; or

Level 3 — Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes certain pricing models, discounted cash flow methodologies and similar techniques that use significant unobservable inputs.

The fair value measurement of assets and liabilities measured at fair value on a recurring basis and reported on the consolidated balance sheets is summarized below:

June 30, 2018	December 31, 2017	
Fair value based	Fair value based on	
on	Quoted,	Other
Quoted	Other	
active	observable	active      observable
markets	inputs	markets      inputs
Level 2	Level 1	Level 2

	Level 1			
Assets/(Liabilities), net:				
Foreign currency contracts	\$ 0.2	\$ -	\$ (0.8 )	\$ -
Natural gas contracts	-	-	-	(0.6 )
Interest rate swap contracts	-	13.7	-	8.9

We do not have any financial assets or liabilities that are valued using Level 3 (unobservable) inputs.

#### NOTE 14. DERIVATIVE FINANCIAL INSTRUMENTS

We are exposed to market risk from changes in foreign exchange rates, interest rates and commodity prices that could impact our results of operations, cash flows and financial condition. We use forward swaps and option contracts to hedge these exposures. At inception, derivatives that we designate as hedging instruments are formally documented as either (1) a hedge of a forecasted transaction or “cash flow” hedge, or (2) a hedge of the fair value of a recognized liability or asset or “fair value” hedge. We also formally assess, both at inception and at least quarterly thereafter, whether the derivatives that are used in hedging transactions are highly effective in offsetting changes in either the fair value or cash flows of the hedged item. If it is determined that a derivative ceases to be a highly effective hedge, or if the anticipated transaction is no longer probable of occurring, we discontinue hedge accounting and any future mark-to-market adjustments are recognized in earnings. We use derivative financial instruments as risk management tools and not for speculative trading purposes.

#### Counterparty Risk

We only enter into derivative transactions with established counterparties having an investment-grade credit rating. We monitor counterparty credit default swap levels and credit ratings on a regular basis. All of our derivative transactions with counterparties are



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governed by master International Swap and Derivatives Association agreements (“ISDAs”) with netting arrangements. These agreements can limit our exposure in situations where we have gain and loss positions outstanding with a single counterparty. We do not post nor do we receive cash collateral with any counterparty for our derivative transactions. These ISDAs do not have any credit contingent features; however, a default under our bank credit facility would trigger a default under these agreements. Exposure to individual counterparties is controlled, and thus we consider the risk of counterparty default to be negligible.

#### Commodity Price Risk

We purchase natural gas for use in the manufacturing process and to heat many of our facilities. As a result, we are exposed to fluctuations in the price of natural gas. We have a policy to reduce cost volatility for North American natural gas purchases by purchasing natural gas forward contracts and swaps, purchased call options, and zero-cost collars up to 24 months forward. The contracts are based on forecasted usage of natural gas measured in mmBtu’s. There is a high correlation between the hedged item and the hedge instrument. The gains and losses on these instruments offset gains and losses on the transactions being hedged. These instruments are designated as cash flow hedges. As of June 30, 2018 and December 31, 2017, the notional amount of these hedges was \$8.0 million and \$9.2 million, respectively. The mark-to-market gain or loss on qualifying hedges is included in other comprehensive income to the extent effective, and reclassified into cost of goods sold in the period during which the underlying gas is consumed. The mark-to-market gains or losses on ineffective portions of hedges are recognized in cost of goods sold immediately. The earnings impact of the ineffective portion of these hedges was not material for the three and six months ended June 30, 2018 and 2017.

#### Currency Rate Risk – Sales and Purchases

We manufacture and sell our products in a number of countries throughout the world and, as a result, we are exposed to movements in foreign currency exchange rates. To a large extent, our global manufacturing and sales provide a natural hedge of foreign currency exchange rate movement, as foreign currency expenses generally offset foreign currency revenues. Upon completion of the sale of our EMEA and Pacific Rim businesses, and on a continuing operations basis as of June 30, 2018, our only major foreign currency exposure is to the Canadian dollar. We manage our Canadian cash flow exposures on a net basis and when possible, use derivatives to hedge our unmatched foreign currency cash inflows and outflows.

We use Canadian dollar forward exchange contracts to reduce our exposure to the risk that the eventual net cash inflows resulting from the sale of products to Canadian customers will be adversely affected by changes in exchange rates. These derivative instruments are used for forecasted transactions and are classified as cash flow hedges. Cash flow hedges are executed quarterly, generally up to 15 months forward, and allow us to further reduce our overall exposure to Canadian dollar exchange rate movements, since gains and losses on these contracts offset gains and losses on the transactions being hedged. The notional amount of these hedges was \$13.3 million as of June 30, 2018 and \$18.9 million as of December 31, 2017. Gains and losses on these instruments are recorded in other comprehensive income, to the extent effective, until the underlying transaction is recognized in earnings. The mark-to-market gains or losses on ineffective portions of hedges are recognized in SG&A expense immediately. The earnings impact of the ineffective portion of these hedges was not material for the three and six months ended June 30, 2018 and 2017.

## Interest Rate Risk

We utilize interest rate swaps to reduce the fluctuations in earnings caused by interest rate volatility. The following table summarizes our interest rate swaps as of June 30, 2018:

	Notional			
Trade Date	Amount	Coverage Period		Risk Coverage
November 13, 2016	\$ 200.0	November 2016 to March 2021		Term Loan A
April 1, 2016	\$ 100.0	April 2016 to March 2023		Term Loan B

Under the terms of our Term Loan A swap, we receive 3-month LIBOR and pay a fixed rate over the hedged period, in addition to a basis rate swap to convert the floating rate risk under our Term Loan A Swap from 3-month LIBOR to 1-month LIBOR. As a result, we receive 1-month LIBOR and pay a fixed rate over the hedged period.

Under the terms of our Term Loan B swap, we receive the greater of 3-month LIBOR or a 0.75% LIBOR Floor and pay a fixed rate over the hedged period.

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These swaps are designated as cash flow hedges against changes in LIBOR for a portion of our variable rate debt. The mark-to-market gains or losses on the ineffective portion of hedges are recognized in interest expense immediately. The earnings impact of the ineffective portion of these hedges was not material for the three and six months ended June 30, 2018 and 2017.

Financial Statement Impacts

The following tables detail amounts related to our derivatives as of June 30, 2018 and December 31, 2017. We had no derivative assets or liabilities not designated as hedging instruments as of June 30, 2018 or December 31, 2017. The derivative asset and liability amounts below are shown in gross amounts; we have not netted assets with liabilities.

