ARMSTRONG WORLD INDUSTRIES INC

FORM 10-K
(Annual Report)

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	LANCASTER, PA, 17603
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Industry	Construction Materials
Sector	Basic Materials
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2017

OR

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

For the transition period from ________ to ________

Commission File Number 1-2116

ARMSTRONG WORLD INDUSTRIES, INC.

(Exact name of registrant as specified in its charter)

Pennsylvania	**23-0366390**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
2500 Columbia Avenue, Lancaster, Pennsylvania	**17603**
(Address of principal executive offices)	(Zip Code)

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

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

Title of each class
Common Stock ($0.01 par value)

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months, 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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

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

The aggregate market value of the Common Stock of Armstrong World Industries, Inc. held by non-affiliates based on the closing price ($46.00 per share) on the New York Stock Exchange (trading symbol AWI) of June 30, 2017 was approximately $2.0 billion. As of February 21, 2018, the number of shares outstanding of the registrant's Common Stock was 53,105,216.

Documents Incorporated by Reference

Certain sections of Armstrong World Industries, Inc.'s definitive Proxy Statement for use in connection with its 2018 annual meeting of shareholders, to be filed no later than April 30, 2018 (120 days after the last day of our 2017 fiscal year), are incorporated by reference into Part III of this Form 10-K Report where indicated.

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

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain statements in this Annual Report on Form 10-K and the documents incorporated by reference 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 discussed below). Words such as “anticipate,” “expect,” “intend,” “plan,” “target,” “project,” “predict,” “believe,” “may,” “will,” “would,” “could,” “should,” “seek,” “estimate” and similar expressions are intended to 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 elsewhere in this 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 statement is based.

PART I

ITEM 1. BUSINESS

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

We are a global leader in the design, innovation and manufacture of commercial and residential ceiling, wall and suspension system solutions. We design, manufacture and sell ceiling systems (primarily mineral fiber, fiberglass wool and metal) throughout the Americas.

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, which is subject to regulatory approvals and other customary conditions, is currently anticipated to close in mid-2018. Our EMEA and Pacific Rim segment’s historical financial results have been reflected in AWI’s Consolidated Financial Statements as a discontinued operation for all periods presented.

On January 13, 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 from the date of acquisition, and its assets and liabilities as of December 31, 2017, have been included as a component of our Architectural Specialties segment.

On April 1, 2016, we completed our separation of Armstrong Flooring, Inc. (“AFI”). AFI’s historical financial results have been reflected in AWI’s Consolidated Financial Statements as a discontinued operation for all periods presented.

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

We are focused on driving sustainable shareholder value creation. Our strategic priority is to accelerate profitable sales and earnings growth. Our goal is to expand into new markets and grow in existing markets in the Americas by selling a broader array of products and solutions into those markets.

Reportable Segments

Effective December 31, 2017 and in connection with the announced sale of our EMEA and Pacific Rim businesses, our historical EMEA and Pacific Rim segments have been excluded from our results of continuing operations. As a result, effective December 31, 2017 and for all periods presented, our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate. See Note 3 to the Consolidated Financial Statements and Management’s Discussion and Analysis of Financial Condition and Results of Operations in Item 7 of this Form 10-K for additional financial information.

Markets

We are well positioned in the industry segments and markets in which we operate, often holding a leadership or significant market share position. The major markets in which we compete are:

Commercial. Our revenue opportunities come from new construction as well as renovation of existing buildings. Renovation work is estimated to represent the majority of the commercial market opportunity. Most of our revenue comes from the following sectors of commercial building – office, education, transportation, healthcare and retail. We monitor U.S. construction starts and follow project activity. Our revenue from new construction can lag behind construction starts by as much as 18 to 24 months. We also monitor office vacancy rates, the Architecture Billings Index, state and local government spending, gross domestic product (“GDP”) and general employment levels, which can indicate movement in renovation and new construction opportunities. We believe that these statistics, taking into account the time-lag effect, provide a reasonable indication of our future revenue opportunity from commercial renovation and new construction. Additionally, we believe that customer preferences for product type, style, color, availability, affordability and ease of installation also affect our revenue.

In our Mineral Fiber segment, we estimate that a majority of our commercial market sales are used for renovation purposes by end-users of our products. The end-use of our products is based on management estimates as such information i s not easily determinable.

Residential. We also sell mineral fiber products for use in single and multi-family housing. These products compete against mineral fiber and fiberglass products from other manufacturers, as well as drywall. We compete directly with other domestic and international suppliers of these products. We estimate that existing home renovation (also known as replacement / remodel) work represents the majority of the residential market opportunity. Key U.S. statistics that indicate market opportunity include existing home sales (a key indicator for renovation opportunity), housing starts, housing completions, home prices, interest rates and consumer confidence.

Approximately 75% of our consolidated net sales are to distributors. Sales to large home centers account for slightly less than 10% of our consolidated sales. Our remaining sales are to contractors and retailers.

Geographic Areas

See Note 3 to the Consolidated Financial Statements and Management's Discussion and Analysis of Financial Condition and Results of Operations in Item 7 of this Form 10-K for additional financial information by geographic areas.

Customers

We use our reputation, capabilities, service and brand recognition to develop long-standing relationships with our customers. We principally sell commercial products to building materials distributors, who re-sell our products to contractors, subcontractors' alliances, large architect and design firms, and major facility owners. We have important relationships with national home centers such as Lowe's Companies, Inc. and The Home Depot, Inc., as well as wholesalers who re-sell our products to dealers who service builders, contractors and consumers.

Net sales to three commercial distributors totaling $426.1 million, included within our Mineral Fiber and Architectural Specialties segments, individually exceeded 10% of our consolidated net sales in 2017.

Working Capital

We produce goods for inventory and sell on credit to our customers. Generally, our distributors carry inventory as needed to meet local or rapid delivery requirements. We sell our products to select, pre-approved customers using customary trade terms that allow for payment in the future. These practices are typical within the industry.

Competition

We face strong competition in all of our businesses. Principal attributes of competition include product performance, product styling, service and price. Competition comes from both domestic and international manufacturers. Additionally, some of our products compete with alternative products or finishing solutions, namely, drywall and exposed structure (also known as open plenum). Excess industry capacity exists for certain products, which tends to increase price competition. The following companies are our primary competitors:

CertainTeed Corporation (a subsidiary of Saint-Gobain), Chicago Metallic Corporation (owned by ROCKWOOL International A/S), Georgia-Pacific Corporation, Rockfon A/S (owned by ROCKWOOL International A/S), USG Corporation, Ceilings Plus (owned by USG Corporation), Rulon International, and 9Wood.

Raw Materials

We purchase raw materials from numerous suppliers worldwide in the ordinary course of business. The principal raw materials include: fiberglass, perlite, starch, waste paper, pigments and clays. We manufacture most of the production needs for mineral wool at one of our manufacturing facilities. Finally, we use aluminum and steel in the production of metal ceilings by us and by WAVE, our joint venture that manufactures ceiling grid.

We also purchase significant amounts of packaging materials and consume substantial amounts of energy, such as electricity and natural gas and water.

In general, adequate supplies of raw materials are available to all of our operations. However, availability can change for a number of reasons, including environmental conditions, laws and regulations, shifts in demand by other industries competing for the same materials, transportation disruptions and/or business decisions made by, or events that affect, our suppliers. There is no ass urance that these raw materials will remain in adequate supply to us.

Prices for certain high usage raw materials can fluctuate dramatically. Cost increases for these materials can have a significant adverse impact on our manufacturing costs. Given the competitiveness of our markets, we may not be able to recover the increased manufacturing costs through increasing selling prices to our customers.

Sourced Products

Some of the products that we sell are sourced from third parties. Our primary sourced products include specialty ceiling products. We purchase some of our sourced products from suppliers that are located outside of the U.S., primarily from the Pacific Rim and Europe. Sales of sourced products represented approximately 15% of our total consolidated revenue in 2017.

In general, we believe we have adequate supplies of sourced products. However, we cannot guarantee that the supply will remain adequate.

Seasonality

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

Patent and Intellectual Property Rights

Patent protection is important to our business. Our competitive position has been enhanced by patents on products and processes developed or perfected within AWI or obtained through acquisitions and licenses. In addition, we benefit from our trade secrets for certain products and processes.

Patent protection extends for varying periods according to the date of patent filing or grant and the legal term of a patent in the various countries where patent protection is obtained. The actual protection afforded by a patent, which can vary from country to country, depends upon the type of patent, the scope of its coverage and the availability of legal remedies. Although we consider that, in the aggregate, our patents, licenses and trade secrets constitute a valuable asset of material importance to our business, we do not believe we are materially dependent upon any single patent or trade secret, or any group of related patents or trade secrets.

Certain of our trademarks, including without limitation, Armstrong, Armstrong®, Calla®, Cirrus®, Cortega®, Dune™, Humiguard®, Infusions®, Lyra®, MetalWorks™, Optima®, Perla™, Soundscapes®, Sustain®, Tectum®, Total Acoustics®, Ultima®, and WoodWorks®, are important to our business because of their significant brand name recognition. Registrations are generally for fixed, but renewable, terms.

In connection with the separation and distribution of AFI, we entered into several agreements with AFI that, together with a plan of division, provided for the separation and allocation of assets between AWI and AFI. These agreements include a Trademark License Agreement and a Transition Trademark License Agreement. Pursuant to the Trademark License Agreement, AWI provided AFI with a perpetual, royalty-free license to utilize the “Armstrong” trade name and logo. Pursuant to the Transition Trademark License Agreement, AFI provided us with a five-year royalty-free license to utilize the “Inspiring Great Spaces” tagline, logo and related color scheme.

Pursuant to our Purchase Agreement with Knauf related to the sale of our EMEA and Pacific Rim businesses and prior to the closing, AWI anticipates entering into an agreement with Knauf relating to the use of certain intellectual property by Knauf after the closing, including the Armstrong trade name.

We review the carrying value of trademarks annually for potential impairment. See the “Critical Accounting Estimates” section of Management’s Discussion and Analysis of Financial Condition and Results of Operations in Item 7 of this Form 10-K for further information.

Employees

As of December 31, 2017, we had approximately 3,900 full-time and part-time employees worldwide compared to approximately 3,700 as of December 31, 2016. The increase in total worldwide employees as of December 31, 2017 in comparison to December 31, 2016 was primarily due to our addition of Tectum employees, partially offset by a reduction of employees related to the closure of one of our plants in China. Excluding our EMEA and Pacific Rim businesses, we had approximately 2,200 employees as of December 31, 2017 compared to approximately 2,000 as of December 31, 20 16.

As of December 31, 2017, approximately 75% of our 1,100 production employees in the U.S. were represented by labor unions. Collective bargaining agreements covering approximately 460 employees at two U.S. plants will expire during 2018. Outside the U.S., most of our production employees are covered by either industry-sponsored and/or state-sponsored collective bargaining mechanisms. We believe that our relations with our employees are satisfactory.

Research & Development

Research and development ("R&D") activities are important and necessary in helping us improve our products' competitiveness. Principal R&D functions include the development and improvement of products and manufacturing processes. We incurred $17.4 million in 2017, $17.8 million in 2016 and $18.7 million in 2015 of R&D expenses.

Sustainability and Environmental Matters

The adoption of environmentally responsible building codes and standards such as the Leadership in Energy and Environmental Design ("LEED") rating system established by the U.S. Green Building Council, has the potential to increase demand for products, systems and services that contribute to building sustainable spaces. Many of our products meet the requirements for the award of LEED credits, and we are continuing to develop new products, systems and services to address market demand for products that enable construction of buildings that require fewer natural resources to build, operate and maintain. Our competitors also have developed and introduced to the market products with an increased focus on sustainability.

We expect that there will be increased demand over time for products, systems and services that meet evolving regulatory and customer sustainability standards and preferences and decreased demand for products that produce significant greenhouse gas emissions. We also believe that our ability to continue to provide these products, systems and services to our customers will be necessary to maintain our competitive position in the marketplace. We are committed to complying with all environmental laws and regulations that are applicable to our operations.

Legal and Regulatory Proceedings

Regulatory activities of particular importance to our operations include proceedings under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), and state Superfund and similar type environmental laws governing existing or potential environmental contamination 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 required investigation, 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.

Most of our facilities are affected by various federal, state and local environmental requirements relating to the discharge of materials or the protection of the environment. We make expenditures necessary for compliance with applicable environmental requirements at each of our operating facilities. We have not experienced a material adverse effect upon our capital expenditures or competitive position as a result of environmental control legislation and regulations.

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 are vigorously defending the matter.

We are involved in various other 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 various 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.

Liabilities of $13.5 million and $4.7 million as of December 31, 2017 and December 31, 2016, respectively, were recorded for environmental liabilities that we consider probable and for which a reasonable estimate of the probable liability could be made. See Note 27 to the Consolidated Financial Statements and Risk Factors in Item 1A of this Form 10-K, for information regarding the possible effects that compliance with environmental laws and regulations may have on our businesses and operating results.

Website

We maintain a website at http://www.armstrongceilings.com. Information contained on our website is not incorporated into this document. Annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, all amendments to those reports and other information about us are available free of charge through this website as soon as reasonably practicable after the reports are electronically filed with the SEC. Reference in this Form 10-K to our website and the SEC's website is an inactive text reference only.

ITEM 1A. R ISK FACTORS

Unstable market and economic conditions could have a material adverse impact on our financial condition, liquidity or results of operations.

Our business is influenced by market and economic conditions, including inflation, deflation, interest rates, availability and cost of capital, consumer spending rates, energy availability and the effects of governmental initiatives to manage economic conditions. Volatility in financial markets and the continued softness or further deterioration of national and global economic conditions could have a material adverse effect on our financial condition, liquidity or results of operations, including as follows:

- the financial stability of our customers or suppliers may be compromised, which could result in additional bad debts for us or non-performance by suppliers;
- commercial and residential consumers of our products may postpone spending in response to tighter credit, negative financial news and/or stagnation or further declines in income or asset values, which could have a material adverse impact on the demand for our products;
- the value of investments underlying our defined benefit pension plans may decline, which could result in negative plan investment performance and additional charges which may involve significant cash contributions to such plans, to meet obligations or regulatory requirements; and
- our asset impairment assessments and underlying valuation assumptions may change, which could result from changes to estimates of future sales and cash flows that may lead to substantial impairment charges.

Continued or sustained deterioration of economic conditions would likely exacerbate and prolong these adverse effects.

Our business is dependent on construction activity. Downturns in construction activity could adversely affect our financial condition, liquidity or results of operations.

Our businesses have greater sales opportunities when construction activity is strong and, conversely, have fewer opportunities when such activity declines. The cyclical nature of commercial and residential construction activity, including construction activity funded by the public sector, tends to be influenced by prevailing economic conditions, including the rate of growth in gross domestic product, prevailing interest rates, government spending patterns, business, investor and consumer confidence and other factors beyond our control. Prolonged downturns in construction activity could have a material adverse effect on our financial condition, liquidity or results of operations.

Our business could be adversely impacted as a result of uncertainty related to the proposed disposition of our EMEA and Pacific Rim businesses.

The proposed disposition of our EMEA and Pacific Rim businesses to Knauf could cause disruptions to our business or our business relationships, which could have an adverse impact on our results of operations. For example, our employees may experience uncertainty about their future roles with us, which may adversely affect our ability to hire and retain key personnel, and parties with which we have business relationships may experience uncertainty as to the future of such relationships and seek alternative relationships with third parties or seek to alter their present business relationships with us. In addition, our management team and other employees are devoting significant time and effort to activities related to the proposed disposition.

We have incurred and will continue to incur significant costs, expenses and fees for professional services and other transaction costs in connection with the proposed disposition, and many of these fees and costs are payable regardless of whether or not the disposition is completed. In the event the disposition is not completed for any reason, or the timing of its consu mmation is delayed, our operating results may be adversely affected as a result of the incurring of these significant additional expenses and the diversion of management's attention.

The proposed disposition of our EMEA and Pacific Rim businesses is subject to the receipt of consents and clearances from regulatory authorities that may impose conditions that could have an adverse effect on us or Knauf or, if not obtained, could prevent the completion of the proposed disposition.

Before the proposed disposition of our EMEA and Pacific Rim businesses to Knauf may be completed, applicable waiting periods must expire or terminate under antitrust and competition laws and clearances or approvals must be obtained from various regulatory entities. In deciding whether to grant antitrust or regulatory clearances, the relevant governmental entities will consider the effect of the disposition on competition within their relevant jurisdiction.

There can be no assurance that regulators will not impose conditions, terms, obligations or restrictions to the consummation of the disposition and that such conditions, terms, obligations or restrictions will not have the effect of delaying the completion of the disposition, or resulting in additional material costs to us. In addition, we cannot provide assurance that any such conditions, terms, obligations or restrictions will not result in the delay or abandonment of the disposition. Additionally, the completion of the disposition is conditioned on the absence of certain restraining orders or injunctions by judgment, court order or law that would prohibit the completion of the disposition.

Our markets are highly competitive. Competition can reduce demand for our products or cause us to lower prices. Failure to compete effectively by meeting consumer preferences, developing and marketing innovative solutions, maintaining strong customer service and distribution relationships, growing market share, and expanding our solutions capabilities and reach could adversely affect our results.

Our markets are highly competitive. Competition can reduce demand for our products, negatively affect our product sales mix or cause us to lower prices. Failure to compete effectively by meeting consumer preferences, developing and marketing innovative solutions, maintaining strong customer service and distribution relationships, growing market share and expanding our solutions capabilities and reach could have a material adverse effect on our financial condition, liquidity or results of operations. Our customers consider our products' performance, product styling, customer service and price when deciding whether to purchase our products. Shifting consumer preference in our highly competitive markets, from acoustical solutions to other ceiling and wall products, for example, whether for performance or styling preferences or our inability to develop and offer new competitive performance features could have an adverse effect on our sales. Similarly, our ability to identify, protect and market new and innovative solutions is critical to our long-term growth strategy, namely to sell into more spaces and sell more solutions in every space. In addition, excess industry capacity for certain products in several geographic markets could lead to industry consolidation and/or increased price competition. In certain local markets, we are also subject to potential increased price competition from foreign competitors, which may have lower cost structures.

Sales fluctuations to and changes in our relationships with key customers could have a material adverse effect on our financial condition, liquidity or results of operations.

Some of our markets are dependent on certain key customers, including independent distributors. The loss, reduction, or fluctuation of sales to key customers, or any adverse change in our business relationship with them, whether as a result of competition, industry consolidation or otherwise, could have a material adverse effect on our financial condition, liquidity or results of operations.

Customer consolidation, and competitive, economic and other pressures facing our customers, may put pressure on our operating margins and profitability.

A number of our customers, including distributors and contractors, have consolidated in recent years and consolidation could continue. Such consolidation could impact margin growth and profitability as larger customers may realize benefits of scale with increased buying power and reduced inventories. The economic and competitive landscape for our customers is constantly changing, and our customers' responses to those changes could impact our business. These factors and others could have an adverse impact on our business, financial condition or results of operations.

If the availability of raw materials or energy decreases, or the costs increase, and we are unable to pass along increased costs, our financial condition, liquidity or results of operations could be adversely affected.

The availability and cost of raw materials, packaging materials, energy and sourced products are critical to our operations. For example, we use substantial quantities of natural gas and petroleum-based raw materials in our manufacturing operations. The cost of some of these items has been volatile in recent years and availability has been limited at times. We source some materials from a limited number of suppliers, which, among other things, increases the risk of unavailability. Limited availability could cause us to reformulate products or limit our production. Decreased access to raw materials and energy or significant increased cost to purchase these items and any corresponding inability to pass along such costs through price increases could have a material adverse effect on our financial condition, liquidity or results of operations.

The performance of our WAVE joint venture is important to our financial results. Changes in the demand for, or quality of, WAVE products, or in the operational or financial performance of the WAVE joint venture, could have a material adverse effect on our financial condition, liquidity or results of operations. Similarly, if there is a change with respect to our joint venture partner that adversely impacts its relationship with us, WAVE's performance could be adversely impacted.

Our equity investment in our WAVE joint venture remains important to our financial results. We believe an important element in the success of this joint venture is the relationship with our partner, Worthington Industries, Inc. If there is a change in ownership, a change of control, a change in management or management philosophy, a change in business strategy or another event with respect to our partner that adversely impacts our relationship, WAVE's performance could be adversely impacted. In addition, our partner may have economic or business interests or goals that are different from or inconsistent with our interests or goals, which may impact our ability to influence or align WAVE's strategy and operations.

We may be subject to liability under, and may make substantial future expenditures to comply with, environmental laws and regulations, which could materially adversely affect our financial condition, liquidity or results of operations.

We are actively involved in environmental investigation and remediation activities relating to several domestically owned, formerly owned and non-owned locations allegedly resulting from past industrial activity, for which our ultimate liability may exceed the currently estimated and accrued amounts. See Note 27 to the Consolidated Financial Statements for further information related to our current environmental matters and the potential liabilities associated therewith. It is also possible that we could become subject to additional environmental matters and corresponding liabilities in the future.

The building materials industry has been subject to claims relating to raw materials such as silicates, polychlorinated biphenyl ("PCB"), PVC, formaldehyde, fire-retardants and claims relating to other issues such as mold and toxic fumes, as well as claims for incidents of catastrophic loss, such as building fires. We have not received any significant claims involving our raw materials or our product performance; however, product liability insurance coverage may not be available or adequate in all circumstances to cover claims that may arise in the future.

In addition, our operations are subject to various environmental, health, and safety laws and regulations. These laws and regulations not only govern our current operations and products, but also impose potential liability on us for our past operations. Our costs to comply with these laws and regulations may increase as these requirements become more stringent in the future, and these increased costs may materially adversely affect our financial condition, liquidity or results of operations.

The agreements that govern our indebtedness contain a number of covenants that impose significant operating and financial restrictions, including restrictions on our ability to engage in activities that may be in our best long-term interests.

The agreements that govern our indebtedness include covenants that, among other things, may impose significant operating and financial restrictions, including restrictions on our ability to engage in activities that may be in our best long-term interests. These covenants may restrict our ability to:

- incur additional debt;
- pay dividends on or make other distributions in respect of our capital stock or redeem, repurchase or retire our capital stock or subordinated debt or make certain other restricted payments;
- make certain acquisitions;
- sell certain assets;
- consolidate, merge, sell or otherwise dispose of all or substantially all of our assets; and
- create liens on certain assets to secure debt.

Under the terms of our senior secured credit facility, we are required to maintain specified leverage and interest coverage ratios. Our ability to meet these ratios could be affected by events beyond our control, and we cannot assure that we will meet them. A breach of any of the restrictive covenants or ratios would result in a default under the senior secured credit facility. If any such default occurs, the lenders under the senior secured credit facility may b e able to elect to declare all outstanding borrowings under our facilities, together with accrued interest and other fees, to be immediately due and payable, or enforce their security interest. The lenders may also have the right in these circumstances to terminate commitments to provide further borrowings.

Our indebtedness may adversely affect our cash flow and our ability to operate our business, make payments on our indebtedness and declare dividends on our capital stock.

Our level of indebtedness and degree of leverage could:

- make it more difficult for us to satisfy our obligations with respect to our indebtedness;
- make us more vulnerable to adverse changes in general economic, industry and competitive conditions and adverse changes in government regulation;
- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate;
- place us at a competitive disadvantage compared to our competitors that are less leveraged and, therefore, more able to take advantage of opportunities that our leverage prevents us from exploiting;
- limit our ability to refinance existing indebtedness or borrow additional amounts for working capital, capital expenditures, acquisitions, debt service requirements, execution of our business strategy or other purposes;
- restrict our ability to pay dividends on our capital stock; and
- adversely affect our credit ratings.

We may also incur additional indebtedness, which could exacerbate the risks described above. In addition, to the extent that our indebtedness bears interest at floating rates, our sensitivity to interest rate fluctuations will increase.

Any of the above listed factors could materially adversely affect our financial condition, liquidity or results of operations.

We require a significant amount of liquidity to fund our operations, and borrowing has increased our vulnerability to negative unforeseen events.

Our liquidity needs vary throughout the year. If our business experiences materially negative unforeseen events, we may be unable to generate sufficient cash flow from operations to fund our needs or maintain sufficient liquidity to operate and remain in compliance with our debt covenants, which could result in reduced or delayed planned capital expenditures and other investments and adversely affect our financial condition or results of operations.

We are subject to risks associated with our international operations in both established and emerging markets. Legislative, political, regulatory and economic volatility, as well as vulnerability to infrastructure and labor disruptions, could have an adverse effect on our financial condition, liquidity or results of operations.

On November 20, 2017, we announced that we had entered into a definitive agreement with Knauf to sell our EMEA and Pacific Rim businesses. This transaction, which is subject to regulatory approvals and other customary conditions, is currently anticipated to close in mid-2018.

A significant portion of our products move in international trade. See Notes 3 and 4 to the Consolidated Financial Statements for further information. Our international trade is subject to currency exchange fluctuations, trade regulations, import duties, logistics costs, delays and other related risks. Our international operations are also subject to various tax rates, credit risks in emerging markets, political risks, uncertain legal systems, high costs in repatriating profits to the United States from some countries, and loss of sales to local competitors following currency devaluations in countries where we import products for sale. In addition, our international growth strategy depends, in part, on our ability to expand our operations in certain emerging markets. However, some emerging markets have greater political and economic volatility and greater vulnerability to infrastructure and labor disruptions than established markets. Similarly, our efforts to enhance the profitability or accelerate the growth of our operations in certain markets depends largely on the economic and geopolitical conditions in those local or regional markets.

In addition, in many countries outside of the United States, particularly in those with developing economies, it may be common for others to engage in business practices prohibited by laws and regulations applicable to us, such as the Foreign Corrupt Practices Act or similar local anti-corruption or anti-bribery laws. These laws generally prohibit companies and their employees, contractors or agents from making improper payments to government officials for the purpose of obtaining or retaining business. Failure to comply wit h these laws, as well as U.S. and foreign export and trading laws, could subject us to civil and criminal penalties. As we continue to expand our business, we may have difficulty anticipating and effectively managing these and other risks that our operati ons may face, which may adversely affect our business outside the United States and our financial condition, liquidity or results of operations.

We may pursue strategic transactions that could create risks and present unforeseen integration obstacles or costs, any of which could materially adversely affect our financial condition, liquidity or results of operations.

We have evaluated, and expect to continue to evaluate, potential strategic transactions as opportunities arise. We routinely engage in discussions with third parties regarding potential transactions, including joint ventures, which could be significant. Any such strategic transaction involves a number of risks, including potential disruption of our ongoing business and distraction of management, difficulty with integrating or separating personnel and business operations and infrastructure, and increasing or decreasing the scope, geographic diversity and complexity of our operations. Strategic transactions could involve payment by us of a substantial amount of cash, assumption of liabilities and indemnification obligations, regulatory requirements, incurrence of a substantial amount of debt or issuance of a substantial amount of equity. Certain strategic opportunities may not result in the consummation of a transaction or may fail to realize the intended benefits and synergies. If we fail to consummate and integrate our strategic transactions in a timely and cost-effective manner, our financial condition, liquidity or results of operation could be materially and adversely affected.

Negative tax consequences can have an unanticipated effect on our financial results.

We are subject to the tax laws of the many jurisdictions in which we operate. The tax laws are complex, and the manner in which they apply to our operations and results is sometimes open to interpretation. Because our income tax expense for any period depends heavily on the mix of income derived from the various taxing jurisdictions, our income tax expense and reported net income may fluctuate significantly, and may be materially different than forecasted or experienced in the past. Our financial condition, liquidity, results of operations or tax liability could be adversely affected by changes in the effective tax rate as a result of a change in the mix of earnings in countries with differing statutory tax rates, changes in our overall profitability, changes in tax legislation and rates, changes in the amount of earnings permanently reinvested offshore, the results of examinations of previously filed tax returns, and ongoing assessments of our tax exposures.

Our financial condition, liquidity, results of operations or tax liability could also be adversely affected by changes in the valuation of deferred tax assets and liabilities. We have substantial deferred tax assets related to U.S. domestic foreign tax credits, or FTCs, and state net operating losses, or NOLs, which are available to reduce our U.S. income tax liability and to offset future state taxable income. However, our ability to utilize the current carrying value of these deferred tax assets may be impacted as a result of certain future events, such as changes in tax legislation and insufficient future taxable income prior to expiration of the FTCs and NOLs.

If the separation and distribution of Armstrong Flooring, Inc. ("AFI") fails to qualify as a tax-free transaction for U.S. federal income tax purposes, then AFI, AWI and AWI's shareholders could be subject to significant tax liability or tax indemnity obligations.

On April 1, 2016, we completed our previously announced separation of AFI by allocating the assets and liabilities related primarily to the Resilient Flooring and Wood Flooring segments to AFI and then distributing the common stock of AFI to our shareholders at a ratio of one share of AFI common stock for every two shares of AWI common stock. In connection with the distribution, we received an opinion from our special tax counsel, on the basis of certain facts, representations, covenants and assumptions set forth in such opinion, substantially to the effect that, for U.S. federal income tax purposes, the separation and distribution should qualify as a transaction that generally is tax-free to us and our shareholders under Sections 355 and 368(a)(1)(D) of the Internal Revenue Code.

Notwithstanding the tax opinion, the Internal Revenue Service ("IRS") could determine on audit that the distribution should be treated as a taxable transaction if it determines that any of the facts, assumptions, representations or covenants set forth in the tax opinion is not correct or has been violated, or that the distribution should be taxable for other reasons, including as a result of a significant change in stock or asset ownership after the distribution, or if the IRS were to disagree with the conclusions of the tax opinion. If the distribution is ultimately determined to be taxable, the distribution could be treated as a taxable dividend to each U.S. holder of our common shares who receives shares of AFI in connection with the spinoff for U.S. federal income tax purposes, and such shareholders could incur significant U.S. federal income tax liabilities. In addition, we and/or AFI could incur significant U.S. federal income tax liabilities or tax indemnification obligations, whether under applicable law or the Tax Matters Agreement that we entered into with AFI, if it is ultimately determined that certain related transactions undertaken in anticipation of the distribution are taxable.

Significant changes in factors and assumptions used to measure our defined benefit plan obligations, actual investment returns on pension assets and other factors could negatively impact our operating results and cash flows.

We maintain pension and postretirement plans throughout the world, with the most significant plans located in the U.S. The recognition of costs and liabilities associated with these plans for financial reporting purposes is affected by assumptions made by management and used by actuaries engaged by us to calculate the benefit obligations and the expenses recognized for these plans.

The inputs used in developing the required estimates are calculated using a number of assumptions, which represent management's best estimate of the future. The assumptions that have the most significant impact on reported results are the discount rate, the estimated long-term return on plan assets for the funded plans, retirement rates, and mortality rates and, for postretirement plans, the estimated inflation in health care costs. These assumptions are generally updated annually.

Our U.S. pension plans were overfunded by $29.6 million as of December 31, 2017. Our unfunded U.S. postretirement plan liabilities were $86.6 million as of December 31, 2017. If our cash flows and capital resources are insufficient to fund our pension and postretirement plans obligations, we could be forced to reduce or delay investments and capital expenditures, seek additional capital, or restructure or refinance our indebtedness.

A disruption in our information technology systems due to a catastrophic event or security breach could interrupt or damage our operations.

In the conduct of our business, we collect, use, transmit and store data on information systems, which are vulnerable to an increasing threat of continually evolving cyber security risks. Any security breach or compromise of our information systems could significantly damage our reputation, cause the disclosure of confidential customer, employee, supplier or company information, including our intellectual property, and result in significant losses, litigation, fines and costs. The security measures we have implemented to protect against unauthorized access to our information systems and data may not be sufficient to prevent breaches. The regulatory environment related to information security, data collection and privacy is evolving, with new and constantly changing requirements applicable to our business, and compliance with those requirements could result in additional costs.

We also compete through our use and improvement of information technology. In order to remain competitive, we need to provide customers with timely, accurate, easy-to-access information about product availability, orders and delivery status using state-of-the-art systems. While we have processes for short-term failures and disaster recovery capability, a prolonged disruption of systems or other failure to meet customers' expectations regarding the capabilities and reliability of our systems may materially and adversely affect our operating results.

Adverse judgments in regulatory actions, product claims, environmental claims and other litigation could be costly. Insurance coverage may not be available or adequate in all circumstances.

In the ordinary course of business, we are subject to various claims and litigation. Any such claims, whether with or without merit, could be time consuming and expensive to defend and could divert management's attention and resources. While we strive to ensure that our products comply with applicable government regulatory standards and internal requirements, and that our products perform effectively and safely, customers from time to time could claim that our products do not meet warranty or contractual requirements, and users could claim to be harmed by use or misuse of our products. These claims could give rise to breach of contract, warranty or recall claims, or claims for negligence, product liability, strict liability, personal injury or property damage. They could also result in negative publicity.

In addition, claims and investigations may arise related to patent infringement, distributor relationships, commercial contracts, antitrust or competition law requirements, employment matters, employee benefits issues, and other compliance and regulatory matters, including anti-corruption and anti-bribery matters. While we have processes and policies designed to mitigate these risks and to investigate and address such claims as they arise, we cannot predict or, in some cases, control the costs to defend or resolve such claims.

We currently maintain insurance against some, but not all, of these potential claims. In the future, we may not be able to maintain insurance at commercially acceptable premium levels. In addition, the levels of insurance we maintain may not be adequate to fully cover any and all losses or liabilities. If any significant judgment or claim is not fully insured or indemnified against, it could have a material adverse impact. We cannot assure that the outcome of all current or future litigation will not have a material adverse effect on our financial condition, liquidity or results of operations.

Increased costs of labor, labor disputes, work stoppages or union organizing activity could delay or impede production and coul d have a material adverse effect on our financial condition, liquidity or results of operations.

Increased costs of labor, including the costs of employee benefits plans, labor disputes, work stoppages or union organizing activity could delay or impede production and have a material adverse effect on our financial condition, liquidity or results of operations. As the majority of our manufacturing employees are represented by unions and covered by collective bargaining or similar agreements, we often incur costs attributable to periodic renegotiation of those agreements, which may be difficult to project. We are also subject to the risk that strikes or other conflicts with organized personnel may arise or that we may become the subject of union organizing activity at our facilities that do not currently have union representation. Prolonged negotiations, conflicts or related activities could also lead to costly work stoppages and loss of productivity.

Our intellectual property rights may not provide meaningful commercial protection for our products or brands, which could adversely impact our financial condition, liquidity or results of operations.

We rely on our proprietary intellectual property, including numerous patents and registered trademarks, as well as our licensed intellectual property to market, promote and sell our products. We monitor and protect against activities that might infringe, dilute, or otherwise harm our patents, trademarks and other intellectual property and rely on the patent, trademark and other laws of the U.S. and other countries. However, we may be unable to prevent third parties from using our intellectual property without our authorization. In addition, the laws of some non-U.S. jurisdictions, particularly those of certain emerging markets, provide less protection for our proprietary rights than the laws of the U.S. and present greater risks of counterfeiting and other infringement. To the extent we cannot protect our intellectual property, unauthorized use and misuse of our intellectual property could harm our competitive position and have a material adverse effect on our financial condition, liquidity or results of operations.

Our cost-saving and productivity initiatives may not achieve expected savings in our operating costs or improved operating results.