	Derivative Assets			Derivative Liabilities		
	Balance Sheet Location	Fair Value		Balance Sheet Location	Fair Value	
		June 30, 2018	December 31, 2017		June 30, 2018	December 31, 2017
<b>Derivatives designated as hedging instruments</b>						
Natural gas commodity contracts	Other current assets	\$0.1	\$ -	Accounts payable and accrued expenses	\$0.1	\$ 0.5
Foreign exchange contracts	Other current assets	0.3	-	Accounts payable and accrued expenses	0.1	0.7
Interest rate swap contracts	Other current assets	-	0.2	Accounts payable and accrued expenses	-	-
Natural gas commodity contracts	Other non-current assets	-	-	Other long-term liabilities	-	0.1
Foreign exchange contracts	Other non-current assets	-	-	Other long-term liabilities	-	0.1
Interest rate swap contracts	Other non-current assets	13.7	8.7	Other long-term liabilities	-	-
<b>Total derivatives designated as hedging instruments</b>					<b>\$0.2</b>	<b>\$ 1.4</b>

Amount of Gain (Loss) Recognized in AOCI (Effective Portion)	Location of Gain (Loss) Reclassified from AOCI into Income (Effective Portion)	Gain (Loss) Reclassified from AOCI into Income (Effective Portion)
--	--	--

	Portion)			Three		Six Months	
	Six Months			Months		Months	
	Ended			Ended		Ended	
	June 30,			June 30,		June 30,	
	2018	2017		2018	2017	2018	2017
Derivatives in cash flow hedging relationships							
Natural gas commodity contracts	\$0.2	\$(1.0)	Cost of goods sold	\$-	\$0.2	\$(0.4)	\$0.3
Foreign exchange contracts – purchases	0.1	(0.4)	Cost of goods sold	-	-	-	-
Foreign exchange contracts – sales	0.7	(0.8)	Net sales	(0.1)	0.2	(0.3)	0.4
Interest rate swap contracts	4.3	0.1	Interest expense	(0.3)	-	(0.8)	-
			Total (loss) gain from continuing operations	\$(0.4)	\$0.4	\$(1.5)	\$0.7
Total	\$5.3	\$(2.1)	Total (loss) from discontinued operations	-	-	(0.1)	-
			Total (loss) gain	\$(0.4)	\$0.4	\$(1.6)	\$0.7

As of June 30, 2018, the amount of existing gains in AOCI expected to be recognized in earnings over the next twelve months is \$2.5 million.

There was no pre-tax gain or loss recognized in income for derivative instruments not designated as hedging instruments for the three or six months ended June 30, 2018 and 2017.

## Armstrong World Industries, Inc., and Subsidiaries

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## NOTE 15. COMMON STOCK REPURCHASE PLAN

On July 29, 2016, we announced that our Board of Directors had approved a share repurchase program pursuant to which we were authorized to repurchase up to \$150.0 million of our outstanding shares of common stock through July 31, 2018 (the "Program"). On October 30, 2017, we announced that our Board of Directors had approved an additional \$250.0 million authorization to repurchase shares under the Program. The Program was also extended through October 31, 2020. On July 31, 2018, we announced that our Board of Directors had approved an additional \$300.0 million authorization to repurchase shares, increasing the total authorized amount under the Program to \$700.0 million. Repurchases under the Program may be made through open market, block and privately-negotiated transactions, including Rule 10b5-1 plans, at such times and in such amounts as management deems appropriate, subject to market and business conditions, regulatory requirements and other factors. The Program does not obligate us to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice. During the six months ended June 30, 2018, we repurchased 1.8 million shares under the Program for a total cost of \$105.0 million, or an average price of \$58.80 per share. Since inception of the Program, we have repurchased 4.7 million shares under the Program for a total cost of \$229.2 million, or an average price of \$48.33 per share.

## NOTE 16. ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

	Foreign			Total
	Currency	Derivative	Pension and	Accumulated
	Translation	Gain	Postretirement	Other
	Adjustments	(Loss) <sup>(1)</sup>	Adjustments	Comprehensive
			<sup>(1)</sup>	(Loss) <sup>(1)</sup>
Balance, December 31, 2017	\$ (47.1 )	\$ 3.5	\$ (302.3 )	\$ (345.9 )
Impact of ASU 2018-02 adoption	-	0.7	(55.0 )	(54.3 )
Other comprehensive income (loss) before				
reclassifications, net of tax expense (benefit) of \$ -, (\$0.8), \$0.2 and (\$0.6)	(14.9 )	4.6	(0.9 )	(11.2 )
Amounts reclassified from accumulated other				
comprehensive (loss)	-	1.2	5.8	7.0
Net current period other comprehensive (loss) income	(14.9 )	5.8	4.9	(4.2 )

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	Foreign			Total
	Currency	Derivative	Pension and	Accumulated
	Translation	Gain	Postretirement	Other
	Adjustments	(Loss) <sup>(1)</sup>	Adjustments	Comprehensive
			<sup>(1)</sup>	(Loss) <sup>(1)</sup>
Balance at June 30, 2018	\$ (62.0 )	\$ 10.0	\$ (352.4 )	\$ (404.4 )
Balance, December 31, 2016	\$ (71.6 )	\$ 3.8	\$ (336.0 )	\$ (403.8 )
Other comprehensive income (loss) before reclassifications,				
net of tax expense (benefit) of \$ -, \$0.9, \$ - and \$0.9	13.9	(1.2 )	(0.8 )	11.9
Amounts reclassified from accumulated other comprehensive (loss)	-	(0.5 )	5.3	4.8
Net current period other comprehensive income (loss)	13.9	(1.7 )	4.5	16.7
Balance at June 30, 2017	\$ (57.7 )	\$ 2.1	\$ (331.5 )	\$ (387.1 )

<sup>(1)</sup> Amounts are net of tax

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	Amounts		
	Reclassified from	Accumulated Other	Affected Line Item in the Condensed Consolidated Statement of Earnings and Comprehensive Income
	(Loss) (1) Six Months Ended June 30, 2018    2017		
<b>Derivative Adjustments:</b>			
Natural gas commodity contracts	\$ 0.4	\$ (0.3 )	Cost of goods sold
Foreign exchange contracts - purchases	0.1	-	Cost of goods sold
Foreign exchange contracts - sales	0.3	(0.4 )	Net sales
Interest rate swap contracts	0.8	-	Interest expense
Total loss (income), before tax	1.6	(0.7 )	
Tax impact	(0.4 )	0.2	Income tax expense
Total loss (income), net of tax	1.2	(0.5 )	
<b>Pension and Postretirement Adjustments:</b>			
Prior service cost amortization	-	0.7	Other non-operating (income) expense, net
Amortization of net actuarial loss	7.3	7.3	Other non-operating (income) expense, net
Total expense, before tax	7.3	8.0	
Tax impact	(1.5 )	(2.7 )	Income tax expense
Total expense, net of tax	5.8	5.3	
Total reclassifications for the period	\$ 7.0	\$ 4.8	

(1) Includes activity from discontinued operations.

NOTE 17. LITIGATION AND RELATED MATTERS

ENVIRONMENTAL MATTERS

Environmental Compliance

Our manufacturing and research facilities are affected by various federal, state and local requirements relating to the discharge of materials and the protection of the environment. We make expenditures necessary for compliance with applicable environmental requirements at each of our operating facilities. These regulatory requirements continually change, therefore we cannot predict with certainty future expenditures associated with compliance with environmental requirements.

## Environmental Sites

### Summary

We are actively involved in the investigation, closure and/or remediation of existing or potential environmental contamination under the Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”) and state Superfund and similar environmental laws at several domestically owned, formerly owned and non-owned locations allegedly resulting from past industrial activity.

In a few cases, we are one of several potentially responsible parties and have agreed to jointly fund the required investigation and remediation, while preserving our defenses to the liability. We may also have rights of contribution or reimbursement from other parties or coverage under applicable insurance policies. We are currently pursuing coverage and recoveries under those policies with respect to certain of the sites, including the St. Helens, OR site, the Macon, GA site and the Elizabeth City, NC site, each of which is summarized below. These efforts include two active and independent litigation matters against legacy primary and excess policy insurance carriers for recovery of fees and costs incurred by us in connection with our investigation and remediation activities for such sites. Other than disclosed below, we are unable to predict the outcome of these matters or the timing of any recoveries, whether through settlement or otherwise. We are also unable to predict the extent to which any recoveries might cover our final share of investigation and remediation costs for these sites. Our final share of investigation and remediation costs may exceed any such recoveries, and such amounts net of insurance recoveries may be material.