We aggressively look for ways to make our operations more efficient and effective. We reduce, move, modify and expand our plants and operations, as well as our sourcing and supply chain arrangements, as needed, to control costs and improve productivity. Such actions involve substantial planning, often require capital investments and may result in charges for fixed asset impairments or obsolescence and substantial severance costs. Our ability to achieve cost savings and other benefits within expected time frames is subject to many estimates and assumptions. These estimates and assumptions are subject to significant economic, competitive and other uncertainties, some of which are beyond our control. If these estimates and assumptions are incorrect, if we experience delays, or if other unforeseen events occur, our financial condition, liquidity or results of operations could be materially and adversely affected.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We own a 100-acre, multi-building campus in Lancaster, Pennsylvania comprising the site of our corporate headquarters and most of our non-manufacturing operations.

As of December 31, 2017, we had 16 manufacturing plants in eight countries. Three of our plants are leased and the remaining 13 are owned. We operate eight plants located throughout the United States. In addition, our WAVE joint venture operates nine additional plants in five countries.

Upon closure of the sale of our EMEA and Pacific Rim businesses, we will have ten plants, including eight plants in the U.S. One of our plants will be leased and the remaining nine will be owned.

Operating Segment	Number of Plants	Location of Principal Facilities
Mineral Fiber	6	U.S. (Florida, Georgia, Ohio, Oregon, Pennsylvania and West Virginia)
Architectural Specialties	3	U.S. (Ohio), Canada
Unallocated Corporate	1	China

During the fourth quarter of 2016, we idled one of our plants in China, which is reported as a component of our Unallocated Corporate segment as it will be retained by AWI after the sale of our Pacific Rim business. During the fourth quarter of 2017, we announced the closing of our St. Helens, Oregon mineral fiber manufacturing facility, expected to occur in the first half of 2018.

Sales and administrative offices are leased and/or owned worldwide, and leased facilities are utilized to supplement our owned warehousing facilities.

Production capacity and the extent of utilization of our facilities are difficult to quantify with certainty. In any one facility, utilization of our capacity varies periodically depending upon demand for the product that is being manufactured. We believe our facilities are adequate and suitable to support the business. Additional incremental investments in plant facilities are made as appropriate to balance capacity with anticipated demand, improve quality and service, and reduce costs.

ITEM 3. LEGAL PROCEEDINGS

See the “Specific Material Events” section of the “Environmental Matters” section of Note 27 to the Consolidated Financial Statements, which is incorporated herein by reference, for a description of our significant legal proceedings.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. MARKET FOR THE REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

AWI's common shares trade on the New York Stock Exchange under the ticker symbol "AWI." As of February 21, 2018, there were approximately 270 holders of record of AWI's common stock.

	First	Second	Third	Fourth	Total Year
2017					
Price range of common stock - high	$ 48.00	$ 47.95	$ 51.98	$ 61.50	$ 61.50
Price range of common stock - low	$ 38.45	$ 41.20	$ 43.77	$ 49.25	$ 38.45
2016					
Price range of common stock - high	$ 48.66	$ 48.39	$ 45.75	$ 45.00	$ 48.66
Price range of common stock - low	$ 35.92	$ 36.33	$ 37.49	$ 36.38	$ 35.92

The above figures represent the high and low intra-day sale prices for our common stock as reported by the New York Stock Exchange. Historical prices have not been restated as a result of our separation of AFI on April 1, 2016.

There were no cash dividends declared during 2017 or 2016.

Dividends are paid when declared by our Board of Directors and in accordance with restrictions set forth in our debt agreements. In general, our debt agreements allow us to make "restricted payments," which include dividends and stock repurchases, subject to certain limitations and other restrictions and provided that we are in compliance with the financial and other covenants of our debt agreements and meet certain liquidity requirements after giving effect to the restricted payment. For further discussion of the debt agreements, see the Financial Condition and Liquidity section of Management's Discussion and Analysis of Financial Condition and Results of Operations in Item 7 and Risk Factors in Item 1A in this Form 10-K.

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased [1]	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
October 1 – 31, 2017	-	$ -	-	$ 280,864,974
November 1 – 30, 2017	509	$ 51.50	-	280,864,974
December 1 – 31, 2017	84,865	$ 59.56	83,943	275,865,282
Total	85,374		83,943	

1 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 long-term incentive plans. For more information regarding securities authorized for issuance under our equity compensation plans, see Note 21 to the Consolidated Financial Statements included in this Form 10-K.

On July 29, 2016, the Company announced that its Board of Directors had approved a share repurchase program pursuant to which the Company is authorized to repurchase up to $150.0 million of its outstanding shares of common stock through July 31, 2018 (the "Program"). On October 31, 2017, we announced that our Board of Directors had approved an additional $250.0 million authorization to repurchase shares of our outstanding common stock under the Program. The Program was also extended to October 31, 2020. Repurchases under the Program may be made through open market, block and privately-negotiated transactions, including Rule 10b5-1 plans, at 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 the Company to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice. During 2017, 1.8 million shares were repurchased under the Program for a total cost of $80.4 million, or an average price of $43.58 per share. Since inception of the Program, we have repurchased 2.95 million shares under the Program for a total cost of $124.2 million, or an average price of $42.03 per share.

ITEM 6. SELECTE D FINANCIAL DATA

The following selected historical consolidated financial data should be read in conjunction with our audited consolidated financial statements, the accompanying notes and Management's Discussion and Analysis of Financial Condition and Results of Operations included in this Form 10-K. The selected historical consolidated financial data for the periods presented have been derived from our audited consolidated financial statements.

	2017	2016	2015	2014	2013
(amounts in millions, except for per-share data)					
Income statement data					
Net sales	$ 893.6	$ 837.3	$ 805.1	$ 798.3	$ 780.8
Operating income	255.1	188.9	157.0	203.1	186.3
Earnings from continuing operations	220.6	99.3	57.9	104.6	91.3
Per common share - basic (a)	$ 4.12	$ 1.79	$ 1.04	$ 1.89	$ 1.57
Per common share - diluted (a)	$ 4.08	$ 1.78	$ 1.03	$ 1.88	$ 1.55
Dividends declared per share of common stock	-	-	-	-	-
Balance sheet data (end of period)					
Total assets	$ 1,873.5	$ 1,758.0	$ 2,687.2	$ 2,599.6	$ 2,907.7
Long-term debt	817.7	848.6	936.1	986.3	1,023.7
Total shareholders' equity	419.3	266.4	768.8	649.1	673.2

Notes:

(a) See definition of basic and diluted earnings per share in Note 2 to the Consolidated Financial Statements.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Armstrong World Industries, Inc. (“AWI”) is a Pennsylvania corporation incorporated in 1891.

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 Form 10-K.

Overview

We are a global leader in the design, innovation and manufacture of commercial and residential ceiling, wall and suspension system solutions. We design, manufacture and sell ceiling systems (primarily mineral fiber, fiberglass wool and metal) throughout the Americas.

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, which is subject to regulatory approvals and other customary conditions, is currently anticipated to close in mid-2018. 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 from the date of acquisition, and its assets and liabilities as of December 31, 2017, have been included as a component of our Architectural Specialties segment.

On April 1, 2016, we completed our separation of Armstrong Flooring, Inc. (“AFI”). AFI’s historical financial results have been reflected in AWI’s Consolidated Financial Statements as a discontinued operation for all periods presented.

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

As of December 31, 2017, we had 16 manufacturing plants in eight countries, including eight plants located throughout the U.S. During the fourth quarter of 2016 we idled one of our mineral fiber plants 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 ten plants, including eight plants in the U.S.

During the fourth quarter of 2017, we announced the closing of our St. Helens, Oregon mineral fiber manufacturing facility, expected to occur in the first half of 2018.

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

Effective December 31, 2017 and 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, effective December 31, 2017 and for all periods presented, our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate.

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 produce 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. Effective December 31, 2017 and for all periods presented, 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' 2017 net sales by geography, see Note 3 to the Consolidated Financial Statements included in this Form 10-K.

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 2017, including:

Mineral Fiber

We experienced lower renovation activity, partially offset by growth from new construction, leading to a slight overall decline in volume.

Architectural Specialties

We experienced strong growth due to new commercial construction activity and increased market penetration, partially driven by the acquisition of Tectum.

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 2017 by approximately $29 million compared to 2016. Architectural Specialties revenues 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 first and fourth quarters of 2017, we implemented ceiling tile pricing increases. We also implemented a pricing increase on grid products in the third quarter of 2017. Finally, in the fourth quarter of 2017 we also announced price increases on certain architectural specialties products, ceiling tile and grid products effective in the first quarter of 2018. We may implement additional pricing actions based on numerous factors, most notably upon future movements in raw material prices.

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, 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 2017, the costs for raw materials, sourced products and energy negatively impacted operating income by approximately $3 million, compared to 2016.

During the fourth quarter of 2017, we announced the closing of our St. Helens, Oregon mineral fiber manufacturing facility, expected to occur in the first half of 2018. Production activity will move to existing facilities in the U.S. We will continue to evaluate the efficiency of our manufacturing footprint and may take additional actions in support of our cost and standardization initiatives. The charges associated with any additional cost reduction initiatives could include severance and related termination benefits, fixed asset write-downs, asset impairments and accelerated depreciation and may be material to our financial statements.

See also "Results of Operations" for further discussion of other significant items affecting operating costs.

Employees

As of December 31, 2017, we had approximately 3,900 full-time and part-time employees worldwide compared to approximately 3,700 as of December 31, 2016. Excluding our EMEA and Pacific Rim businesses, we had approximately 2,200 employees as of December 31, 2017 compared to approximately 2,000 as of December 31, 2016. The increase in total worldwide employees as of December 31, 2017 in comparison to December 31, 2016 was primarily due to our addition of Tectum employees, partially offset by a reduction of employees related to the closure of one of our plants in China.

Collective bargaining agreements covering approximately 460 employees at two U.S. plants will expire during 2018. We believe that our relations with our employees are satisfactory.

CRITICAL ACCOUNTING ESTIMATES

In preparing our consolidated financial statements in accordance with U.S. generally accepted accounting principles ("GAAP"), we are required to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. We evaluate our estimates and assumptions on an on-going basis, using relevant internal and external information. We believe that our estimates and assumptions are reasonable. However, actual results may differ from what was estimated and could have a significant impact on the financial statements.

We have identified the following as our critical accounting estimates. We have discussed these critical accounting estimates with our Audit Committee.

U.S. Pension Credit and Postretirement Benefit Costs – We maintain pension and postretirement plans throughout the world, with the most significant plans located in the U.S. Our defined benefit pension and postretirement benefit costs are developed from actuarial valuations. These valuations are calculated using a number of assumptions, which represent management's best estimate of the future. The assumptions that have the most significant impact on reported results are the discount rate, the estimated long-term return on plan assets and the estimated inflation in health care costs. These assumptions are generally updated annually.

Management utilizes the Aon Hewitt AA only above median yield curve, which is a hypothetical AA yield curve comprised of a series of annualized individual discount rates, as the primary basis for determining discount rates. As of December 31, 2017 and 2016, we assumed discount rates of 3.63% and 4.12%, respectively, for the U.S. defined benefit pension plans. As of December 31, 2017 and 2016, we assumed a discount rates of 3.60% and 4.10%, respectively, for the U.S. postretirement plan. The effects of the change in discount rate will be amortized into earnings as described below. Absent any other changes, a one-quarter percentage point increase or decrease in the discount rates for the U.S. pension and postretirement plans would not have a material impact on 2018 operating income.

We manage two U.S. defined benefit pension plans, our RIP, which is a qualified funded plan, and a nonqualified unfunded plan. For the RIP, the expected long-term return on plan assets represents a long-term view of the future estimated investment return on plan assets. This estimate is d etermined based on the target allocation of plan assets among asset classes and input from investment professionals on the expected performance of the asset classes over 10 to 30 years. Historical asset returns are monitored and considered when we develop our expected long-term return on plan assets. An incremental component is added for the expected return from active management based on historical information obtained from the plan's investment consultants. These forecasted gross returns are reduced by estimated management fees and expenses. Over the 10 year period ended December 31, 2017, the historical annualized return was approximately 5.5% compared to an average expected return of 7.1%. The actual gain on plan assets achieved for 2017 was 12.4%. The difference between the actual and expected rate of return on plan assets will be amortized into earnings as described below.

The expected long-term return on plan assets used in determining our 2017 U.S. pension cost was 6.50%. We have assumed a return on plan assets for 2018 of 6.50%. The 2018 expected return on assets was calculated in a manner consistent with 2017. A one-quarter percentage point increase or decrease in this assumption would increase or decrease 2018 operating income by approximately $3.7 million.

Contributions to the unfunded plan were $3.9 million in 2017 and were made on a monthly basis to fund benefit payments. We estimate the 2018 contributions will be approximately $4.0 million. See Note 16 to the Consolidated Financial Statements for more information.

The estimated inflation in health care costs represents a 5-10 year view of the expected inflation in our postretirement health care costs. We separately estimate expected health care cost increases for pre-65 retirees and post-65 retirees due to the influence of Medicare coverage at age 65, as illustrated below:

	Assumptions		**Actual**	
	Post 65	**Pre 65**	**Post 65**	**Pre 65**
2016	9.0 %	7.5 %	8.6 %	3.3 %
2017	8.5 %	7.3 %	6.8 %	11.3 %
2018	9.2 %	8.0 %		

The difference between the actual and expected health care costs is amortized into earnings as described below. As of December 31, 2017, health care cost increases are estimated to decrease ratably until 2026, after which they are estimated to be constant at 4.5%. A one percentage point increase or decrease in the assumed health care cost trend rate would not have a material impact on 2018 operating income. See Note 16 to the Consolidated Financial Statements for more information.

Actual results that differ from our various pension and postretirement plan estimates are captured as actuarial gains/losses. When certain thresholds are met, the gains and losses are amortized into future earnings over the remaining life expectancy of participants. Changes in assumptions could have significant effects on earnings in future years.

We recognized a decrease in net actuarial losses related to our U.S. pension benefit plans of $34.8 million in 2017 primarily due to a better than expected return on assets and a partial settlement of the RIP in 2017, partially offset by changes in actuarial assumptions (most significantly a 49 basis point decrease in the discount rate). The $34.8 million actuarial gain impacting our U.S. pension plans is reflected as a component of other comprehensive income in our Consolidated Statement of Earnings and Comprehensive Income along with actuarial gains and losses from our foreign pension plan and our U.S. postretirement benefit plan.

Income Taxes – Our effective tax rate is primarily determined based on our pre-tax income and the statutory income tax rates in the jurisdictions in which we operate. The effective tax rate also reflects the tax impacts of items treated differently for tax purposes than for financial reporting purposes. Some of these differences are permanent, such as expenses that are not deductible in our tax returns, and some differences are temporary, reversing over time, such as depreciation expense. These temporary differences create deferred income tax assets and liabilities. Deferred income tax assets are also recorded for net operating loss ("NOL") and foreign tax credit ("FTC") carryforwards.

Deferred income tax assets and liabilities are recognized by applying enacted tax rates to temporary differences that exist as of the balance sheet date. We reduce the carrying amounts of deferred tax assets by a valuation allowance if, based on the available evidence, it is more likely than not that such assets will not be realized. The need to establish valuation allowances for deferred tax assets is assessed quarterly. In assessing the requirement for, and amount of, a valuation allowance in accordance with the more likely than not standard, we give appropriate consideration to all positive and negative evidence related to the realization of the deferred tax assets. This assessment considers, among other matters, the nature, frequency and severity of current and cumulative losses, forecasts of future profitability and foreign source income ("FSI"), the duration of statutory carryforward periods, and our experience with operating loss and tax credit carryforward expirations. A history of cumulative losses is a significant piece of negative evidence used in our assessment. If a history of cumulative losses is incurred for a tax jurisdiction, forecasts of future profitability are not used as positive evidence related to the realization of the deferred tax assets in the assessment.

As of December 31, 2017, we have recorded valuation allowances totaling $47.4 million for various federal, state, and foreign deferred tax assets. While we have considered future taxable income in assessing the need for the valuation allowances based on our best available projections, if these estimates and assumptions change in the future or if actual results differ from our projections, we may be required to adjust our valuation allowances accordingly. Such adjustments could be material to our Consolidated Financial Statements.

As further described in Note 14 to the Consolidated Financial Statements, our Consolidated Balance Sheet as of December 31, 2017 includes net deferred income tax assets of $96.8 million. Included in this amount are deferred federal income tax assets for FTC carryforwards of $15.7 million, and state NOL deferred income tax assets of $35.6 million. We have established valuation allowances in the amount of $47.4 million consisting of $10.3 million for federal deferred tax assets related to FTC carryovers, $17.7 million for d ifferences between book and tax basis of undistributed foreign earnings , and $19.4 million for state deferred tax assets, primarily operating loss carryovers.

Inherent in determining our effective tax rate are judgments regarding business plans and expectations about future operations. These judgments include the amount and geographic mix of future taxable income, the amount of FSI, limitations on usage of NOL carryforwards, the impact of ongoing or potential tax audits, and other future tax consequences.

We estimate we will need to generate future U.S. taxable income of approximately $506.8 million for state income tax purposes during the respective realization periods (ranging from 2018 to 2036) in order to fully realize the net deferred income tax assets.

As previously disclosed in prior SEC filings, our ability to utilize deferred tax assets may be impacted by certain future events, such as changes in tax legislation and insufficient future taxable income prior to expiration of certain deferred tax assets.

We recognize the tax benefits of an uncertain tax position if those benefits are more likely than not to be sustained based on existing tax law. Additionally, we establish a reserve for tax positions that are more likely than not to be sustained based on existing tax law, but uncertain in the ultimate benefit to be sustained upon examination by the relevant taxing authorities. Unrecognized tax benefits are subsequently recognized at the time the more likely than not recognition threshold is met, the tax matter is effectively settled or the statute of limitations for the relevant taxing authority to examine and challenge the tax position has expired, whichever is earlier.