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In 2017, we entered into settlement agreements totaling \$30.5 million with certain legacy insurance carriers to resolve ongoing litigation and recover fees and costs previously incurred by us in connection with certain environmental sites. All of these cash settlements have been released to us from escrow, including \$28.7 million received in the first six months of 2018. We anticipate that we may enter into additional settlement agreements in the future which may or may not be material, with other legacy insurers to obtain reimbursement or contribution for environmental site expenses.

Estimates of our future liability at the environmental sites are based on evaluations of currently available facts regarding each individual site. We consider factors such as our activities associated with the site, existing technology, presently enacted laws and regulations and prior company experience in remediating contaminated sites. Although current law imposes joint and several liability on all parties at Superfund sites, our contribution to the remediation of these sites is expected to be limited by the number of other companies potentially liable for site remediation. As a result, our estimated liability reflects only our expected share. In determining the probability of contribution, we consider the solvency of other parties, the site activities of other parties, whether liability is being disputed, the terms of any existing agreements and experience with similar matters, and the effect of our October 2006 Chapter 11 reorganization upon the validity of the claim, if any.

Specific Material Events

St Helens, OR

In August 2010, we entered into a Consent Order (the "Consent Order") with the Oregon Department of Environmental Quality ("ODEQ"), along with Kaiser Gypsum Company, Inc. ("Kaiser"), and Owens Corning Sales LLC ("OC"), with respect to our St. Helens, OR facility, which was previously owned by Kaiser and then OC. The Consent Order required that we and Kaiser complete a remedial investigation and feasibility study ("RI/FS") on the portion of the site owned by us ("Owned Property"), which is comprised of Upland and Lowland areas. The Consent Order further required us, Kaiser and OC to conduct an RI/FS in the In-Water area of the adjacent Scappoose Bay. Costs and responsibilities for investigation, including the current RI/FS, for the Owned Property have been shared with Kaiser pursuant to a cost sharing agreement with Kaiser. Costs and responsibilities for the investigation with respect to the in-water areas that we do not own have been shared with Kaiser and OC pursuant to a cost sharing agreement with Kaiser and OC.

On September 14, 2016, the parties submitted a Feasibility Study to the ODEQ proposing remedial action options for the Upland area. We have participated in the investigation phase for the Lowland area of the Owned Property and the Scappoose Bay and worked with the ODEQ, Kaiser and OC to finalize the reports to move to the Feasibility Study phase.

On September 30, 2016, Kaiser filed a voluntary petition for relief under Chapter 11 of the Bankruptcy Code in the U.S. Bankruptcy Court for the Western District of North Carolina (Case No. 16-31602) (the "Bankruptcy Court"). AWI, OC and the ODEQ have all been included on the master list of potential creditors filed with the Bankruptcy Court for notice purposes. By order dated October 14, 2016, the Bankruptcy Court formed a statutory committee of unsecured creditors, to which we were appointed to serve, along with OC and The Boeing Company. The Committee is charged with, among other things, maximizing recovery of all unsecured creditor claims, including

claims of Kaiser and ODEQ. Noticed parties submitted claims to the Bankruptcy Court on September 13, 2017. The Chapter 11 case impacts Kaiser's ongoing participation in the RI/FS process, as well as the ODEQ consent order and cost sharing agreements.

In November 2017, we participated in voluntary mediation with ODEQ, OC and Kaiser to negotiate a resolution that would discharge Potentially Responsible Parties ("PRPs") liability for the site. As a result of the mediation, on February 1, 2018, ODEQ issued a Public Notice and a proposed Consent Judgment recommending that, in exchange for a release from ODEQ for all contamination claims against AWI, we would pay \$8.6 million to the State of Oregon and perform a previously scoped remedial action for the Upland area of the site. During the fourth quarter of 2017, we increased our reserve for environmental liabilities by \$8.6 million as a result of this pending settlement with the State of Oregon. The public comment period has closed and ODEQ published its response to the comments received. On April 5, 2018, ODEQ issued Public Notice of the Remedial Action for the Upland Area and has since responded to public comments. The Consent Judgment remains subject to entry and approval by the Columbia County Circuit Court, which we expect to occur in 2018. On June 26, 2018 ODEQ published its Record of Decision confirming the selected remedial action required for the Upland Area. AWI will be responsible for performing the remedial action upon ODEQ's filing of the Consent Judgment with the court, pending appeal. Kaiser has asserted that the Consent Judgment violates the stay imposed by its bankruptcy case. We believe Kaiser's assertions are without merit. A hearing on the applicability of the stay to the Consent Judgment is scheduled with the Bankruptcy Court on July 31, 2018.

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Macon, GA

The U.S. Environmental Protection Agency (“EPA”) has listed two landfills located on a portion of our building products facility in Macon, GA, along with the former Macon Naval Ordnance Plant landfill adjacent to our property, portions of Rocky Creek, and certain tributaries leading to Rocky Creek (collectively, the “Macon Site”) as a Superfund site on the National Priorities List due to the presence of contaminants, most notably polychlorinated biphenyls (“PCBs”).

In September 2010, we entered into an Administrative Order on Consent for a Removal Action with the EPA to investigate PCB contamination in one of the landfills on our property, the Wastewater Treatment Plant Landfill (the “WWTP Landfill,” also known as “Operable Unit 1”). After completing an investigation of the WWTP Landfill and submitting our final Engineering Evaluation/Cost Analysis, EPA issued an Action Memorandum in July 2013 selecting our recommended remedy for the Removal Action. The Operable Unit 1 response action for the WWTP Landfill is complete and the final report was submitted to the EPA on October 11, 2016. The EPA approved the final report on November 28, 2016, and a Post-Removal Control Plan (the “Plan”) was submitted to the EPA on March 28, 2017. That Plan will monitor the effectiveness of the WWTP Landfill response action and our estimate of future liabilities includes these tasks.

It is probable that we will incur field investigation, engineering and oversight costs associated with a RI/FS with respect to the remainder of the Superfund site, which includes the other landfill on our property, as well as areas on and adjacent to AWI’s property and Rocky Creek (the “Remaining Site,” also known as “Operable Unit 2”). On September 25, 2015, AWI and other PRPs received a Special Notice Letter from the EPA under CERCLA inviting AWI and the PRPs to enter into the negotiation of a Settlement Agreement (formerly known as an Administrative Order on Consent) to conduct an RI/FS of Operable Unit 2. We, along with the other PRPs, submitted a good faith offer to the EPA in response to the Special Notice Letter to conduct RI/FS and are currently negotiating a final agreement with EPA. We have not yet commenced an investigation of this portion of the site. We anticipate that the EPA will require significant investigative work for Operable Unit 2 and that we may ultimately incur costs in remediating any contamination discovered during the RI/FS. The current estimate of future liability at this site includes only our estimated share of the costs of the investigative work that, at this time, we anticipate the EPA will require the PRPs to perform. We are unable to reasonably estimate AWI’s final share of the costs or the total costs associated with the investigation work or any resulting remediation therefrom, although such amounts may be material.

Elizabeth City, NC

This site is a former cabinet manufacturing facility that was operated by Triangle Pacific Corporation, now known as Armstrong Wood Products, Inc. (“Triangle Pacific”), from 1977 until 1996. The site was formerly owned by the U.S. Navy (“Navy”) and Westinghouse, now CBS Corporation (“CBS”). We assumed ownership of the site when we acquired the stock of Triangle Pacific in 1998. Prior to our acquisition, the NC Department of Environment and Natural Resources listed the site as a hazardous waste site. In 1997, Triangle Pacific entered into a cost sharing agreement with Westinghouse whereby the parties agreed to share equally in costs associated with investigation and potential remediation. In 2000, Triangle Pacific and CBS entered into an Administrative Order on Consent to conduct an RI/FS with the EPA for the site. In 2007, we and CBS entered into an agreement with the Navy whereby the Navy agreed to pay one third of defined past and future investigative costs up to a certain amount, which has now been exhausted.

The EPA approved the RI/FS work plan in August 2011. In January 2014, we submitted the draft Remedial Investigation and Risk Assessment reports and conducted supplemental investigative work based upon agency comments to those reports. The EPA published an Interim Action Proposed Plan for the site in April 2018 seeking public comment through June 7, 2018. EPA is now evaluating comments, including ours, as we work toward a Record Of Decision in 2018. If remediation is required, the related costs may be material, although we expect these costs to be shared with CBS and the Navy.

#### Summary of Financial Position

Liabilities of \$13.1 million as of June 30, 2018 and \$13.5 million as of December 31, 2017 were recorded for environmental liabilities that we consider probable and for which a reasonable estimate of the probable liability could be made. During the three and six months ended June 30, 2018, we did not record any additional reserves for potential environmental liabilities. During the three and six months ended June 30, 2017, we recorded reserves for potential environmental liabilities of \$0.7 million and \$1.3 million, respectively. Where existing data is sufficient to estimate the liability, that estimate has been used; where only a range of probable liabilities is available and no amount within that range is more likely than any other, the lower end of the range has been used. As assessments and remediation activities progress at each site, these liabilities are reviewed to reflect new information as it becomes available, and adjusted to reflect amounts actually incurred and paid. These liabilities are undiscounted.

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The estimated liabilities above do not take into account any claims for recoveries from insurance or third parties. It is our policy to record insurance recoveries when probable. For insurance recoveries that are reimbursements of prior environmental expenditures, the income statement impact is recorded within cost of goods sold, SG&A expenses and/or discontinued operations, which are the same income statement categories where environmental expenditures were historically recorded. Insurance recoveries in excess of historical environmental spending, are recorded on the balance sheet as a part of other long-term liabilities and released as future environmental spending occurs or the liability is settled.

The estimated liabilities above do not take into account any claims for recoveries from insurance or third parties. It is our policy to record recoveries as assets in the Consolidated Balance Sheets.

Actual costs to be incurred at identified sites may vary from our estimates. Based on our knowledge of the identified sites, it is not possible to reasonably estimate future costs in excess of amounts already recognized.

#### OTHER CLAIMS

On September 8, 2017, Roxul USA, Inc. (d/b/a Rockfon) filed litigation against us in the United States District Court for the District of Delaware alleging anticompetitive conduct seeking remedial measures and unspecified damages. Roxul USA, Inc. is a significant ceilings systems competitor with global headquarters in Europe and expanding operations in the Americas. We believe the allegations are without merit and intend to vigorously defend the matter. During the first quarter of 2018, the Court denied, in part, and granted, in part, our motion to dismiss, dismissing two of the claims brought by Roxul. The litigation is currently ongoing.

We are involved in other various lawsuits, claims, investigations and other legal matters from time to time that arise in the ordinary course of business, including matters involving our products, intellectual property, relationships with suppliers, relationships with distributors, relationships with competitors, employees and other matters. From time to time, for example, we may be a party to litigation matters that involve product liability, tort liability and other claims under various allegations, including illness due to exposure to certain chemicals used in the workplace; or medical conditions arising from exposure to product ingredients or the presence of trace contaminants. Such allegations may involve multiple defendants and relate to legacy products that we and other defendants purportedly manufactured or sold. We believe that any current claims are without merit and intend to defend them vigorously. For these matters, we also may have rights of contribution or reimbursement from other parties or coverage under applicable insurance policies. When applicable and appropriate, we will pursue coverage and recoveries under those policies, but are unable to predict the outcome of those demands. While complete assurance cannot be given to the outcome of these proceedings, we do not believe that any current claims, individually or in the aggregate, will have a material adverse effect on our financial condition, liquidity or results of operations.

#### NOTE 18. EARNINGS PER SHARE

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Earnings per share (“EPS”) components may not add due to rounding.

The following table is a reconciliation of earnings to earnings attributable to common shares used in our basic and diluted EPS calculations for the three and six months ended June 30, 2018 and 2017:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2018	2017	2018	2017
Earnings from continuing operations	\$47.6	\$43.7	\$88.8	\$79.2
Earnings allocated to participating non-vested share awards	(0.2)	(0.1)	(0.3)	(0.3)
Earnings from continuing operations attributable to common shares	\$47.4	\$43.6	\$88.5	\$78.9

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(dollar amounts in millions, except share data)

The following table is a reconciliation of basic shares outstanding to diluted shares outstanding for the three and six months ended June 30, 2018 and 2017 (shares in millions):

	Three Months Ended June 30, 2018		Six Months Ended June 30, 2017	
Basic shares outstanding	51.9	53.3	52.5	53.7
Dilutive effect of common stock equivalents	0.7	0.4	0.7	0.4
Diluted shares outstanding	52.6	53.7	53.2	54.1

There were no anti-dilutive stock options excluded from the computation of diluted EPS for the three and six months ended June 30, 2018. Anti-dilutive stock options excluded from the computation of diluted EPS for the three and six months ended June 30, 2017 were 445,921 and 516,381, respectively.

Management's Discussion and Analysis of Financial Condition and Results of Operations

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

This discussion should be read in conjunction with the financial statements, the accompanying notes, the cautionary note regarding forward-looking statements and risk factors included in this report and our Annual Report on Form 10-K for the year ended December 31, 2017.

OVERVIEW

We are a leading global producer of ceiling systems for use primarily in the construction and renovation of commercial, institutional and residential buildings. We design, manufacture and sell ceiling systems (primarily mineral fiber, fiberglass wool and metal) throughout the Americas.

In May 2018, we acquired the business and assets of Plasterform, Inc. ("Plasterform"), based in Mississauga, Ontario, Canada. Plasterform is a manufacturer of architectural cast ceilings, walls, facades, columns and moldings with one manufacturing facility. Plasterform's operations, and its assets and liabilities, are included as a component of our Architectural Specialties segment.