Impairments of Long-Lived Tangible and Intangible Assets – Our indefinite-lived intangibles are primarily trademarks and brand names, which are integral to our corporate identity and expected to contribute indefinitely to our corporate cash flows. Accordingly, they have been assigned an indefinite life. We conduct our annual impairment test for non-amortizable intangible assets during the fourth quarter, although we conduct interim impairment tests if events or circumstances indicate the asset might be impaired. We conduct impairment tests for tangible assets and amortizable intangible assets when indicators of impairment exist, such as operating losses and/or negative cash flows. If an indication of impairment exists, we compare the carrying amount of the asset group to the estimated undiscounted future cash flows expected to be generated by the assets. If the undiscounted cash flows of an impaired asset are less than the carrying value, an estimate of an asset group's fair value is based on discounted future cash flows expected to be generated by the asset group, or based on management's estimated exit price assuming the assets could be sold in an orderly transaction between market participants or estimated salvage value if no sale is assumed. If the fair value is less than the carrying value of the asset group, we record an impairment charge equal to the difference between the fair value and carrying value of the asset group.

The principal assumption utilized in our impairment tests for definite-lived intangible assets is operating profit adjusted for depreciation and amortization. The principal assumptions utilized in our impairment tests for indefinite-lived intangible assets include revenue growth rate, discount rate and royalty rate. Revenue growth rate and operating profit assumptions are primarily derived from those utilized in our operating plan and strategic planning processes. The discount rate assumption is calculated based upon an estimated weighted average cost of equity which reflects the overall level of inherent risk and the rate of return a market participant would expect to achieve. The royalty rate assumption represents the estimated contribution of the intangible assets to the overall profits of the reporting unit.

In 2017, indefinite-lived intangibles were tested for impairment based on our existing reporting units, which changed as a result of the announced future sale of our EMEA and Pacific Rim segments. No other methodologies used for valuing our intangible assets changed from prior periods.

The cash flow estimates used in applyin g our impairment tests are based on management's analysis of information available at the time of the impairment test. Actual cash flows lower than the estimate could lead to significant future impairments. If subsequent testing indicates that fair value s have declined, the carrying values would be reduced and our future statements of income would be affected.

There were no material impairment charges recorded in 2017, 2016 or 2015 related to intangible assets.

We did not test tangible assets within our continuing operations for impairment in 2017, 2016 or 2015 as no indicators of impairment existed.

We cannot predict the occurrence of certain events that might lead to material impairment charges in the future. Such events may include, but are not limited to, the impact of economic environments, particularly related to the commercial and residential construction industries, material adverse changes in relationships with significant customers, or strategic decisions made in response to economic and competitive conditions.

See Notes 3 and 10 to the Consolidated Financial Statements for further information.

Environmental Liabilities – 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 type 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, 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 provide for environmental remediation costs and penalties when the responsibility to remediate is probable and the amount of associated costs is reasonably determinable. Accruals are estimates based on the judgment of management related to ongoing proceedings. Estimates of our future liability at the environmental sites are based on evaluations of currently available facts regarding each individual site. 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.

We evaluate the measurement of recorded liabilities each reporting period based on current facts and circumstances specific to each matter. The ultimate losses incurred upon final resolution may materially differ from the estimated liability recorded. Changes in estimates are recorded in earnings in the period in which such changes occur.

We are unable to predict the extent to which any recoveries from other parties or coverage under insurance policies might cover our final share of 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.

ACCOUNTING PRONOUNCEMENTS EFFECTIVE IN FUTURE PERIODS

See Note 2 to the Consolidated Financial Statements for further information.

RESULTS OF OPERATIONS

Unless otherwise indicated, net sales in these results of operations are reported based upon the AWI location where the sale was made. Please refer to Notes 3 and 4 to the Consolidated Financial Statements for a reconciliation of segment operating income to consolidated earnings from continuing operations before income taxes and additional financial information related to discontinued operations.

2017 COMPARED TO 2016
CONSOLIDATED RESULTS FROM CONTINUING OPERATIONS

(dollar amounts in millions)

	2017	2016	Favorable
Total consolidated net sales	$ 893.6	$ 837.3	6.7 %
Operating income	$ 255.1	$ 188.9	35.0 %

Consolidated net sales increased due to favorable AUV of $29 million and higher volumes of $27 million.

Cost of goods sold was 63.8% of net sales in 2017, compared to 63.5% in 2016 due to higher manufacturing and input costs. The increase in cost of goods sold as a percentage of sales in comparison to 2016 was impacted by $10 million of accelerated depreciation charges due to management's decision to permanently close a plant in China that will be retained by AWI after the sale of our Pacific Rim business and management's decision to close our St. Helens, Oregon plant. Cost of goods sold for 2017 were also impacted by an increase in manufacturing and input costs and $3 million of severance and other charges associated with the announced closure of our St. Helens, Oregon plant. Partially offsetting these increases was a $10 million reduction in RIP expense and a $10 million reduction of cost of goods sold related to environmental insurance settlements recorded in 2017.

SG&A expenses in 2017 were $135.7 million, or 15.2% of net sales, compared to $155.5 million, or 18.6% of net sales, in 2016. The decrease in SG&A expenses was impacted by a $7 million decrease in the RIP expense, a $6 million reduction in expenses resulting from an increase in certain selling, promotional and administrative processing service reimbursements from WAVE and a $5 million reduction related to environmental insurance settlements, net of charges. These decreases in SG&A expenses were partially offset by higher SG&A expenses as a result of the Tectum acquisition and $2 million of severance related to cost control measures in the U.S.

Separation costs of $34.5 million in 2016 were primarily related to outside professional services and employee retention and severance accruals incurred in conjunction with our initiative to separate our flooring business from our ceilings business.

Equity earnings from our WAVE joint venture were $67.0 million in 2017, compared to $73.1 million in 2016. The decrease in WAVE earnings was primarily driven by an increase in selling and administrative processing charges from AWI and Worthington Industries, Inc. WAVE earnings were also negatively impacted by higher input costs, particularly steel. See Note 9 to the Consolidated Financial Statements for further information.

Interest expense was $35.4 million in 2017, compared to $49.5 million in 2016. Interest expense in 2016 included higher debt financing costs as a result of the refinancing of our credit facilities in April 2016 and $8.3 million of net losses that were reclassified from accumulated other comprehensive income as a result of the settlement of interest rate swaps which occurred in April 2016 and in connection with our entering into $450.0 million of notional amount of basis rate swaps during the fourth quarter of 2016. Also contributing to the decrease in interest expense was a reduction in total debt outstanding and a lower interest rate spread in comparison to 2016.

Other non-operating income was $2.4 million in 2017 and $11.2 million in 2016. The changes in other non-operating income were primarily due to foreign exchange rate gains on the translation of unhedged cross-currency intercompany loans in 2016.

Income tax expense was $1.5 million and $51.3 million in 2017 and 2016, respectively. The effective tax rate for 2017 was 0.7% as compared to a rate of 34.1% for 2016. On December 22, 2017, the U.S. federal government enacted the Tax Cut and Jobs Act of 2017 (the "2017 Tax Act"), resulting in significant changes from previous tax law. Effective January 1, 2018, the 2017 Tax Act reduces the federal corporate income tax rate from 35% to 21%. As a result, we recorded a net $82.5 million income tax benefit in the fourth quarter of 2017. Excluding the impact of the 2017 Tax Act, income tax expense for 2017 increased in comparison to 2016 due to an increase in pre-tax income, a decrease in reversals of reserves for uncertain tax positions from the expiration of the federal statute of limitations and an increase to the valuation allowance on foreign tax credits due to the anticipated sale of our EMEA and Pacific Rim businesses.

Total other comprehensive income ("OCI") was $57.9 million for 2017 compared to $23.6 million for 2016. Foreign currency translation adjustments represent the change in the U.S. dollar value of assets and liabilities denominated in foreign currencies. Foreign currency translation adjustments in 2017 were driven primarily by changes in the exchange rates of the British pound, the Chinese renminbi, the Russian ruble and the Canadian dollar. 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. Derivative gains in 2016 were impacted by $8.3 million of net losses related to settlements of interest rates swaps. Pension and postretirement adjustments represent actuarial gains and losses related to our defined benefit pension and postretirement plans and amortization of net losses on the U.S. pension plans. Increases in OCI in 2017 primarily related to our U.S. pension plans.

REPORTABLE SEGMENT RESULTS

Mineral Fiber

(dollar amounts in millions)

	2017	2016	Change is Favorable
Total segment net sales	$ 756.4	$ 736.6	2.7 %
Operating income	$ 231.9	$ 223.9	3.6 %

Net sales increased due to favorable AUV of $29 million, partially offset by lower volumes of $10 million. The favorable AUV was primarily due to improved mix from the sale of higher end ceiling tile products, while the decrease in volumes was primarily in lower end ceiling tile products.

Operating income increased due to lower SG&A expenses of $20 million and the favorable margin impact of higher AUV of $12 million, partially offset by higher manufacturing and input costs of $13 million, lower earnings from WAVE of $6 million and the negative impact of lower volumes of $2 million. The reduction in SG&A expenses was impacted by $6 million of additional expense reimbursements from WAVE and $5 million of environmental insurance settlements, net of charges, both recorded in 2017. The increase in manufacturing costs was impacted by higher costs associated with planned enhancements to our manufacturing footprint to produce high end products and $7 million of severance and accelerated depreciation charges, primarily associated with the announced closure of our St. Helens manufacturing plant, partially offset by a $10 million reduction in costs related to environmental insurance settlements, net of charges, in 2017.

Architectural Specialties

(dollar amounts in millions)

	2017	2016	Change is Favorable
Total segment net sales	$ 137.2	$ 100.7	36.2 %
Operating income	$ 27.7	$ 19.2	44.3 %

Net sales increased due to higher volumes, partially as a result of our acquisition of Tectum and increased new construction activity.

Operating income increased due to the positive impact of higher volumes, partially offset by an increase in SG&A expenses due primarily to the acquisition of Tectum and investments in selling and design capabilities.

Unallocated Corporate

Unallocated Corporate expense of $5 million decreased from $54 million in the prior year, due to $35 million of charges incurred in connection with our separation of AFI in 2016 and a $17 million decrease in RIP expense.

FINANCIAL CONDITION AND LIQUIDITY

Cash Flow

The discussion that follows includes cash flows related to discontinued operations.

Operating activities for 2017 provided $170.4 million of cash, compared to $49.3 million of cash provided in 2016. The increase was primarily due to changes in working capital, most notably a decrease accounts payable and accrued expenses related to the separation of AFI.

Net cash used for investing activities was $54.2 million in 2017, compared to $17.0 million in 2016. The change in investing activities cash flows was primarily due to the acquisition of Tectum and lower dividends from our WAVE joint venture, partially offset by decreased purchases of property, plant and equipment.

Net cash used by financing activities was $102.7 million in 2017, compared to $128.9 million in 2016. The favorable change in use of cash was primarily the result of lower payments of debt, partially offset by higher repurchases of outstanding common stock.

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 senior 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 revolving credit facility and Term Loan A are currently priced at 2.00% over LIBOR and the Term Loan B portion is priced at 2.75% over LIBOR with a 0.75% floor. The senior credit facility also has a $25.0 million letter of credit facility, also known as our bi-lateral facility. The revolving credit facility and Term Loan A mature in March 2021 and Term Loan B matures in November 2023. This $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.

As of December 31, 2017, total borrowings outstanding under our senior credit facility were $577.5 million under Term Loan A and $245.6 million under Term Loan B. There were no borrowings outstanding under the revolving credit facility.

In February 2017, we repriced the interest rate of our Term Loan B borrowing, resulting in a lower LIBOR spread (2.75% vs. 3.25%). The maturity date remained unchanged along with all other terms and conditions. In connection with the repricing we paid $0.6 million of bank, legal and other fees, the majority of which were capitalized.

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 2017 or will be required in 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 December 31, 2017, 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):

Trade Date		Notional Amount	Coverage Period	Risk Coverage
November 13, 2016	$	250.0	November 2016 to March 2018	Term Loan A
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

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

In connection with the refinancing of our credit facilities in April 2016, $450.0 million of notional amount Term Loan B swaps with a trade date of March 27, 2012 were settled and $10.7 million of losses previously recorded as a component of accumulated other comprehensive income were reclassified to interest expense in 2016.

As of December 31, 2017, we had $450.0 million notional Term A swaps (the "Term Loan A Swaps"), in which we received 1-month LIBOR and paid a fixed rate over the hedged period.

During the fourth quarter of 2016, we elected to change the basis for interest payments due under our Term Loan A Swaps from 3-month LIBOR to 1-month LIBOR. In connection with the change in our underlying interest payments, in November 2016 we entered into $450.0 million forward-starting notional amount basis rate swaps to convert the floating rate risk under our Term Loan A Swaps from 3-month LIBOR to 1-month LIBOR and jointly designated the basis swaps with our Term Loan A Swaps in cash flow hedging relationships. As a result of this transaction, $2.4 million of gains previously recorded as a component of accumulated other comprehensive income were reclassified as a reduction to interest expense during the fourth quarter of 2016. Since the basis rate swaps had a non-zero fair value upon designation as cash flow hedges, mark-to-market gains or losses on ineffective portions of these hedges are reco rded as a component of interest expense.

As of December 31, 2017, we had a $100.0 million notional Term Loan B swap in which we receive the greater of 3-month LIBOR or a 0.75% LIBOR Floor and pay a fixed rate over the hedged period.

As of 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 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 December 31, 2017, we had $159.6 million of cash and cash equivalents, $81.0 million in the U.S and $78.6 million in various foreign jurisdictions. Upon completion of the sale of our EMEA and Pacific Rim businesses, it is our intention to repatriate a significant majority of the $78.6 million of cash held in various foreign jurisdictions; however our Purchase Agreement with Knauf allows AWI to transfer any cash balances held in our EMEA and Pacific Rim businesses to Knauf up to $10.0 million. See Note 4 to the Consolidated Financial Statements for additional information.

We have a $40.0 million Accounts Receivable Securitization Facility (the "funding entity") 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 sells 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 continuously purchased by ARC with the proceeds from collections of receivables previously purchased. As of December 31, 2017 we had no borrowings under this 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):

	As of December 31, 2017		
Financing Arrangement	**Limit**	**Used**	**Available**
Revolving credit facility	$ 150.0	$ -	$ 150.0
Bi-lateral facility	25.0	17.1	7.9
Accounts receivable securitization facility	29.6	36.2	(6.6)
Total	$ 204.6	$ 53.3	$ 151.3

As of December 31, 2017 and 2016, $6.6 million and $4.0 million, respectively, 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 Consolidated Balance Sheets. This restriction will lapse upon replacement of collateral with accounts receivables and/or upon a change in the letter of credit limit as a result of higher securitized accounts receivable balances.

We believe that cash on hand and cash generated from operations, together with lines of credit, 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.

2016 COMPARED TO 2015
CONSOLIDATED RESULTS FROM CONTINUING OPERATIONS
(dollar amounts in millions)

	2016	2015	Change is Favorable
Total consolidated net sales	$ 837.3	$ 805.1	4.0 %
Operating income	$ 188.9	$ 157.0	20.3 %

Consolidated net sales for 2016 increased due to higher volumes of $20 million and favorable AUV of $15 million.

Cost of goods sold was 63.5% of net sales in 2016, compared to 62.0% in 2015. Compared to the prior year, the increase was due to higher manufacturing and input costs.

SG&A expenses in 2016 were $155.5 million, or 18.6% of net sales, compared to $180.8 million, or 22.5% of net sales in 2015. The decrease was the result of the AFI separation and a decrease in RIP expense.

Separation costs of $34.5 million in 2016 and $34.3 million in 2015 were primarily related to outside professional services and employee retention and severance accruals incurred in conjunction with our initiative to separate our flooring business from our ceilings business.

Equity earnings from our WAVE joint venture were $73.1 million in 2016, compared to $66.1 million in 2015. The increase was due to higher sales volumes, favorable AUV and lower manufacturing input costs, partially offset by higher SG&A expenses for go-to-market investments.

Interest expense was $49.5 million in 2016, compared to $44.6 million in 2015. The increase in interest expense was due to $10.7 million of losses that were reclassified from accumulated other comprehensive income to interest expense during 2016 as a result of the settlement of $450.0 million of notional amount interest rate swaps which occurred in connection with the refinancing of our credit facilities, partially offset by lower costs due to a reduction in total debt outstanding and a lower interest rate spread and $2.4 million of gains that were reclassified from accumulated other comprehensive income to interest expense during 2016 in connection with our entering into $450.0 million of notional amount of basis rate swaps.

Other non-operating income was $11.2 million in 2016, compared to other non-operating expense of $17.8 million in 2015. The changes in other non-operating income were primarily due to foreign exchange rate gains on the translation of unhedged cross-currency intercompany loans. Expenses in 2015 were primarily due to foreign exchange rate losses on the translation of unhedged cross-currency intercompany loans denominated in Russian rubles, related to the construction of our Russian mineral fiber ceiling plant that was completed in the first quarter of 2015. During the fourth quarter of 2016, all Russian ruble denominated intercompany loans were settled with intercompany capital contributions.

Income tax expense was $51.3 million and $36.7 million in 2016 and 2015, respectively. The effective tax rate for 2016 was 34.1% as compared to a rate of 38.8% for 2015. The effective tax rate for 2016 was lower than 2015 primarily due to income tax benefits recorded during the second half of 2016 resulting from the reversal of reserves for uncertain tax positions as a result of an expiration of the federal statute of limitations to review previously filed income tax returns.