On November 17, 2017, we entered into a Share Purchase Agreement (the "Purchase Agreement") with Knauf International GmbH ("Knauf"), to sell certain subsidiaries comprising our business in Europe, the Middle East and Africa (including Russia) ("EMEA") and the Pacific Rim, including the corresponding businesses and operations conducted by Worthington Armstrong Venture ("WAVE"), our joint venture with Worthington Industries, Inc., in which AWI holds a 50% interest. The total consideration to be paid by Knauf in connection with the sale is \$330 million in cash, inclusive of amounts due to WAVE, subject to certain adjustments as provided in the Purchase Agreement, including adjustments based on the economic impact of any required regulatory remedies and a working capital adjustment. The transaction has been notified or is set to be notified for merger control clearance in the European Union ("EU"), Bosnia and Herzegovina, Macedonia, Montenegro, Russia and Serbia. It has so far been cleared unconditionally in Montenegro (February 2018), Serbia (February 2018), Russia (March 2018) and Macedonia (July 2018). Clearance in the remaining jurisdictions (EU and Bosnia and Herzegovina) is currently expected during 2018.

On July 18, 2018, we entered into an amendment to the Purchase Agreement, pursuant to which Knauf agreed to irrevocably and unconditionally pay us (i) \$250 million on August 1, 2018, and (ii) \$80 million on September 15, 2018, if, prior to such date (A) any competition condition has not been satisfied, or (B) the closing has not yet occurred. The amendment also provided for the reduction (from a maximum of \$35 million to a maximum of \$20 million) of potential adjustments to the purchase price consideration for the transaction based on the impact of remedies required to satisfy competition conditions. We continue to work closely with Knauf towards closing and now expect the transaction to close prior to December 31, 2018. The EMEA and Pacific Rim segment historical financial results have been reflected in AWI's Consolidated Financial Statements as discontinued operations for all periods presented.

In January 2017, we acquired the business and assets of Tectum, Inc. ("Tectum") based in Newark, Ohio. Tectum is a manufacturer of acoustical ceiling, wall and structural solutions for commercial building applications with two manufacturing facilities. Tectum's operations and its assets and liabilities are included as a component of our Architectural Specialties segment.



See Note 4 to the Consolidated Financial Statements for additional information related to our acquisition and discontinued operations.

As of June 30, 2018, we had 17 manufacturing plants in eight countries, including eight plants located throughout the U.S, which included our St. Helens, Oregon mineral fiber manufacturing facility, which closed in the second quarter of 2018. During the second quarter of 2018, as part of our acquisition of Plasterform, we acquired one additional plant located in Canada. We have one idle mineral fiber plant in China, reported as a component of our Unallocated Corporate segment as it will be retained by AWI after the sale of the Pacific Rim business. Upon closure of the sale of our EMEA and Pacific Rim businesses, we will have eleven plants, including eight plants in the U.S, two plants in Canada and the idle plant in China.

WAVE operates 9 additional plants in five countries to produce suspension system (grid) products, which we use and sell in our ceiling systems. Upon closure of the sale of its corresponding EMEA and Pacific Rim businesses, WAVE will operate five plants in the U.S.

#### Reportable Segments

In connection with the anticipated sale of our EMEA and Pacific Rim businesses, our EMEA and Pacific Rim segments have been excluded from our results of continuing operations. As a result, our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate.

Management's Discussion and Analysis of Financial Condition and Results of Operations

Mineral Fiber – produces suspended mineral fiber and soft fiber ceiling systems for use in commercial and residential settings. Products offer various performance attributes such as acoustical control, rated fire protection and aesthetic appeal. Commercial ceiling products are sold to resale distributors and to ceiling systems contractors. Residential ceiling products are sold primarily to wholesalers and retailers (including large home centers). The Mineral Fiber segment also includes the results of WAVE, which manufactures suspension system (grid) products and ceiling component products that are invoiced by both us and WAVE. Segment results relating to WAVE consist primarily of equity earnings and reflect our 50% equity interest in the joint venture. Ceiling component products consist of ceiling perimeters and trim, in addition to grid products that support drywall ceiling systems. To a lesser extent, however, in some markets, WAVE sells its suspension systems products to us for resale to customers. Mineral Fiber segment results reflect those sales transactions.

Architectural Specialties – produces and sources ceilings and walls for use in commercial settings. Products are available in numerous materials, such as metal and wood, in addition to various colors, shapes and designs. Products offer various performance attributes such as acoustical control, rated fire protection and aesthetic appeal. We sell standard and customized products, with the majority of Architectural Specialties revenues derived from sourced products. Architectural Specialties products are sold to resale distributors and ceiling systems contractors. The majority of revenues are project driven, which can lead to more volatile sales patterns due to project scheduling.

Unallocated Corporate – includes assets, liabilities, income and expenses that have not been allocated to our other business segments and consist of: cash and cash equivalents, the net funded status of our U.S. Retirement Income Plan (“RIP”), the estimated fair value of interest rate swap contracts, outstanding borrowings under our senior credit facilities and income tax balances. Our Unallocated Corporate segment also includes all assets, liabilities, income and expenses formerly reported in our EMEA and Pacific Rim segments that are not included in the pending sale to Knauf.

#### Factors Affecting Revenues

For information on our segments' 2018 net sales by geography, see Note 2 to the Consolidated Financial Statements included in this Form 10-Q.

Markets. We compete in building material markets in the Americas. We closely monitor publicly available macroeconomic trends that provide insight into commercial and residential market activity, including GDP, office vacancy rates, the Architecture Billings Index, new commercial construction starts, state and local government spending, corporate profits and retail sales.

In addition, we noted several factors and trends within our markets that directly affected our business performance during the second quarter of 2018 compared to the second quarter of 2017.

In our Mineral Fiber segment, we experienced higher volume activity due to growth from new construction partially offset by lower renovation activity.

In our Architectural Specialties segment, we experienced strong growth due to increased market penetration and new commercial construction activity.

Average Unit Value. We periodically modify sales prices of our products due to changes in costs for raw materials and energy, market conditions and the competitive environment. In certain cases, realized price increases are less than the announced price increases because of project pricing, competitive reactions and changing market conditions. Additionally, we offer a wide assortment of products that are differentiated by style, design and performance attributes. Pricing and margins for products within the assortment vary. In addition, changes in the relative quantity of products purchased at different price points can impact year-to-year comparisons of net sales and operating income. We focus on improving sales dollars per unit sold, or average unit value (“AUV”), as a measure that accounts for the varying assortment of products and geographic mix impacting our revenues. We estimate that favorable AUV increased our Mineral Fiber and total consolidated net sales for the three and six months ended June 30, 2018 by approximately \$6 million and \$17 million, respectively compared to the same periods in 2017. Our Architectural Specialties segment generates revenues that are generally earned based on individual contracts that include a mix of products, manufactured by us and sourced, that vary by project. As such, we do not track AUV performance for this segment, but rather attribute all changes in net sales to volume.

In the second quarter of 2018, we implemented price increases on Mineral Fiber ceiling tile, grid products, and certain Architectural Specialties products. During the second quarter, we also announced additional price increases on both ceiling tile and grid products

## Management's Discussion and Analysis of Financial Condition and Results of Operations

effective in the third quarter. We may implement additional pricing actions based on numerous factors, most notably upon future movements in raw material prices and sourced product costs.

Seasonality. Generally, our sales tend to be stronger in the second and the third quarters of our fiscal year due to more favorable weather conditions, customer business cycles and the timing of renovation and new construction.

## Factors Affecting Operating Costs

Operating Expenses. Our operating expenses are comprised of direct production costs (principally raw materials, labor and energy), manufacturing overhead costs, freight, costs to purchase sourced products and selling, general, and administrative ("SG&A") expenses.

Our largest individual raw material expenditures are for fiberglass, perlite, starch, waste paper, steel, pigments and clays. We manufacture most of the production needs for mineral wool at one of our manufacturing facilities. Natural gas and packaging materials are also significant input costs. Fluctuations in the prices of these inputs are generally beyond our control and have a direct impact on our financial results. In the second quarter and six months of 2018, costs for raw materials, sourced products and energy negatively impacted operating income by \$2 million and \$3 million compared to the same periods of 2017.

## Employees

As of June 30, 2018 and December 31, 2017 we had approximately 3,900 full-time and part-time employees. Excluding our EMEA and Pacific Rim businesses, we had approximately 2,200 employees as of June 30, 2018 and December 31, 2017.

## RESULTS OF CONTINUING OPERATIONS

Unless otherwise indicated, net sales in these results of continuing operations are reported based upon the AWI location where the sale was made. Please refer to Notes 2 and 3 to the Condensed Consolidated Financial Statements for a reconciliation of operating income to consolidated earnings from continuing operations before income taxes and additional financial information related to discontinued operations.

## CONSOLIDATED RESULTS FROM CONTINUING OPERATIONS

(dollar amounts in millions)

	2018	2017	Change is Favorable/ (Unfavorable)	
Three Months Ended June 30,				
Total consolidated net sales	\$248.6	\$225.6	10.2	%
Operating income	\$66.0	\$69.2	(4.6)	)%
Six Months Ended June 30,				
Total consolidated net sales	\$475.9	\$445.4	6.8	%
Operating income	\$115.6	\$126.5	(8.6)	)%

Consolidated net sales for the second quarter of 2018 increased 10.2% due to higher volumes of \$16 million and favorable AUV of \$6 million. Mineral Fiber sales increased \$17 million and Architectural Specialties net sales increased by \$6 million. Consolidated net sales for the first six months of 2018 increased 6.8% due to favorable AUV of \$17 million and higher volumes of \$13 million. Mineral Fiber sales increased \$18 million and Architectural Specialties net sales increased by \$13 million.

Cost of goods sold in the second quarter of 2018 was 66.7% of net sales, compared to 62.2% for the same period in 2017. Cost of goods sold in the first six months of 2018 was 67.7% of net sales compared to 63.3% for the same period in 2017. The increases in cost of goods sold as a percent of net sales for the second quarter and first six months of 2018 is primarily due to \$7 million and \$15 million, respectively, of accelerated depreciation and maintenance costs related to management's decision to permanently close the St. Helens, Oregon plant, in addition to increased raw material and freight costs.

SG&A expenses in the second quarter of 2018 were \$40.9 million, or 16.5% of net sales, compared to \$35.7 million, or 15.8% of net sales, for the same period in 2017. SG&A for the first six months of 2018 were \$78.4 million, or 16.5% of net sales, compared to \$75.0 million, or 16.8% of net sales, for the same period in 2017. The increase in SG&A expenses for the three months ended June 30, 2018 was primarily due to higher selling expenses as a result of increases in net sales, higher legal and environmental fees and

Management's Discussion and Analysis of Financial Condition and Results of Operations

severance related charges, partially offset by a \$1.5 million reduction due to an increase in certain selling, promotional and administrative processing service reimbursements from WAVE. SG&A expenses for the first six months ended June 30, 2018 were impacted by higher selling expenses and a \$3.0 million increase in reimbursements from WAVE.

Equity earnings from our WAVE joint venture were \$24.2 million for the second quarter of 2018, compared to \$19.7 million in the second quarter of 2017. Equity earnings from our WAVE joint venture were \$40.5 million for the first six months of 2018, compared to \$38.0 million in the first six months of 2017. Earnings increased for both periods as sales increases, primarily related to increased AUV, were partially offset by higher input costs, particularly steel. Increases in WAVE earnings were also partially offset by increases in selling and administrative processing charges from AWI and Worthington Industries, Inc. See Note 7 to the Consolidated Financial Statements for further information.

Interest expense was \$9.8 million for the second quarter of 2018 compared to \$8.9 million in the second quarter of 2017. Interest expense was \$19.0 million for the first six months of 2018 compared to \$17.8 million in the first six months of 2017. The increase was due to higher floating interest rates and expiration of a \$250 million interest rate swap on March 31, 2018.

Other non-operating income, net was \$9.1 million for the second quarter of 2018 compared to \$8.3 million in the second quarter of 2017. Other non-operating income, net was \$18.1 million for the first six months of 2018 compared to \$17.2 million in the first six months of 2017. The increases were primarily related to lower non-service cost components of pension and postretirement net periodic benefit costs, which beginning in January 2018, are recorded as a component of non-operating income in accordance with our adoption of ASU 2017-07. See Note 12 to the Condensed Consolidated Financial Statements for further information.

Income tax expense was \$17.7 million for the second quarter of 2018 compared to \$24.9 million in the second quarter of 2017. The effective tax rate for the second quarter of 2018 was 27.1% as compared to a rate of 36.3% for the same period of 2017. The effective tax rate was lower due to changes resulting from the 2017 Tax Act, primarily the reduction in the federal statutory tax rate from 35% to 21%. Income tax expense was \$25.9 million for the first six months of 2018 compared to \$46.7 million in the first six months of 2017. The effective tax rate for the first six months of 2018 was 22.6% as compared to a rate of 37.1% for the same period of 2017. The effective tax rate for the second quarter of 2018 was lower compared to the same quarter in 2017 due to the changes resulting from the 2017 Tax Act, primarily the reduction in the federal statutory tax rate from 35% to 21%, as well as an increase in excess tax benefits from stock-based compensation.

Total Other Comprehensive Loss ("OCL") was \$15.7 million in the second quarter of 2018 compared to Total Other Comprehensive Income ("OCI") of \$3.0 million for the second quarter of 2017. Total OCL was \$4.2 million in the first six months of 2018 compared to OCI of \$16.7 million for the first six months of 2017. Foreign currency translation adjustments represent the change in the U.S. dollar value of assets and liabilities denominated in foreign currencies. Amounts in the second quarter of 2018 and first six months of 2018 were driven primarily by changes in the exchange rates of the Russian ruble and the British pound. Amounts in the second quarter of 2017 were driven primarily by changes in the exchange rates of the British pound, the Euro and the Australian dollar. Amounts in the first six months of 2017 were driven primarily by changes in the exchange rates of the British pound and the Russian ruble. Derivative gain/loss represents the mark-to-market value adjustments of our derivative assets and liabilities and the recognition of gains and losses previously deferred in OCI. Pension and postretirement adjustments represent the amortization of actuarial gains and losses related to our defined benefit pension and postretirement plans.

REPORTABLE SEGMENT RESULTS

## Mineral Fiber

(dollar amounts in millions)

	2018	2017	Change is Favorable/ (Unfavorable)	
Three Months Ended June 30,				
Total segment net sales	\$206.7	\$190.1	8.7	%
Operating income	\$59.5	\$64.1	(7.2)	)%
Six Months Ended June 30,				
Total segment net sales	\$397.4	\$379.9	4.6	%
Operating income	\$103.2	\$119.6	(13.7)	)%

Net sales increased in the second quarter of 2018 due to higher volumes of \$10 million and favorable AUV of \$6 million. The increase in volumes was partially driven by one additional shipping day in the second quarter of 2018 as compared to the same period in 2017. The increase in net sales for the first six months of 2018 was due to favorable AUV of \$17 million. Favorable AUV for the

## Management's Discussion and Analysis of Financial Condition and Results of Operations

three and six months ended June 30, 2018 as compared to 2017 was primarily due to improved mix from the sale of higher end ceiling tile products.