REPORTABLE SEGMENT RESULTS
Mineral Fiber
(dollar amounts in millions)

	2016	2015	Change is Favorable/ (Unfavorable)
Total segment net sales	$ 736.6	$ 723.7	1.8 %
Operating income	$ 223.9	$ 270.3	(17.2) %

Net sales increased due to favorable AUV of $15 million, while volume was flat.

Operating income decreased due to higher SG&A expenses of $50 million, the margin impact of lower volumes of $5 million and an increase manufacturing and input costs of $4 million, partially offset by the margin impact of favorable AUV of $8 million and higher earnings from WAVE of $7 million. The increase in SG&A expenses in 2016 was primarily a result of the inclusion of costs formally assigned to our Unallocated Corporate se gment prior to the separation of AFI, partially offset by a reduction in costs primarily due to the separation of AFI.

Architectural Specialties
(dollar amounts in millions)

	2016	2015	Change is Favorable
Total segment net sales	$ 100.7	$ 81.4	23.7 %
Operating income	$ 19.2	$ 16.5	16.4 %

Net sales and operating income both increased due to higher volumes. The increase in operating income was partially offset by a $4 million increase in SG&A expenses, due to investments in selling and design capabilities.

Unallocated Corporate

Unallocated Corporate expense of $54.2 million decreased from $129.8 million in the prior year. The decrease was due to the inclusion of most of the Corporate functions within the Mineral Fiber and Architectural Specialties segments starting in 2016 as a result of the AFI separation.

Cash Flow

The discussion that follows includes cash flows related to discontinued operations.

Operating activities for 2016 provided $49.3 million of cash, compared to $203.7 million of cash provided in 2015. The decrease was primarily due to change in working capital, most notably a decrease in accounts payable and accrued expenses related to the separation of AFI. The decrease due to the change in working capital was partially offset by higher cash earnings partially offset by a reduction in depreciation and amortization.

Net cash used for investing activities was $17.0 million in 2016, compared to $101.5 million in 2015. The change in investing activities cash flows was primarily due to decreased purchases of property, plant and equipment, partially offset by higher dividends from our WAVE joint venture.

Net cash used by financing activities was $128.9 million in 2016, compared to $32.3 million in 2015. The unfavorable use of cash was primarily the result of higher payments of debt and repurchase of outstanding common stock.

OFF-BALANCE SHEET ARRANGEMENTS

No disclosures are required pursuant to Item 303(a)(4) of Regulation S-K.

CONTRACTUAL OBLIGATIONS

As part of our normal operations, we enter into numerous contractual obligations that require specific payments during the term of the various agreements. The following table includes amounts ongoing under contractual obligations existing as of December 31, 2017. Only known payments that are dependent solely on the passage of time are included. Obligations under contracts that contain minimum payment amounts are shown at the minimum payment amount. Contracts that contain variable payment structures without minimum payments are excluded. Purchase orders that are entered into in the normal course of business are also excluded because they are generally cancelable and not legally binding. Amounts are presented below based upon the currently scheduled payment terms. Actual future payments may differ from the amounts presented below due to changes in payment terms or events affecting the payments.

(dollar amounts in millions)	2018	2019	2020	2021	2022	Thereafter	Total
Long-term debt (1)	$ 32.5	$ 55.0	$ 62.5	$ 437.5	$ 2.5	$ 268.1	$ 858.1
Scheduled interest payments (2)	33.1	34.7	32.2	21.8	12.9	19.6	154.3
Operating lease obligations, net of sublease income (3)	2.4	2.2	1.8	1.5	1.1	4.3	13.3
Unconditional purchase obligations (4)	49.8	5.7	1.6	1.4	1.2	1.7	61.4
Pension contributions (5)	4.0	-	-	-	-	-	4.0
Other obligations (6), (7)	4.7	-	-	-	-	-	4.7
Total contractual obligations	$ 126.5	$ 97.6	$ 98.1	$ 462.2	$ 17.7	$ 293.7	$ 1,095.8

(1) Excludes $7.9 million of unamortized debt financing costs as of December 31, 2017.

(2) For debt with variable interest rates and interest rate swaps, we projected future interest payments based on market-based interest rate swap curves.

(3) Lease obligations include the minimum payments due under existing agreements with non-cancelable lease terms in excess of one year.

(4) Unconditional purchase obligations include (a) purchase contracts whereby we must make guaranteed minimum payments of a specified amount regardless of how little material is actually purchased ("take or pay" contracts) and (b) service agreements. Unconditional purchase obligations exclude contracts entered into during the normal course of business that are non-cancelable and have fixed per unit fees, but where the monthly commitment varies based upon usage. Cellular phone contracts are an example.

(5) Pension contributions include estimated contributions for our defined benefit pension plans. We are not presenting estimated payments in the table above beyond 2018 as funding can vary significantly from year to year based upon changes in the fair value of plan assets, funding regulations and actuarial assumptions.

(6) Other obligations include payments under severance agreements.

(7) Other obligations excludes $53.4 million of unrecognized tax benefit liabilities under ASC 740 *"Income Taxes."* Due to the uncertainty relating to these positions, we are unable to reasonably estimate the ultimate amount or timing of the settlement of these issues. Other obligations also excludes $10.3 million of one-time deemed repatriation tax liabilities on undistributed foreign earnings and profits, gross of foreign tax credit utilization, as a result of the enactment of the 2017 Tax Act as such amounts were recorded on a provisional basis and estimated based on information available as of December 31, 2017. See Note 14 to the Consolidated Financial Statements for more information.

This table excludes obligations related to postretirement benefits (retiree health care and life insurance) since we voluntarily provide these benefits. The amount of benefit payments we made in 2017 was $10.3 million. See Note 16 to the Consolidated Financial Statements for additional information regarding future expected cash payments for postretirement benefits.

We are party to supply agreements, some of which require the purchase of inventory remaining at the supplier upon termination of the agreement. Had these agreements terminated at December 31, 2017, we would have been obligated to purchase approximately $0.6 million of inventory. Historically, due to production planning, we have not had to purchase material amounts of product at the end of similar contracts. Accordingly, no liability has been recorded for these guarantees.

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 summarizes the commitments we have available for use as of December 31, 2017.

Other Commercial Commitments (dollar amounts in millions)	Total Amounts Committed	Less Than 1 Year	1 – 3 Years	4 – 5 Years	Over 5 Years
Letters of credit	$ 53.3	$ 53.3	$ -	$ -	$ -

In connection with our disposition of certain assets through a variety of unrelated transactions, we have entered into contracts that included various indemnity provisions, some of which are customary for such transactions, while others hold the acquirer of the assets harmless with respect to liabilities relating to such matters as taxes, environmental and other litigation. Some of these provisions include exposure limits, but many do not. Due to the nature of the indemnities, it is not possible to estimate the potential maximum exposure under these contractual provisions. As of December 31, 2017, we had no liabilities recorded for which an indemnity claim had been received.

ITEM 7A. QUANTITATIVE AND QUALITA TIVE DISCLOSURES ABOUT MARKET RISK

Market Risk

We are exposed to market risk from changes in foreign currency 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, which are entered into for periods consistent with underlying exposure and do not constitute positions independent of those exposures. We use derivative financial instruments as risk management tools and not for speculative trading purposes. In addition, derivative financial instruments are entered into with a diversified group of major financial institutions in order to manage our exposure to potential nonperformance on such instruments. We regularly monitor developments in the capital markets.

Counterparty Risk

We only enter into derivative transactions with established counterparties having an investment grade or better. We monitor counterparty credit default swap levels and credit ratings on a regular basis. All of our derivative transactions with counterparties are 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 receive cash collateral with any counterparty for our derivative transactions. These ISDAs do not contain any credit contingent features other than those contained in our bank credit facility. Exposure to individual counterparties is controlled, and thus we consider the risk of counterparty default to be negligible.

Interest Rate Sensitivity

We are subject to interest rate variability on our Term Loan A, Term Loan B, revolving credit facility and other borrowings. A hypothetical increase of one-quarter percentage point in LIBOR interest rates from December 31, 2017 levels would increase 2018 interest expense by approximately $1.4 million. As of December 31, 2017, $245.6 million of our debt has a 0.75% LIBOR floor, which would not be affected by a one-quarter percentage point move in LIBOR given the current interest rate environment. We also have $550.0 million of interest rate swaps outstanding, which fix the interest rates for a portion of our debt. The current portion of the interest rate swaps is included in this calculation.

As of December 31, 2017, we had interest rate swaps outstanding on Term Loan A and on Term Loan B, with notional amounts of $450.0 million and $100.0 million, respectively. We utilize interest rate swaps to minimize the fluctuations in earnings caused by interest rate volatility. Under the terms of the Term Loan A swaps we receive 1-month LIBOR and pay a fixed rate over the hedged period. Under the terms of our Term Loan B, we receive the greater of 3-month LIBOR or a 0.75% LIBOR Floor and pay a fixed rate over the hedged period. The following table summarizes our interest rate swaps as of December 31, 2017 (dollar amounts in millions):

Trade Date	Notional Amount	Coverage Period	Risk Coverage
November 13, 2016	$ 250.0	November 2016 to March 2018	Term Loan A
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

These swaps are designated as cash flow hedges against changes in LIBOR for a portion of our variable rate debt. The net asset measured at fair value was $8.9 million at December 31, 2017.

The table below provides information about our long-term debt obligations as of December 31, 2017, including payment requirements and related weighted-average interest rates by scheduled maturity dates. Weighted average variable rates are based on implied forward rates in the yield curve and are exclusive of our interest rate swaps.

Scheduled maturity date (dollar amounts in millions)	2018	2019	2020	2021	2022	After 2022	Total
Variable rate principal payments	$ 32.5	$ 55.0	$ 62.5	$ 437.5	$ 2.5	$ 268.1	$ 858.1
Average interest rate	3.90%	4.30%	4.37%	4.41%	5.26%	4.91%	4.54%

Variable rate principle payments reflected in the preceding table exclude $7.9 million of unamortized debt financing costs as of December 31, 2017.

Exchange Rate Sensitivity

We manufacture and sell our products in a number of countries throughout the world and, as a result, 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. Upon completion of the sale of our EMEA and Pacific Rim businesses, and on a continuing operations basis as of December 31, 2017, our only major foreign currency exposure is to the Canadian dollar. A 10% strengthening of the Canadian dollar against the U.S. dollar compared to December 31, 2017 levels would increase our 2018 earnings before income taxes by approximately $0.5 million, including the impact of current foreign currency forward exchange contracts.

The table below details our outstanding currency instruments as of December 31, 2017.

On balance sheet foreign exchange related derivatives (dollar amounts in millions)	**Maturing in 2018**	**Maturing in 2019**	**Total**
Notional amounts	$ 15.7	$ 3.2	$ 18.9
Assets at fair value	(0.7)	(0.1)	(0.8)

Natural Gas Price Sensitivity

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 of reducing North American natural gas volatility through derivative instruments, including forward contracts and swaps, purchased call options, and zero-cost collars up to 24 months forward. As of December 31, 2017, we had contracts to hedge approximately $9.2 million (notional amounts) of natural gas. All of these contracts mature by November 2019. A 10% increase in North American natural gas prices compared to December 31, 2017 prices would increase our 2018 expenses by approximately $0.5 million including the impact of current hedging contracts. As of December 31, 2017 we had recorded net liabilities of $0.6 million related to these contracts.

ITEM 8. FINANCIAL STATEMEN TS AND SUPPLEMENTARY DATA

SUPPLEMENTARY DATA

Quarterly Financial Information for the Years Ended December 31, 2017 and 2016 (Unaudited)

The following consolidated financial statements are filed as part of this Annual Report on Form 10-K:

Reports of Independent Registered Public Accounting Firm.

Consolidated Statements of Earnings and Comprehensive Income for the Years Ended December 31, 2017, 2016 and 2015.

Consolidated Balance Sheets as of December 31, 2017 and 2016.

Consolidated Statements of Equity for the Years Ended December 31, 2017, 2016 and 2015.

Consolidated Statements of Cash Flows for the Years Ended December 31, 2017, 2016 and 2015.

Notes to Consolidated Financial Statements.

Schedule II for the Years Ended December 31, 2017, 2016 and 2015.

Armstrong World Industries, Inc., and Subsi diaries
Quarterly Financial Information (unaudited)
(dollar amounts in millions, except for per share data)

	First	Second	Third	Fourth
2017				
Net sales	$ 219.8	$ 225.6	$ 233.9	$ 214.3
Gross profit	83.4	90.3	83.6	66.5
Earnings from continuing operations	35.5	43.7	37.3	104.1
Per share of common stock:				
Basic	$ 0.65	$ 0.82	$ 0.70	$ 1.96
Diluted	$ 0.65	$ 0.81	$ 0.70	$ 1.92
Price range of common stock - high	$ 48.00	$ 47.95	$ 51.98	$ 61.50
Price range of common stock - low	$ 38.45	$ 41.20	$ 43.77	$ 49.25
2016				
Net sales	$ 200.1	$ 214.8	$ 226.0	$ 196.4
Gross profit	70.7	79.5	87.3	68.3
(Loss) earnings from continuing operations	(0.2)	26.8	54.5	18.2
Per share of common stock:				
Basic	$ -	$ 0.48	$ 0.97	$ 0.33
Diluted	$ -	$ 0.48	$ 0.97	$ 0.33
Price range of common stock - high	$ 48.66	$ 48.39	$ 45.75	$ 45.00
Price range of common stock - low	$ 35.92	$ 36.33	$ 37.49	$ 36.38

Note: The net sales and gross profit amounts above are reported on a continuing operations basis. The sum of the quarterly earnings per share data may not equal the total year amounts due to changes in the average shares outstanding and, for diluted data, the exclusion of the anti-dilutive effect in certain quarters. Historical stock prices above have not been restated as a result of the separation of AFI.

Fourth Quarter 2017 Compared With Fourth Quarter 2016 – Continuing Operations

Consolidated net sales of $214.3 million in the fourth quarter of 2017 increased 9.1% due to higher volumes of $14 million and favorable AUV of $4 million.

Mineral Fiber net sales increased 3.4% due to favorable AUV of $4 million and higher volumes of $1 million. Architectural Specialties net sales increased 49.0% due to higher volumes due to the acquisition of Tectum and increased new construction activity.

For the fourth quarter of 2017, cost of goods sold was 69.0% of net sales, compared to 65.2% in 2016. The increase in cost of goods sold as a percentage of sales was impacted by $6 million of accelerated depreciation charges primarily due to management's decision to permanently close a plant in China that will be retained by AWI after the sale of our Pacific Rim business and management's decision to close our St. Helens, Oregon plant. Cost of goods sold for 2017 was also impacted by an increase in manufacturing and input costs and $3 million of severance and other charges associated with the announced closure of our St. Helens, Oregon plant. Partially offsetting these increases was a $6 million reduction in RIP expense and a $2 million reduction of cost of goods sold related to environmental insurance settlements, net of charges, recorded in 2017.

SG&A expenses for the fourth quarter of 2017 were $29.9 million, or 14.0% of net sales compared to $42.6 million, or 21.7% of net sales, for the fourth quarter of 2015. The decrease in SG&A expenses was primarily due to a reduction of $6 million related to environmental insurance settlements, net of charges, a $4 million decrease in the RIP expense and a $2 million reduction in expenses resulting from an increase in certain selling, promotional and administrative processing service reimbursements from WAVE. These decreases in SG&A expenses were partially offset by $2 million of severance related to cost control measures in the U.S. as a result of the announced future sale of our EMEA and Pacific Rim businesses.

Equity earnings in the fourth quarters of 2017 and 2016 were $15.1 million and $16.1 million, respectively. The decrease in WAVE earnings was primarily driven by higher input costs, particularly steel, and an increase in selling and administrative processing charges from AWI and Worthington Industries, Inc.

Operating income was $51.7 million in the fourth quarter of 2017 compared to $40.3 million in the fourth quarter of 2016, with the increase due primarily to a decrease in SG&A expenses as described above.

Interest expense in the fourth quarter of 2017 decreased to $8.8 million compared to $11.2 million in the fourth quarter of 2016 primarily due to a reduction in total debt outstanding and a lower interest rate spread, partially offset by $2.4 million of gains on interest rate swaps recorded as a reduction to interest expense in the fourth quarter of 2016.

Fourth quarter income tax benefit was $60.7 million on pre-tax earnings from continuing operations of $43.4 million in 2017 compared to income tax expense of $12.7 million on a pre-tax earnings from continuing operations of $30.9 million in 2016. The effective tax rate for 2017 was lower than 2016 primarily due to the income tax benefits of the 2017 Tax Act. Effective January 1, 2018, the 2017 Tax Act reduces the federal corporate income tax rate from 35% to 21%. As a result, we recorded a net $82.5 million income tax benefit in the fourth quarter of 2017. Excluding the impact of the 2017 Tax Act, income tax expense for the fourth quarter of 2017 increased in comparison to 2016 due to an increase in pre-tax income and an increase to the valuation allowance on foreign tax credits in 2017 due to the anticipated sale of our EMEA and Pacific Rim businesses.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934, as amended. Our internal control over financial reporting was designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of our financial statements for external purposes in accordance with generally accepted accounting principles.

Because of inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this evaluation and the criteria in the COSO framework, our management concluded that our internal control over financial reporting was effective as of December 31, 2017.

KPMG LLP, an independent registered public accounting firm, audited our internal control over financial reporting as of December 31, 2017, as stated in their report included herein.