Operating income decreased in the second quarter of 2018 due to higher depreciation and closure costs of \$7 million attributable to our St Helens manufacturing plant during the second quarter of 2018, an increase in manufacturing and input costs of \$6 million due to higher freight and raw material spending and an increase in SG&A expenses of \$5 million including legal and environmental fees of \$3 million and severance related charges of \$2 million. Partially offsetting these decreases was the favorable impact of higher volumes and AUV, in addition to a \$5 million increase in equity earnings from WAVE.

Operating income decreased in the first six months of 2018 due to higher depreciation and closure costs of \$15 million attributable to our St Helens manufacturing plant, a \$6 million increase in manufacturing and input costs, and a \$4 million increase in SG&A expenses, partially offset by a \$3 million increase in equity earnings from WAVE and the favorable impact of higher AUV.

## Architectural Specialties

(dollar amounts in millions)

	2018	2017	Change is	
			Favorable	
Three Months Ended June 30,				
Total segment net sales	\$41.9	\$35.5	18.0	%
Operating income	\$8.6	\$8.1	6.2	%
Six Months Ended June 30,				
Total segment net sales	\$78.5	\$65.5	19.8	%
Operating income	\$16.9	\$12.9	31.0	%

Net sales for the second quarter and first six months of 2018 increased due to higher volume from increased market penetration and new construction activity. Net sales for the first six months of 2018 also benefitted from the acquisition of Tectum, which was acquired in January 2017.

Operating income for the second quarter of 2018 increased due to the positive impact of higher sales volume, partially offset by an increase in manufacturing costs and SG&A expenses. Operating income for the first six months of 2018 increased due to positive impact of higher sales volume, partially offset by an increase in manufacturing costs.

## Unallocated Corporate

Unallocated corporate expenses were \$2.1 million for the second quarter of 2018 compared to expenses of \$3.0 million in the second quarter of 2017. Unallocated corporate expenses were \$4.5 million for the first six months of 2018 compared to expenses of \$6.0 million in the first six months of 2017. The decreases in expense were primarily



due to lower service cost associated with our RIP.

## FINANCIAL CONDITION AND LIQUIDITY

### Cash Flow

Operating activities in the first six months of 2018 provided \$89.0 million of cash, compared to \$42.4 million provided in the first six months of 2017. The increase was due to higher cash earnings and changes in working capital due to the receipt of environmental insurance recoveries in the first quarter of 2018.

Net cash used for investing activities was \$1.3 million for the first six months of 2018, compared to \$40.7 million for the first six months of 2017. The change in investing activities cash flows was primarily due to the \$31.4 million acquisition of Tectum in 2017 as compared to the \$11.6 million acquisition of Plasterform during the second quarter of 2018. Also contributing to the change in investing activities was a decrease in purchases of property, plant and equipment in the current year.

Net cash used for financing activities was \$105.8 million for the first six months of 2018, compared to \$64.6 million used during the first six months of 2017. The unfavorable change in use of cash was primarily due to the higher repurchases of outstanding common stock and a decrease in net borrowings under our credit facility, partially offset by proceeds from exercised employee stock awards.

## Management's Discussion and Analysis of Financial Condition and Results of Operations

## Liquidity

Our liquidity needs for operations vary throughout the year. We retain lines of credit to facilitate our seasonal cash flow needs, since cash flow is generally lower during the first and fourth quarters of our fiscal year. We have a \$1,050.0 million credit facility which is comprised of a \$200.0 million revolving credit facility (with a \$150.0 million sublimit for letters of credit), a \$600.0 million Term Loan A and a \$250.0 million Term Loan B. The \$1,050.0 million senior credit facility is secured by U.S. personal property, the capital stock of material U.S. subsidiaries and a pledge of 65% of the stock of our material first tier foreign subsidiaries. The unpaid balances of Term Loan A, the Revolving Credit Facility and Term Loan B may be prepaid without penalty at the maturity of their respective interest reset periods. Any amounts prepaid on the Term Loan A or Term Loan B may not be re-borrowed. As of June 30, 2018, total borrowings outstanding under our senior credit facility were \$562.5 million under Term Loan A and \$244.4 million under Term Loan B. There were no borrowings outstanding under the revolving credit facility.

Under our senior credit facility, we are subject to year-end leverage tests that may trigger mandatory prepayments. If our ratio of consolidated funded indebtedness, minus AWI and domestic subsidiary unrestricted cash and cash equivalents up to \$100 million, to consolidated earnings before interest, taxes, depreciation and amortization ("EBITDA") ("Consolidated Net Leverage Ratio") is greater than 3.5 to 1.0, the prepayment amount would be based on a computation of 50% of Consolidated Excess Cash Flow, as defined by the credit agreement. These annual payments would be made in the first quarter of the following year. No payment was made in the first quarter of 2018.

The senior credit facility includes two financial covenants that require the ratio of consolidated EBITDA to consolidated cash interest expense minus cash consolidated interest income to be greater than or equal to 3.0 to 1.0 and requires the Consolidated Net Leverage Ratio to be less than or equal to 3.75 to 1.0. As of June 30, 2018, we were in compliance with all covenants of the senior credit facility.

The Term Loan A and Term Loan B were both fully drawn and are currently priced on a variable interest rate basis. The following table summarizes our interest rate swaps (dollar amounts in millions):

Notional			
Trade Date	Amount	Coverage Period	Risk Coverage
November 13, 2016	\$ 200.0	November 2016 to March 2021	Term Loan A
April 1, 2016	\$ 100.0	April 2016 to March 2023	Term Loan B

Under the terms of our Term Loan A swap, we receive 3-month LIBOR and pay a fixed rate over the hedged period, in addition to a basis rate swap to convert the floating rate risk under our Term Loan A Swap from 3-month LIBOR to 1-month LIBOR. As a result, we receive 1-month LIBOR and pay a fixed rate over the hedged period.

Under the terms of our Term Loan B swap, we receive the greater of 3-month LIBOR or a 0.75% LIBOR Floor and pay a fixed rate over the hedged period.

These swaps are designated as cash flow hedges against changes in LIBOR for a portion of our variable rate debt.

As of June 30, 2018 our outstanding long-term debt also included a \$35.0 million variable rate, tax-exempt industrial development bond that financed the construction of a plant in prior years. This bond has a scheduled final maturity of 2041 and is remarketed by an agent on a regular basis at a market-clearing interest rate. Any portion of the bond that is not successfully remarketed by the agent is required to be repurchased. This bond is backed by letters of credit, which will be drawn if a portion of the bond is not successfully remarketed. We have not had to repurchase the bond.

As of June 30, 2018, we had \$129.0 million of cash and cash equivalents, \$86.4 million in the U.S and \$42.6 million in various foreign jurisdictions. Prior to the completion of the sale of our EMEA and Pacific Rim businesses, it is our intention to repatriate a significant majority of the cash held in various foreign jurisdictions; however, our Purchase Agreement with Knauf allows AWI to transfer any cash balances held in our EMEA businesses to Knauf up to \$10.0 million.

We have a \$40.0 million Accounts Receivable Securitization Facility that matures in March 2019. Under our Accounts Receivable Securitization Facility we sell accounts receivables to Armstrong Receivables Company, LLC (“ARC”), a Delaware entity that is consolidated in these financial statements. ARC is a 100% wholly owned single member LLC special purpose entity created specifically for this transaction; therefore, any receivables sold to ARC are not available to the general creditors of AWI. ARC then assigns an undivided interest in the purchased accounts receivables to the funding entity. This undivided interest acts as collateral for drawings on the facility. Any borrowings under this facility are obligations of ARC and not AWI. ARC contracts with and pays a servicing fee to AWI to manage, collect and service the purchased accounts receivables. All new receivables under the program are

## Management's Discussion and Analysis of Financial Condition and Results of Operations

continuously purchased by ARC with the proceeds from collections of receivables previously purchased. As of June 30, 2018 we had no borrowings under this facility. We also have a \$25.0 million letter of credit facility, also known as our bi-lateral facility.

We utilize lines of credit and other commercial commitments in order to ensure that adequate funds are available to meet operating requirements. Letters of credit are currently arranged through our revolving credit facility, our bi-lateral facility and our securitization facility. Letters of credit may be issued to third party suppliers, insurance and financial institutions and typically can only be drawn upon in the event of AWI's failure to pay its obligations to the beneficiary. The following table presents details related to our letters of credit (dollar amounts in millions):

Financing Arrangements	As of June 30, 2018		
	Limit	Used	Available
Accounts receivable securitization facility	\$40.0	\$36.2	\$ 3.8
Bi-lateral facility	25.0	13.4	11.6
Revolving credit facility	150.0	-	150.0
<b>Total</b>	<b>\$215.0</b>	<b>\$49.6</b>	<b>\$ 165.4</b>

We believe that cash on hand and cash generated from operations, together with lines of credit, availability under our securitization facility and the availability under our revolving credit facility, will be adequate to address our foreseeable liquidity needs based on current expectations of our business operations, capital expenditures and scheduled payments of debt obligations.

#### CONTRACTUAL OBLIGATIONS

Information related to our contractual obligations at December 31, 2017 can be found in our 2017 Annual Report, Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

### ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

For information regarding our exposure to certain market risks, see Item 7A, “Quantitative and Qualitative Disclosures About Market Risk,” in our 2017 Annual Report on Form 10-K. There have been no material changes in our use of financial instruments to hedge against market risks or market risk exposures since December 31, 2017.

### ITEM 4. CONTROLS AND PROCEDURES

- (a) Evaluation of Disclosure Controls and Procedures. The Securities and Exchange Commission defines the term “disclosure controls and procedures” to mean a company’s controls and other procedures that are designed to ensure that information required to be disclosed in the reports that it files or submits under the Securities Exchange Act of 1934, as amended (the “Act”), is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission’s rules and forms. Based on the evaluation of the effectiveness of our disclosure controls and procedures by our management, with the participation of our principal executive officer and our chief financial officer, as of June 30, 2018, our principal executive officer and our chief financial officer have concluded that our disclosure controls and procedures were effective to ensure that information required to be disclosed in the reports that we file or submit under the Act is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission’s rules and forms.
- (b) Changes in Internal Control Over Financial Reporting. There have been no material changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Act) during the fiscal quarter ended June 30, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. We implemented internal controls to ensure we adequately evaluated our contracts and properly assessed the impact of the new accounting standard related to revenue recognition on our financial statements to facilitate adoption of the standard on January 1, 2018. There were no significant changes to our internal control over financial reporting due to the adoption of the new standard.

## PART II – OTHER INFORMATION

## ITEM 1. LEGAL PROCEEDINGS

See Note 17 to the Condensed Consolidated Financial Statements, which is incorporated herein by reference.

## ITEM 1A. RISK FACTORS

There have been no other material changes to the risk factors disclosed in our 2017 Annual Report on Form 10-K.

## ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

## (c) Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased <sup>1</sup>	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Approximate Value of Shares that may yet be Purchased under the Plans or Programs
April 1 – 30, 2018	459,525	\$ 56.17	448,641	\$ 211,399,819
May 1 – 31, 2018	193,683	\$ 57.12	171,928	\$ 201,579,757
June 1 – 30, 2018	6,945	\$ 62.57	-	\$ 201,579,757
Total	660,153		620,569	

<sup>1</sup>Includes shares reacquired through the withholding of shares to pay employee tax obligations upon the exercise of options or vesting of restricted shares previously granted under our long term incentive plans.

On July 29, 2016, we announced that our Board of Directors had approved a share repurchase program pursuant to which we were authorized to repurchase up to \$150.0 million of our outstanding shares of common stock through July 31, 2018 (the “Program”). On October 30, 2017, we announced that our Board of Directors had approved an additional \$250.0 million authorization to repurchase shares under the Program. The Program was also extended through October 31, 2020. On July 31, 2018, we announced that our Board of Directors had approved an additional \$300.0 million authorization to repurchase shares, increasing the total authorized amount under the Program to \$700.0

million. Repurchases under the Program may be made through open market, block and privately-negotiated transactions, including Rule 10b5-1 plans, at such times and in such amounts as management deems appropriate, subject to market and business conditions, regulatory requirements and other factors. The Program does not obligate us to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice. During the six months ended June 30, 2018, we repurchased 1.8 million shares under the Program for a total cost of \$105.0 million, or an average price of \$58.80 per share. Since inception of the Program, we have repurchased 4.7 million shares under the Program for a total cost of \$229.2 million, or an average price of \$48.33 per share.

#### ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

#### ITEM 4. MINE SAFETY DISCLOSURES

Not Applicable.

#### ITEM 5. OTHER INFORMATION

None.

ITEM 6. EXHIBITS

The following exhibits are filed as part of this Quarterly Report on Form 10-Q:

Exhibit No. Description

- 10.1 Deed of Amendment, dated July 18, 2018, by and between Armstrong World Industries, Inc. and Knauf International GmbH and is incorporated by reference from the Current Report on Form 8-K filed on July 19, 2018, wherein it appeared as Exhibit 2.1.
- 31.1 Certification of Chief Executive Officer required by Rule 13a-15(e) or 15d-15(e) of the Securities Exchange Act. †
- 31.2 Certification of Chief Financial Officer required by Rule 13a-15(e) or 15d-15(e) of the Securities Exchange Act. †
- 32.1 Certification of Chief Executive Officer required by Rule 13a and 18 U.S.C. Section 1350. †
- 32.2 Certification of Chief Financial Officer required by Rule 13a and 18 U.S.C. Section 1350. †
- 101.INS XBRL Instance Document. †
- 101.SCH XBRL Taxonomy Extension Schema. †
- 101.CAL XBRL Taxonomy Extension Calculation Linkbase. †
- 101.DEF XBRL Taxonomy Extension Definition Linkbase. †
- 101.LAB XBRL Taxonomy Extension Label Linkbase. †
- 101.PRE XBRL Taxonomy Extension Presentation Linkbase. †

Filed herewith.



SIGNATURES

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.

Armstrong World Industries, Inc.

By: /s/ Brian L. MacNeal  
Brian L. MacNeal, Senior Vice President and  
Chief Financial Officer (Principal Financial Officer)

By: /s/ Stephen F. McNamara  
Stephen F. McNamara, Vice President and  
Controller (Principal Accounting Officer)

Date: July 31, 2018