/s/ Victor D. Grizzle

Victor D. Grizzle
Director, President and Chief Executive Officer

/s/ Brian L. MacNeal

Brian L. MacNeal
Senior Vice President and Chief Financial Officer

/s/ Stephen F. McNamara

Stephen F. McNamara
Vice President and Corporate Controller

February 26, 2018

Report of Independent Regist ered Public Accounting Firm

To the Shareholders and Board of Directors
Armstrong World Industries, Inc.:

Opinion on Internal Control Over Financial Reporting

We have audited Armstrong World Industries, Inc. and subsidiaries (the "Company") internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 31, 2017 and 2016, the related consolidated statements of earnings and comprehensive income, equity, and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes and financial statement schedule of valuation and qualifying reserves (collectively, the "consolidated financial statements"), and our report dated February 26, 2018 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying *Management's Report on Internal Control over Financial Reporting* . Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ KPMG LLP

Philadelphia, Pennsylvania
February 26, 2018

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Armstrong World Industries, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Armstrong World Industries, Inc. and subsidiaries (the "Company") as of December 31, 2017 and 2016, the related consolidated statements of earnings and comprehensive income, equity, and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes and financial statement schedule of valuation and qualifying reserves (collectively, the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 26, 2018 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company's auditor since 1929.

Philadelphia, Pennsylvania
February 26, 2018

Armstrong World Industries, Inc., and Subsidiaries
Consolidated Statements of Earnings and Comprehensive Income
(amounts in millions, except per share data)

	Years Ended December 31, 2017	2016	2015
Net sales	$ 893.6	$ 837.3	$ 805.1
Cost of goods sold	569.8	531.5	499.1
Gross profit	323.8	305.8	306.0
Selling, general and administrative expenses	135.7	155.5	180.8
Separation costs	-	34.5	34.3
Equity earnings from joint venture	(67.0)	(73.1)	(66.1)
Operating income	255.1	188.9	157.0
Interest expense	35.4	49.5	44.6
Other non-operating (income) expense, net	(2.4)	(11.2)	17.8
Earnings from continuing operations before income taxes	222.1	150.6	94.6
Income tax expense	1.5	51.3	36.7
Earnings from continuing operations	220.6	99.3	57.9
Net gain (loss) from discontinued operations, net of tax expense (benefit) of $3.6, ($0.8) and $34.6	4.2	(9.9)	(5.3)
(Loss) gain on disposal of discontinued business, net of tax (benefit) of ($4.1), ($15.2) and ($41.8)	(70.0)	15.3	41.6
Net (loss) gain from discontinued operations	(65.8)	5.4	36.3
Net earnings	$ 154.8	$ 104.7	$ 94.2
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	24.5	(33.2)	(25.5)
Derivative (loss) gain	(0.3)	7.5	0.7
Pension and postretirement adjustments	33.7	49.3	32.9
Total other comprehensive income	57.9	23.6	8.1
Total comprehensive income	$ 212.7	$ 128.3	$ 102.3
Earnings per share of common stock, continuing operations:			
Basic	$ 4.12	$ 1.79	$ 1.04
Diluted	$ 4.08	$ 1.78	$ 1.03
(Loss) earnings per share of common stock, discontinued operations:			
Basic	$ (1.23)	$ 0.09	$ 0.65
Diluted	$ (1.22)	$ 0.09	$ 0.65
Net earnings per share of common stock:			
Basic	$ 2.89	$ 1.88	$ 1.69
Diluted	$ 2.86	$ 1.87	$ 1.68
Average number of common shares outstanding:			
Basic	53.3	55.4	55.5
Diluted	53.9	55.7	55.9

See accompanying notes to consolidated financial statements beginning on page 44.

Armstrong World Industries, Inc., and Subsidiaries
Consolidated Balance Sheets
(amounts in millions, except share data)

	December 31, 2017	December 31, 2016
Assets		
Current assets:		
Cash and cash equivalents	$ 159.6	$ 141.9
Accounts and notes receivable, net	90.8	58.8
Inventories, net	53.8	46.9
Current assets of discontinued operations	306.1	125.2
Income tax receivable	30.7	22.2
Other current assets	7.9	11.2
Total current assets	648.9	406.2
Property, plant, and equipment, less accumulated depreciation and amortization of $361.4 and $323.8, respectively	499.9	465.2
Prepaid pension costs	88.3	48.7
Investment in joint venture	107.3	106.2
Goodwill and intangible assets, net	441.1	427.7
Noncurrent assets of discontinued operations	-	221.1
Deferred income taxes	19.6	14.4
Income tax receivable	4.1	5.7
Other noncurrent assets	64.3	62.8
Total assets	$ 1,873.5	$ 1,758.0
Liabilities and Shareholders' Equity		
Current liabilities:		
Current installments of long-term debt	$ 32.5	$ 25.0
Accounts payable and accrued expenses	108.4	117.0
Liabilities of discontinued operations	128.5	80.8
Income tax payable	0.5	1.3
Deferred income taxes	-	-
Total current liabilities	269.9	224.1
Long-term debt, less current installments	817.7	848.6
Postretirement benefit liabilities	79.2	84.8
Pension benefit liabilities	57.2	56.8
Other long-term liabilities	35.5	27.0
Noncurrent liabilities of discontinued operations	-	34.0
Income tax payable	53.0	62.2
Deferred income taxes	141.7	154.1
Total noncurrent liabilities	1,184.3	1,267.5
Shareholders' equity:		
Common stock, $0.01 par value per share, authorized 200 million shares; issued 60,782,736 shares, outstanding 52,772,139 shares in 2017 and 60,597,140 shares issued, 54,428,233 outstanding shares in 2016	0.6	0.6
Capital in excess of par value	516.8	504.9
Retained earnings	633.4	469.9
Treasury stock, at cost, 8,010,597 shares as of December 31, 2017 and 6,168,907 shares as of December 31, 2016	(385.6)	(305.2)
Accumulated other comprehensive (loss)	(345.9)	(403.8)
Total shareholders' equity	419.3	266.4
Total liabilities and shareholders' equity	$ 1,873.5	$ 1,758.0

See accompanying notes to consolidated financial statements beginning on page 44.

Armstrong World Industries, Inc., and Subsidiaries
Consolidated Statements of Equity
(amounts in millions, except share data)

	Common Stock		Additional Paid-In Capital	Retained Earnings	Treasury Stock		Accumulated Other Comprehensive Income (Loss)	Total
	Shares	Amount			Shares	Amount		
December 31, 2014	55,126,153	$ 0.6	$ 1,134.4	$ 271.0	5,057,382	$ (261.4)	$ (495.5)	$ 649.1
Stock issuance, net	232,911							
Share-based employee compensation			17.4					17.4
Net earnings				94.2				94.2
Other comprehensive income							8.1	8.1
December 31, 2015	55,359,064	$ 0.6	$ 1,151.8	$ 365.2	5,057,382	$ (261.4)	$ (487.4)	$ 768.8
Stock issuance, net	180,694							
Share-based employee compensation			9.2					9.2
Net earnings				104.7				104.7
Other comprehensive income							23.6	23.6
Separation of Armstrong Flooring, Inc.			(656.1)				60.0	(596.1)
Acquisition of treasury stock	(1,111,525)				1,111,525	(43.8)		(43.8)
December 31, 2016	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, net	185,596							
Share-based employee compensation			11.4					11.4
Net earnings				154.8				154.8
Other comprehensive income							57.9	57.9
Separation of Armstrong Flooring, Inc.			0.5					0.5
Acquisition of treasury stock	(1,841,690)				1,841,690	(80.4)		(80.4)
December 31, 2017	52,772,139	$ 0.6	$ 516.8	$ 633.4	8,010,597	$ (385.6)	$ (345.9)	$ 419.3

See accompanying notes to consolidated financial statements beginning on page 44.

Armstrong World Industries, Inc., and Subsidiaries
Consolidated Statements of Cash Flows
(amounts in millions)

	Years Ended December 31, 2017	2016	2015
Cash flows from operating activities:			
Net earnings	$ 154.8	$ 104.7	$ 94.2
Adjustments to reconcile earnings to net cash provided by operating activities:			
Depreciation and amortization	89.2	89.2	118.3
Write off of debt financing costs	-	1.1	-
Loss (gain) on disposal of discontinued operations	74.1	(0.1)	0.2
Deferred income taxes	(12.3)	51.0	(48.5)
Share-based compensation	10.2	12.4	13.4
Equity earnings from joint venture	(67.0)	(73.1)	(66.1)
Separation costs	-	34.5	34.3
Loss on interest rate swap	-	10.7	-
U.S. pension (credit) expense	(4.5)	15.0	25.2
Non-cash foreign currency translation on intercompany loans	(2.6)	(3.6)	19.8
Other, non-cash adjustments, net	2.2	(0.3)	0.3
Changes in operating assets and liabilities:			
Receivables	(37.1)	(23.9)	2.7
Inventories	3.6	(7.0)	(15.7)
Other current assets	2.2	7.1	(7.3)
Other noncurrent assets	(1.6)	(9.9)	7.9
Accounts payable and accrued expenses	(20.0)	(82.1)	15.0
Income taxes payable	(18.8)	(49.3)	33.6
Other long-term liabilities	(1.2)	(22.0)	(22.2)
Other, net	(0.8)	(5.1)	(1.4)
Net cash provided by operating activities	170.4	49.3	203.7
Cash flows from investing activities:			
Purchases of property, plant and equipment	(89.7)	(104.2)	(170.7)
Return of investment from joint venture	69.1	86.9	64.2
Cash paid for acquisition	(31.2)	-	-
Payment of company-owned life insurance, net	(2.4)	-	2.2
Other investing activities	-	0.3	2.8
Net cash (used for) investing activities	(54.2)	(17.0)	(101.5)
Cash flows from financing activities:			
Proceeds from revolving credit facility and other short-term debt	103.0	90.0	-
Payments of revolving credit facility and other short-term debt	(103.0)	(90.0)	-
Proceeds from long-term debt	-	363.5	-
Payments of long-term debt	(25.0)	(434.1)	(39.5)
Financing costs	(0.6)	(8.1)	-
Special dividends paid	-	-	(1.2)
Proceeds from exercised stock options	3.3	0.7	6.4
Cash transferred to Armstrong Flooring, Inc.	-	(9.1)	-
Proceeds from company-owned life insurance loans, net	-	2.0	2.0
Payment for treasury stock acquired	(80.4)	(43.8)	-
Net cash (used for) financing activities	(102.7)	(128.9)	(32.3)
Effect of exchange rate changes on cash and cash equivalents	4.2	(6.3)	(10.4)
Net increase (decrease) in cash and cash equivalents	17.7	(102.9)	59.5
Cash and cash equivalents at beginning of year	141.9	244.8	185.3
Cash and cash equivalents at end of year	159.6	141.9	244.8
Cash and cash equivalents at end of year of discontinued operations	-	-	35.5
Cash and cash equivalents at end of year of continuing operations	$ 159.6	$ 141.9	$ 209.3
Supplemental Cash Flow Disclosures:			
Interest paid	$ 30.7	$ 33.4	$ 39.4
Income taxes paid, net	$ 32.1	$ 33.7	$ 44.4
Amounts in accounts payable for capital expenditures	$ 2.6	$ 4.4	$ 14.3

See accompanying notes to consolidated financial statements beginning on page 44.

NOTE 1. BUSINESS

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

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 $330.0 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, which is subject to regulatory approvals and other customary conditions, is currently anticipated to close in mid-2018. EMEA and Pacific Rim's historical financial results have been reflected in AWI's Consolidated Financial Statements as discontinued operations for all periods presented. See Note 4 for additional information.

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 have been included as a component of our Architectural Specialties segment. See Note 4 for additional information.

NOTE 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Consolidation Policy. The consolidated financial statements and accompanying data in this report include the accounts of AWI and its majority-owned subsidiaries. All significant intercompany transactions have been eliminated from the consolidated financial statements.

Use of Estimates. We prepare our financial statements in conformity with U.S. Generally Accepted Accounting Principles ("U.S. GAAP"), which requires management to make estimates and assumptions. These estimates and assumptions affect the reported amounts of assets, liabilities, revenues and expenses. When preparing an estimate, management determines the amount based upon the consideration of relevant internal and external information. Actual results may differ from these estimates.

Reclassifications. Certain amounts in the prior year's Consolidated Financial Statements and related notes and schedule thereto have been recast to conform to the 2017 presentation.

Revenue Recognition. We recognize revenue from the sale of products when persuasive evidence of an arrangement exists, title and risk of loss transfers to the customers, prices are fixed and determinable, and it is reasonably assured the related accounts receivable is collectible. Our standard sales terms are Free On Board ("FOB") shipping point. We have some sales terms that are FOB destination. Our products are sold with normal and customary return provisions. Sales discounts are deducted immediately from the sales invoice. Provisions, which are recorded as a reduction of revenue, are made for the estimated cost of rebates, promotional programs and warranties.

Sales Incentives. Sales incentives are reflected as a reduction of net sales.

Shipping and Handling Costs. Shipping and handling costs are reflected in cost of goods sold.

Advertising Costs. We recognize advertising expenses as they are incurred.

Research and Development Costs. We expense research and development costs as they are incurred.

Pension and Postretirement Benefits. We have benefit plans that provide for pension, medical and life insurance benefits to certain eligible employees when they retire from active service. See Note 16 to the Consolidated Financial Statements for disclosures on pension and postretirement benefits.

Taxes. The provision for income taxes has been determined using the asset and liability approach of accounting for income taxes to reflect the expected future tax consequences of events recognized in the financial statements. Deferred income tax assets and liabilities a re recognized by applying enacted tax rates to temporary differences that exist as of the balance sheet date, which result from differences in the timing of reported taxable income between tax and financial reporting.

We reduce the carrying amounts of deferred tax assets by a valuation allowance if, based on the available evidence, it is more likely than not that such assets will not be realized. The need to establish valuation allowances for deferred tax assets is assessed quarterly. In assessing the requirement for, and amount of, a valuation allowance in accordance with the more likely than not standard, we give appropriate consideration to all positive and negative evidence related to the realization of the deferred tax assets. This assessment considers, among other matters, the nature, frequency and severity of current and cumulative losses, forecasts of future profitability and foreign source income, the duration of statutory carryforward periods, and our experience with operating loss and tax credit carryforward expirations. A history of cumulative losses is a significant piece of negative evidence used in our assessment. If a history of cumulative losses is incurred for a tax jurisdiction, forecasts of future profitability are generally not used as positive evidence related to the realization of the deferred tax assets in the assessment.

We recognize the tax benefits of an uncertain tax position if those benefits are more likely than not to be sustained based on existing tax law. Additionally, we establish a reserve for tax positions that are more likely than not to be sustained based on existing tax law, but uncertain in the ultimate benefit to be sustained upon examination by the relevant taxing authorities. Unrecognized tax benefits are subsequently recognized at the time the more likely than not recognition threshold is met, the tax matter is effectively settled or the statute of limitations for the relevant taxing authority to examine and challenge the tax position has expired, whichever is earlier.

Taxes collected from customers and remitted to governmental authorities are reported on a net basis.

Earnings per Share . Basic earnings per share is computed by dividing the earnings attributable to common shares by the weighted average number of shares of common stock outstanding during the period. Diluted earnings per share reflects the potential dilution of securities that could share in the earnings.

Cash and Cash Equivalents . Cash and cash equivalents include cash on hand, short-term investments that have maturities of three months or less when purchased and restricted cash.

Concentration of Credit . We principally sell products to customers in building products industries in various geographic regions. Revenues from three commercial distributors, included within our Mineral Fiber and Architectural Specialties segments, individually exceeded 10% of our revenues in 2017. Net sales in 2017 to these three customers totaled $426.1 million. Net sales of $372.9 million and $305.6 million to these three customers also exceeded 10% of our revenues in 2016 and 2015, respectively. We monitor the creditworthiness of our customers and generally do not require collateral.

Receivables . We sell our products to select, pre-approved customers using customary trade terms that allow for payment in the future. Customer trade receivables, customer notes receivable and miscellaneous receivables (which include supply related rebates and other), net of allowances for doubtful accounts, customer credits and warranties are reported in accounts and notes receivable, net. Cash flows from the collection of receivables are classified as operating cash flows on the consolidated statements of cash flows.

We establish credit-worthiness prior to extending credit. We estimate the recoverability of receivables each period. This estimate is based upon new information in the period, which can include the review of any available financial statements and forecasts, as well as discussions with legal counsel and the management of the debtor company. As events occur, which impact the collectability of the receivable, all or a portion of the receivable is reserved. Account balances are charged off against the allowance when the potential for recovery is considered remote. We do not have any off-balance sheet credit exposure related to our customers.

Inventories . Inventories are valued at the lower of cost and net realizable value. See Note 6 to the Consolidated Financial Statements for further information on our accounting for inventories.

Property Plant and Equipment . Property plant and equipment is recorded at cost reduced by accumulated depreciation. Depreciation expense is recognized on a straight-line basis over the assets' estimated useful lives. Machinery and equipment includes manufacturing equipment (depreciated over 3 to 15 years), computer equipment (depreciated over 3 to 5 years) and office furniture and equipment (depreciated over 5 to 7 years). Within manufacturing equipment, assets that are subject to accelerated obsolescence or wear out quickly, such as dryer components, are depreciated over shorter periods (3 to 7 years). Heavy production equipment, such as conveyors and production presses, are depreciated over longer periods (10 to 15 years). Buildings are depreciated over 15 to 30 years, depending on factors such as type of construction and use. Computer software is depreciated over 3 to 7 years.

Property, plant and equipment is tested for impairment by asset group when indicators of impairment are present, such a s operating losses and/or negative cash flows. If an indication of impairment exists, we compare the carrying amount of the asset group to the estimated undiscounted future cash flows expected to be generated by the asset group. The estimate of an asset group's fair value is based on discounted future cash flows expected to be generated by the asset group, or based on management's estimated exit price assuming the assets could be sold in an orderly transaction between market participants, or estimated sal vage value if no sale is assumed. If the fair value is less than the carrying value of the asset group, we record an impairment charge equal to the difference between the fair value and carrying value of the asset group. Impairments of assets related to our manufacturing operations are recorded in cost of goods sold.

When assets are disposed of or retired, their costs and related depreciation are removed from the financial statements, and any resulting gains or losses normally are reflected in cost of goods sold or selling, general and administrative ("SG&A") expenses depending on the nature of the asset.

Asset Retirement Obligations . We recognize the fair value of obligations associated with the retirement of tangible long-lived assets in the period in which they are incurred. Upon initial recognition of a liability, the discounted cost is capitalized as part of the related long-lived asset and depreciated over the corresponding asset's useful life. Over time, accretion of the liability is recognized as an operating expense to reflect the change in the liability's present value.

Intangible Assets . Our definite-lived intangible assets are primarily customer relationships (amortized over 20 years) and developed technology (amortized over 15 years). We review significant definite-lived intangible assets for impairment when indicators of impairment exist. We review our businesses for indicators of impairment such as operating losses and/or negative cash flows. If an indication of impairment exists, we compare the carrying amount of the asset group to the estimated undiscounted future cash flows expected to be generated by the asset group. The estimate of an asset group's fair value is based on discounted future cash flows expected to be generated by the asset group, or based on management's estimated exit price assuming the assets could be sold in an orderly transaction between market participants. If the fair value is less than the carrying value of the asset group, we record an impairment charge equal to the difference between the fair value and carrying value of the asset group.

Our indefinite-lived intangibles are primarily goodwill, trademarks and brand names, with Armstrong representing our primary trademark, which are integral to our corporate identity and expected to contribute indefinitely to our cash flows. Accordingly, they have been assigned an indefinite life. We perform annual impairment tests during the fourth quarter on these indefinite-lived intangibles. These assets undergo more frequent tests if an indication of possible impairment exists.

The principal assumption used in our impairment tests for definite-lived intangible assets is future operating profit adjusted for depreciation and amortization. The principal assumptions used in our impairment tests for indefinite-lived intangible assets include revenue growth rate, discount rate and royalty rate. Revenue growth rate and future operating profit assumptions are derived from those utilized in our operating plan and strategic planning processes. The discount rate assumption is calculated based upon an estimated weighted average cost of equity which reflects the overall level of inherent risk and the rate of return a market participant would expect to achieve. The royalty rate assumption represents the estimated contribution of the intangible asset to the overall profits of the reporting unit. Methodologies used for valuing our intangible assets did not change from prior periods.

See Note 10 to the Consolidated Financial Statements for disclosure on intangible assets.

Foreign Currency Transactions . Assets and liabilities of our subsidiaries operating outside the United States which account in a functional currency other than U.S. dollars are translated using the period end exchange rate. Revenues and expenses are translated at exchange rates effective during each month. Foreign currency translation gains or losses are included as a component of accumulated other comprehensive income (loss) within shareholders' equity. Gains or losses on foreign currency transactions are recognized through earnings.

Financial Instruments and Derivatives . From time to time, we use derivatives and other financial instruments to offset the effect of currency, interest rate and commodity price variability. See Notes 17 and 18 to the Consolidated Financial Statements for further discussion.

Share-based Employee Compensation . We recognize share-based compensation expense on a straight-line basis over the vesting period for the entire award. Compensation expense for performance based awards with non-market based conditions are also recognized over the vesting period for the entire award, however, compensation expense may vary based on the expectations for actual performance relative to defined performa nce measures. See Note 21 to the Consolidated Financial Statements for additional information on share-based employee compensation.

Subsequent Events . We have evaluated subsequent events for potential recognition and disclosure through the date the consolidated financial statements included in the Annual Report on Form 10-K were issued.

Recently Adopted Accounting Standards

In July 2015, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2015-11, " *Simplifying the Measurement of Inventory* ," which requires inventory that is measured on a first-in, first-out or average cost basis to be measured at lower of cost and net realizable value, as opposed to the lower of cost or market. For inventory that is measured under the last-in, first-out ("LIFO") basis or the retail recovery method, there is no change to current measurement requirements. The adoption of this standard on January 1, 2017 did not have an impact on our financial condition, results of operations or cash flows.

In March 2016, the FASB issued ASU 2016-09, " *Improvements to Employee Share-Based Payment Accounting* ." This new guidance simplifies accounting for share-based payments, most notably by requiring all excess tax benefits and tax deficiencies to be recorded as income tax benefits or expense in the income statement and by allowing entities to recognize forfeitures of awards when they occur. Effective January 1, 2017, we adopted the provisions of ASU 2016-09 and elected to continue to estimate the impact of forfeitures when determining share-based compensation cost. We prospectively adopted the provisions of this new guidance related to the recognition of excess tax benefits and deficiencies through income tax expense, the presentation of excess tax benefits from share-based compensation as operating cash outflows, and changes to diluted earnings per share computations, the impact of which were not material to our Consolidated Statements of Earnings and Comprehensive Income or Consolidated Statements of Cash Flows. Finally, as required by ASU 2016-09, effective January 1, 2017, we recorded an $8.7 million cumulative-effect increase to Retained earnings and Deferred income taxes (assets), representing prior years' tax benefits that were not previously recognized because the related tax deductions had not reduced income taxes payable.

Recently Issued Accounting Standards

In May 2014, the FASB issued 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 will replace most existing revenue recognition guidance in U.S. GAAP when it becomes effective. 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 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 provided 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.

Collectively, the revenue recognition updates are effective for annual reporting periods beginning after December 15, 2017, but early adoption is permitted. We have adopted these standards effective January 1, 2018 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. Based on our evaluation, adoption will 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. We will be impacted by the expanded disclosure requirements of the revenue recognition updates, most notably the disclosure of revenues from contracts with customers into disaggregated categories.

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. Most notably, 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. This new guidance is effective for annual reporting periods beginning after December 15, 2017. We do not believe the adoption of this standard will have a material impact on our financial condition, results of operations and cash flows.

In February 2016, the FASB issued ASU 2016-02, *"Leases,"* which amends accounting for leases, most notably by requiring a lessee to recognize the ass ets 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, wit h limited exceptions. The accounting applied by a lessor is largely unchanged from that applied under existing U.S. GAAP. This new guidance is effective for annual reporting periods beginning after December 15, 2018 and must be adopted under a modified r etrospective basis. We are currently evaluating the impact the adoption of this standard will have on our financial condition, results of operations and 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. This new guidance is effective for annual reporting periods beginning after December 15, 2017. We do not believe the impact the adoption of this standard will have a 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. This new guidance is effective for annual periods beginning after December 15, 2017 and will have an impact on the classification of net benefit costs, which are currently included as a component of Costs of goods sold and Selling, general and administrative ("SG&A") expenses, on our Consolidated Statements of Earnings and Comprehensive Income. See Note 16 for details related to our components of net benefit costs.

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, this new guidance simplifies the application of current hedge accounting guidance. This new 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.

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. As a result of this guidance, the tax effects of items recorded within Accumulated Other Comprehensive Income ("AOCI") do not reflect the appropriate tax rate. This standard would require entities to record a reclassification from 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. Upon adoption, we will record an approximately $54 million reduction to AOCI with a corresponding increase to retained earnings.

NOTE 3. NATURE OF OPERATIONS

Effective December 31, 2017 and 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. As a result, effective December 31, 2017 and for all periods presented, our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate.

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 our Worthington Armstrong Venture ("WAVE") joint venture with Worthington Industries, Inc., 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. Our segment results reflect those sales transactions. The Mineral Fiber segment also includes all assets and liabilities not specifically allocated to our Architectural Specialties or Unallocated

(dollar amounts in millions, except share data)

Corporate segment, including all property and related depre ciation associated with our Lancaster, PA headquarters. Operating results for the Mineral Fiber segment include a significant majority of allocated Corporate administrative expenses that represent a reasonable allocation of general services to support its operations.

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 produce 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. Operating results for the Architectural Specialties segment include a minor portion of allocated Corporate administrative expenses that represent a reasonable allocation of general services to support its operations.

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. Effective December 31, 2017 and for all periods presented, 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.

Segment results below have been restated for all periods presented as a result of the disaggregation of our former Americas segment and the reclassification of Unallocated Corporate assets.

For the year ended 2017	Mineral Fiber	Architectural Specialties	Unallocated Corporate	Total
Net sales to external customers	$ 756.4	$ 137.2	$ -	$ 893.6
Equity (earnings) from joint venture	(67.0)	-	-	(67.0)
Segment operating income (loss)	231.9	27.7	(4.5)	255.1
Segment assets	1,193.5	53.2	320.7	1,567.4
Depreciation and amortization (1)	59.2	1.8	6.0	67.0
Investment in joint venture	107.3	-	-	107.3
Purchases of property, plant and equipment (1)	76.1	1.6	-	77.7

For the year ended 2016	Mineral Fiber	Architectural Specialties	Unallocated Corporate	Total
Net sales to external customers	$ 736.6	$ 100.7	$ -	$ 837.3
Equity (earnings) from joint venture	(73.1)	-	-	(73.1)
Segment operating income (loss)	223.9	19.2	(54.2)	188.9
Segment assets	1,145.1	17.3	249.3	1,411.7
Depreciation and amortization (1)	53.6	0.8	0.4	54.8
Investment in joint venture	106.2	-	-	106.2
Purchases of property, plant and equipment (1)	66.1	0.2	-	66.3

(dollar amounts in millions, except share data)

For the year ended 2015	Mineral Fiber	Architectural Specialties	Unallocated Corporate	Total
Net sales to external customers	$ 723.7	$ 81.4	$ -	$ 805.1
Equity (earnings) from joint venture	(66.1)	-	-	(66.1)
Segment operating income (loss)	270.3	16.5	(129.8)	157.0
Segment assets	1,132.8	17.2	271.0	1,421.0
Depreciation and amortization (1)	43.9	0.8	11.9	56.6
Investment in joint venture	130.8	-	-	130.8
Purchases of property, plant and equipment (1)	51.5	0.6	22.4	74.5

(1) Totals will differ from the totals on our Consolidated Statement of Cash Flows by the amounts that have been classified as discontinued operations. See Note 4 for additional details.

Segment operating income (loss) is the measure of segment profit or loss reviewed by the chief operating decision maker. The sum of the segments' operating income (loss) equals the total consolidated operating income as reported on our Consolidated Statements of Earnings and Comprehensive Income. The following reconciles our total consolidated operating income to earnings from continuing operations before income taxes. These items are only measured and managed on a consolidated basis:

	2017	2016	2015
Segment operating income	$ 255.1	$ 188.9	$ 157.0
Interest expense	35.4	49.5	44.6
Other non-operating (income)/expense, net	(2.4)	(11.2)	17.8
Earnings from continuing operations before income taxes	$ 222.1	$ 150.6	$ 94.6

Accounting policies of the segments are the same as those described in the summary of significant accounting policies.

The sales in the table below are allocated to geographic areas based on the location of our selling entities.

	2017	2016	2015
Geographic Areas			
Net trade sales			
Mineral Fiber:			
United States	$ 699.8	$ 680.8	$ 670.8
Canada	56.6	55.8	52.9
Total Mineral Fiber	756.4	736.6	723.7
Architectural Specialties:			
United States	129.5	95.1	75.1
Canada	7.7	5.6	6.3
Total Architectural Specialties	137.2	100.7	81.4
Total net trade sales	$ 893.6	$ 837.3	$ 805.1

(dollar amounts in millions, except share data)

	2017	2016
Property, plant and equipment, net at December 31,		
Mineral Fiber:		
United States	$ 488.7	$ 457.3
Total Mineral Fiber	488.7	457.3
Architectural Specialties:		
Canada	$ 4.5	$ 4.0
United States	3.0	0.3
Total Architectural Specialties	7.5	4.3
Unallocated Corporate (1)	3.7	3.6
Total property, plant and equipment, net	$ 499.9	$ 465.2

(1) Includes property, plant and equipment located in China that were formerly reported in our Pacific Rim segment and will not be included in the sale to Knauf.

Impairment testing of our tangible assets occurs whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable.

In September 2017, we made the decision to permanently close a previously idled plant in China, which is reported as a component of Unallocated Corporate as of December 31, 2017. As a result, during 2017 we recorded $5.6 million in costs of goods sold for accelerated depreciation of machinery and equipment based on management estimates. During the fourth quarter of 2017, we announced the closing of our St. Helens, Oregon mineral fiber manufacturing facility, expected to occur in the first half of 2018. During the fourth quarter of 2017, we recorded $4.0 million in costs of goods sold primarily related to accelerated depreciation of machinery and equipment within our Mineral Fiber segment based on management estimates.

NOTE 4. ACQUISITIONS AND DISCONTINUED OPERATIONS

ACQUISITION OF TECTUM

On January 13, 2017, in connection with the acquisition 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, in connection with the Tectum acquisition 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. All of the acquired goodwill is deductible for tax purposes.

EMEA AND PACIFIC RIM BUSINESSES

On November 17, 2017, in connection with the Purchase Agreement we entered into with Knauf, we agreed to sell certain subsidiaries comprising our businesses in EMEA and the Pacific Rim. 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 one year. WAVE and Knauf will also enter into similar agreements for such purposes.

As of December 31, 2017, 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 an impairment charge of $74.0 million during the fourth quarter of 2017, which included $51.4 million of accumulated other comprehensive income adjustments, primarily accumulated foreign currency translation amounts, that will be subsequently reclassified to earnings from discontinued operations upon sale of our EMEA and Pacific Rim businesses.

FLOORING BUSINESSES

Separation and Distribution of AFI

On April 1, 2016, we completed our separation of Armstrong Flooring, Inc. ("AFI") by allocating the assets and liabilities related primarily to our Resilient and Wood Flooring segments to AFI and then distributing the common stock of AFI to our shareholders at a ratio of one share of AFI common stock for every two shares of AWI common stock. Separation costs for 2016 and 2015 were $34.5 million and $34.3 million, respectively. Separation costs for all periods primarily related to outside professional services and employee compensation and retention and severance accruals which were recorded within the Unallocated Corporate segment in conjunction with this initiative.

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, provided 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. AWI and AFI provided various services to each other during a transition period that expired on December 31, 2017.

The Tax Matters Agreement generally governs AWI's and AFI's respective rights, responsibilities and obligations after the separation and distribution with respect to tax matters. Upon distribution, AWI received an opinion from its tax counsel that the separation and distribution qualified as a tax-free transaction for AWI and its shareholders.

The Employee Matters Agreement governed certain compensation and employee benefit obligations with respect to the current and former employees and non-employee directors of AWI and AFI. Pursuant to this agreement and in connection with the distribution, AWI transferred assets and liabilities from the AWI defined benefit pension and postretirement plans to AFI that relate to active AFI employees and certain former AFI employees to mirror plans established by AFI. See Note 16 for additional details.

Pursuant to the Trademark License Agreement, AWI provided AFI with a perpetual, royalty-free license to utilize the "Armstrong" trade name and logo. Pursuant to the Transition Trademark License Agreement, AFI provided us with a five-year royalty-free license to utilize the "Inspiring Great Spaces" tagline, logo and related color scheme.

Under the Campus Lease Agreement, certain portions of the AWI headquarters are being leased to AFI to use as its corporate headquarters for an initial term of five years, subject to certain renewal rights.

European Resilient Flooring

On December 4, 2014, our Board of Directors approved the cessation of funding to our former DLW subsidiary, which was our former 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.

As of December 4, 2014, DLW had a net liability of $12.9 million, representing assets of $151.9 million and liabilities of $164.8 million, which were removed from our balance sheet. This net liability was recognized as a contingent liability on our consolidated balance sheet pending the closure and results of the insolvency proceeding. The amount of the net liability, included within Accounts payable and accrued expenses on our Consolidated Balance Sheets, was $11.9 million as of December 31, 2016. 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. DLW was previously shown within our Resilient Flooring reporting segment.

CABINETS

In September 2012, we entered into a definitive agreement to sell our cabinets business to American Industrial Partners. The sale was completed in October 2012. Net loss on disposal of discontinued operations in 2015 related to the settlement of a multi-employer pension plan.

(dollar amounts in millions, except share data)

Summarized Financial Information of Discontinued Operations

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

	EMEA and Pacific Rim Businesses	Flooring Businesses	Total
2017:			
Net sales	$ 436.2	$ -	$ 436.2
Cost of goods sold	350.8	-	350.8
Gross profit	85.4	-	85.4
Selling, general and administrative expenses	78.3	-	78.3
Operating income	7.1	-	7.1
Interest expense	1.2	-	1.2
Other non-operating (income), net	(1.9)	-	(1.9)
Earnings from discontinued operations before income tax	7.8	-	7.8
Income tax expense	3.6	-	3.6
Gain from discontinued operations	$ 4.2	$ -	$ 4.2
(Loss) on expected disposal of discontinued businesses before income tax (1)	$ (74.0)	$ (0.1)	$ (74.1)
Income tax (benefit)	-	(4.1)	(4.1)
Net (loss) gain on disposal of discontinued businesses	$ (74.0)	$ 4.0	$ (70.0)
Net (loss) gain from discontinued operations	$ (69.8)	$ 4.0	$ (65.8)

(1) Loss on disposal of EMEA and Pacific Rim businesses for the year ended December 31, 2017 represents the estimated write-down of EMEA and Pacific Rim assets based on our expected sales proceeds to be received upon closure of the transaction.

	EMEA and Pacific Rim Businesses	Flooring Businesses	Total
2016:			
Net sales	$ 397.2	$ 284.4	$ 681.6
Cost of goods sold	331.8	237.2	569.0
Gross profit	65.4	47.2	112.6
Selling, general and administrative expenses	69.7	50.5	120.2
Operating (loss)	(4.3)	(3.3)	(7.6)
Interest expense	0.3	-	0.3
Other non-operating expense, net	1.7	1.1	2.8
(Loss) from discontinued operations before income tax	(6.3)	(4.4)	(10.7)
Income tax (benefit) expense	(0.9)	0.1	(0.8)
(Loss) from discontinued operations	$ (5.4)	$ (4.5)	$ (9.9)
Gain on disposal of discontinued businesses before income tax	$ -	$ 0.1	$ 0.1
Income tax (benefit)	-	(15.2)	(15.2)
Net gain on disposal of discontinued businesses	$ -	$ 15.3	$ 15.3
Net (loss) gain from discontinued operations	$ (5.4)	$ 10.8	$ 5.4

(dollar amounts in millions, except share data)

	EMEA and Pacific Rim Businesses	Flooring Businesses	Cabinets	Total
2015:				
Net sales	$ 426.2	$ 1,188.7	$ -	$ 1,614.9
Cost of goods sold	355.8	962.3	-	1,318.1
Gross profit	70.4	226.4	-	296.8
Selling, general and administrative expenses	86.9	179.5	-	266.4
Operating (loss) income	(16.5)	46.9	-	30.4
Interest expense	0.7	-	-	0.7
Other non-operating (income) expense, net	(2.7)	3.1	-	0.4
(Loss) earnings from discontinued operations before income tax	(14.5)	43.8	-	29.3
Income tax expense	16.8	17.8	-	34.6
(Loss) earnings from discontinued operations	$ (31.3)	$ 26.0	$ -	$ (5.3)
(Loss) gain on disposal of discontinued businesses before income tax	$ -	$ (0.8)	$ 0.6	$ (0.2)
Income tax (benefit) expense	-	(42.0)	0.2	(41.8)
Net gain on disposal of discontinued businesses	$ -	$ 41.2	$ 0.4	$ 41.6
Net (loss) gain from discontinued operations	$ (31.3)	$ 67.2	$ 0.4	$ 36.3

(dollar amounts in millions, except share data)

The following is a summary of the carrying amount of the major classes of assets and liabilities classified as assets and liabilities of discontinued operations as of December 31, 2017 and 2016 related to our EMEA and Pacific Rim businesses.

	December 31, 2017	December 31, 2016
Assets		
Current assets:		
Accounts and notes receivable, net	$ 61.4	$ 49.5
Inventories, net	59.2	62.1
Income tax receivable	3.1	4.0
Other current assets	12.9	9.6
Total current assets discontinued operations	136.6	125.2
Property, plant, and equipment, less accumulated depreciation and amortization (1) (2)	131.3	204.4
Prepaid pension costs (1)	26.1	7.9
Goodwill and intangible assets, net (1)	7.2	6.8
Deferred income taxes (1)	4.0	1.0
Other non-current assets (1)	0.9	1.0
Total non-current assets of discontinued operations (1)	169.5	221.1
Total assets of discontinued operations (1)	$ 306.1	$ 346.3
Liabilities		
Current liabilities:		
Accounts payable and accrued expenses	$ 78.6	$ 80.1
Income tax payable	1.3	0.7
Total current liabilities	79.9	80.8
Pension benefit liabilities (3)	34.7	29.5
Other long-term liabilities (3)	1.8	2.1
Deferred income taxes (3)	12.1	2.4
Total non-current liabilities of discontinued operations (3)	48.6	34.0
Total liabilities of discontinued operations (3)	$ 128.5	$ 114.8

(1) Presented as Current assets of discontinued operations on the Consolidated Balance Sheets as of December 31, 2017.
(2) Includes a pre-tax impairment charge of $74.0 million recorded during the fourth quarter of 2017.
(3) Presented as Current liabilities of discontinued operations on the Consolidated Balance Sheets as of December 31, 2017.

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 consolidated statements of cash flows:

	EMEA and Pacific Rim Businesses	Flooring Businesses	Total
2017:			
Depreciation and amortization	$ 22.2	$ -	$ 22.2
Fixed asset impairment (1)	74.0	-	74.0
Purchases of property, plant and equipment	(12.0)	-	(12.0)
2016:			
Depreciation and amortization	$ 23.0	$ 11.4	$ 34.4
Purchases of property, plant and equipment	(25.8)	(12.1)	(37.9)
2015:			
Depreciation and amortization	$ 22.6	$ 39.1	$ 61.7
Purchases of property, plant and equipment	(34.6)	(61.6)	(96.2)

(1) Loss on disposal of EMEA and Pacific Rim businesses for the year ended December 31, 2017 represents the estimated write-down of EMEA and Pacific Rim assets based on our expected sales proceeds to be received upon closure of the transaction.

(dollar amounts in millions, except share data)

NOTE 5. ACCOUNTS AND NOTES RECEIVABLE

	December 31, 2017	December 31, 2016
Customer receivables	$ 62.8	$ 56.9
Miscellaneous receivables	29.9	3.8
Less allowance for warranties, discounts, and losses	(1.9)	(1.9)
Accounts and notes receivable, net	$ 90.8	$ 58.8

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 include insurance recoveries related to environmental matters. See Note 27 for more information.

NOTE 6. INVENTORIES

	December 31, 2017	December 31, 2016
Finished goods	$ 33.2	$ 30.1
Goods in process	2.7	2.6
Raw materials and supplies	26.1	21.4
Less LIFO reserves	(8.2)	(7.2)
Total inventories, net	$ 53.8	$ 46.9

Approximately 84% and 87% of our total inventory in 2017 and 2016, respectively, were valued on a LIFO (last-in, first-out) basis.

The distinction between the use of different methods of inventory valuation is primarily based on geographical locations and/or legal entities. The following table summarizes the amount of inventory that is not accounted for under the LIFO method.

	December 31, 2017	December 31, 2016
U.S. locations	$ 6.5	$ 4.2
Canada locations	2.2	1.9
Total	$ 8.7	$ 6.1

Our Canadian locations use the FIFO method of inventory valuation (or other methods which closely approximate the FIFO method) primarily because the LIFO method is not permitted for local tax and/or statutory reporting purposes. In these situations, a conversion to LIFO would be highly complex and involve excessive cost and effort to achieve under local tax and/or statutory reporting requirements. U.S. locations that use the FIFO method of inventory valuation primarily represent certain finished goods sourced from third party suppliers.

NOTE 7. OTHER CURRENT ASSETS

	December 31, 2017	December 31, 2016
Prepaid expenses	$ 7.1	$ 6.4
Fair value of derivative assets	0.2	2.2
Other	0.6	2.6
Total other current assets	$ 7.9	$ 11.2

(dollar amounts in millions, except share data)

NOTE 8. PROPERTY, PLANT AND EQUIPMENT

	December 31, 2017	December 31, 2016
Land	$ 32.5	$ 32.2
Buildings	224.6	202.8
Machinery and equipment	537.1	471.2
Computer software	20.9	15.2
Construction in progress	46.2	67.6
Less accumulated depreciation and amortization	(361.4)	(323.8)
Net property, plant and equipment	$ 499.9	$ 465.2

See Note 2 to the Consolidated Financial Statements for discussion of policies related to property and depreciation and asset retirement obligations.

NOTE 9. EQUITY INVESTMENTS

Investment in joint venture as of December 31, 2017 reflected the equity interest in our 50% investment in our WAVE joint venture. The WAVE joint venture is reflected within the Mineral Fiber segment in our consolidated financial statements using the equity method of accounting.

We use the equity in earnings method to determine the appropriate classification of distributions from WAVE within our cash flow statement. During 2017, 2016 and 2015, WAVE distributed amounts in excess of our capital contributions and proportionate share of retained earnings. Accordingly, the distributions in these years were reflected as a return of investment in cash flows from investing activity in our Consolidated Statement of Cash Flows. Distributions from WAVE in 2017, 2016 and 2015 were $69.1 million, $86.9 million, and $64.2 million, respectively.

In certain markets, we sell WAVE products directly to customers pursuant to specific terms of sale. In those circumstances, we record the sales and associated costs within our consolidated financial statements. The total sales associated with these transactions were $31.2 million, $29.8 million and $29.9 million for the years ended 2017, 2016 and 2015, respectively.

Our recorded investment in WAVE was higher than our 50% share of the carrying values reported in WAVE's consolidated financial statements by $161.0 million as of December 31, 2017 and $166.6 million as of December 31, 2016. These differences are due to our adoption of fresh-start reporting upon emergence from Chapter 11 in October 2006, while WAVE's consolidated financial statements do not reflect fresh-start reporting. The differences are composed of the following fair value adjustments to assets:

	December 31, 2017	December 31, 2016
Property, plant and equipment	$ 0.4	$ 0.4
Other intangibles	130.2	135.8
Goodwill	30.4	30.4
Total	$ 161.0	$ 166.6

Other intangibles include customer relationships, trademarks and developed technology. Customer relationships are amortized over 20 years and developed technology is amortized over 15 years. Trademarks have an indefinite life.

See Exhibit 99.1 for WAVE's consolidated financial statements. On November 17, 2017, in connection with the Purchase Agreement we entered into with Knauf, the corresponding European and Pacific Rim businesses of WAVE will also be sold. Accordingly, WAVE's European and Pacific Rim historical financial statement results have been reflected in WAVE's consolidated financial statements as a discontinued operation for all periods presented. Our equity earnings in joint venture reflected as a component of earnings from continuing operations included $1.7 million, $2.8 million and $2.6 million of equity earnings from WAVE's European and Pacific Rim businesses in 2017, 2016 and 2015, respectively. Condensed financial data for WAVE is summarized below.

(dollar amounts in millions, except share data)

	December 31, 2017	December 31, 2016
Current assets	$ 96.8	$ 96.3
Current assets of discontinued operations	36.4	16.8
Noncurrent assets	32.6	32.9
Noncurrent assets of discontinued operations	-	17.4
Current liabilities	18.1	33.1
Current liabilities of discontinued operations	8.1	8.2
Other noncurrent liabilities	246.6	244.0

	2017	2016	2015
Net sales	$ 344.5	$ 330.7	$ 309.7
Gross profit	192.7	192.4	172.1
Net earnings	144.3	151.9	136.5

Management evaluated its investment in WAVE for impairment as a result of WAVE's anticipated sale of its European and Pacific Rim businesses. Based on that evaluation, management concluded that as of December 31, 2017, its investment in WAVE was not impaired.

See discussion in Note 26 to the Consolidated Financial Statements for additional information on this related party.

NOTE 10. GOODWILL AND INTANGIBLE ASSETS

We conduct our annual impairment testing of non-amortizing intangible assets during the fourth quarter. The 2017, 2016 and 2015 reviews concluded that no impairment charges were necessary. See Note 2 to the Consolidated Financial Statements for a discussion of our accounting policy for intangible assets.

The following table details amounts related to our intangible assets as of December 31, 2017 and 2016:

		December 31, 2017		December 31, 2016	
	Estimated Useful Life	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Amortizing intangible assets					
Customer relationships	20 years	$ 176.3	$ 93.9	$ 165.3	$ 84.9
Developed technology	15 years	83.7	60.9	82.8	55.4
Other	Various	5.9	1.1	6.3	1.3
Total		$ 265.9	$ 155.9	$ 254.4	$ 141.6
Non-amortizing intangible assets					
Trademarks and brand names	Indefinite	319.8		314.4	
Goodwill		11.3		0.5	
Total goodwill and intangible assets		$ 597.0		$ 569.3	

	2017	2016	2015
Amortization expense	$ 14.6	$ 13.9	$ 14.0

The expected annual amortization expense for the years 2018 through 2022 are as follows:

2018	$ 14.7
2019	14.7
2020	14.7
2021	13.3
2022	9.3

(dollar amounts in millions, except share data)

NOTE 11. OTHER NON-CURRENT ASSETS

	December 31, 2017	December 31, 2016
Cash surrender value of company-owned life insurance policies	$ 53.9	$ 52.7
Fair value of derivative assets	8.7	7.5
Other	1.7	2.6
Total other non-current assets	$ 64.3	$ 62.8

NOTE 12. ACCOUNTS PAYABLE AND ACCRUED EXPENSES

	December 31, 2017	December 31, 2016
Payables, trade and other	$ 67.6	$ 68.7
Employment costs	18.0	16.3
Current portion of pension and postretirement benefit liabilities	11.6	12.2
Contingent liability related to discontinued operations	-	11.9
Other	11.2	7.9
Total accounts payable and accrued expenses	$ 108.4	$ 117.0

NOTE 13. SEVERANCE AND RELATED COSTS

In an effort to optimize our organizational and manufacturing cost structures, during the fourth quarter of 2017, we recorded $3.3 million in costs of goods sold in our Mineral Fiber segment for severance and related costs to reflect approximately 126 position eliminations in connection with the planned closure of our St. Helens, Oregon mineral fiber manufacturing facility, expected to occur in the first half of 2018. In addition, during the fourth quarter of 2017, we recorded $1.3 million in SG&A expenses in our Mineral Fiber and Architectural Specialties segments for severance and related costs to reflect 18 position eliminations at our Lancaster, PA headquarters.

In 2016 and 2015, we recorded $2.4 million and $5.3 million, respectively, in Unallocated Corporate for severance and related costs to reflect approximately 30 position eliminations (including our former Chief Executive Officer) as a result of our initiative to separate our flooring business from our ceiling business. These costs are reflected within Separation costs on the Consolidated Statements of Earnings and Comprehensive Income (Loss).

NOTE 14. INCOME TAXES

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 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 or amounts that cannot be estimated as of December 31, 2017.

As a result of the reduction of the corporate income tax rate to 21%, we were required to re-measure our deferred tax assets and liabilities as of the date of enactment based on the rates at which they are expected to be utilized in the future. The rate change resulted in an $87.2 million reduction of our net deferred tax liabilities and a corresponding deferred income tax benefit in the fourth quarter of 2017.

The 2017 Tax Act also changes the taxation of foreign earnings . Generally, corporations are no longer subject to U.S. federal income tax upon the receipt of dividends from foreign subsidiaries and are not permitted foreign tax credits ("FTCs") related to such dividends. Accordingly, we recorded an additional valuati on allowance on $9.5 million of FTCs as of December 31, 2017. This increase in our valuation allowance was due to these 2017 Tax Act provisions and as a result of the anticipated sale of our EMEA and Pacific Rim businesses. As we continue to analyze the 2017 Tax Act and refine our calculations, it could give rise to additional changes in our valuation allowance and the realizability of foreign tax credits.

The one-time transition tax is based on the total post-1986 earnings and profits of our foreign subsidiaries. Substantially all of our earnings and profits were permanently reinvested outside the U.S prior to the 2017 Tax Act. We recorded provisional U.S. amounts for the one-time transition tax liabilities, resulting in an increase in income tax expense of $10.3 million. We have not yet completed our calculation of the total post-1986 earnings and profits for our foreign subsidiaries or the tax pools of our foreign subsidiaries. Further, the one-time transition tax is based in part on the amount of those earnings held in cash and other specified assets. This amount may change when we finalize the calculation of tax pools, finalize the calculation of post-1986 foreign earnings and profits previously deferred from U.S. federal taxation and finalize the amounts held in cash or other specified assets. Taxes due on the one-time transition tax are payable as of December 31, 2017 and may be elected to be paid over a period of eight years. We intend on making this election.

The 2017 Tax Act also provides for immediate 100% deduction of the costs of qualified property placed in service from September 27, 2017 to December 31, 2022. This provision will begin to phase down by 20% per year beginning January 1, 2023 and will be completely phased out as of January 1, 2027. As of December 31, 2017, we have not completed our analysis of qualifying expenditures for purposes of determining the expenditures that qualify for the immediate 100% deduction under the 2017 Tax Act.

The adjustments to deferred tax assets and liabilities, the liability related to the one-time transition tax, changes in our valuation allowance, the realizability of foreign tax credits and the immediate deduction of 100% of the costs of qualifying property are provisional amounts estimated based on information available as of December 31, 2017. These amounts are subject to change as we obtain information necessary to complete the calculations. Additional information that may affect our provisional amounts would include further clarification and guidance on how the Internal Revenue Service will implement tax reform, including guidance with respect to the one-time transition tax, further clarification and guidance on the impact of the 2017 Act from state taxing authorities and completion of our 2017 tax return filings. We will recognize any changes to the provisional amounts as we refine our estimates of cumulative temporary differences and our interpretations of the application of the 2017 Tax Act. We expect to complete our analysis of the provisional items by the second half of 2018.

The tax effects of principal temporary differences between the carrying amounts of assets and liabilities and their tax basis are summarized below. Management believes it is more likely than not that the results of future operations will generate sufficient taxable income in the appropriate jurisdiction and will generate foreign source income to realize deferred tax assets, net of valuation allowances. In arriving at this conclusion, we considered the profit before tax generated for the years 2015 through 2017, as well as future reversals of existing taxable temporary differences and projections of future profit before tax and foreign source income.

We reduce the carrying amounts of deferred tax assets by a valuation allowance if, based on the available evidence, it is more likely than not that such assets will not be realized. The need to establish valuation allowances for deferred tax assets is assessed quarterly. In assessing the requirement for, and amount of, a valuation allowance in accordance with the more likely than not standard for all periods, we give appropriate consideration to all positive and negative evidence related to the realization of the deferred tax assets. This assessment considers, among other matters, the nature, frequency and severity of current and cumulative losses, forecasts of future profitability and foreign source income, the duration of statutory carryforward periods, and our experience with operating loss and tax credit carryforward expirations. A history of cumulative losses is a significant piece of negative evidence used in our assessment. If a history of cumulative losses is incurred for a tax jurisdiction, forecasts of future profitability are not used as positive evidence related to the realization of the deferred tax assets in the assessment.

As of December 31, 2017 and 2016, we had $664.6 million and $760.6 million, respectively, of gross state net operating loss ("NOL") carryforwards expiring between 2018 and 2036. As of December 31, 2017, we also had FTC carryforwards of $15.7 million that expire between 2018 and 2022. U.S. FTC carryforwards as of December 31, 2016 were $22.1 million on a gross basis, $19.3 million when netted with unrecognized tax benefits.

As of December 31, 2017 and 2016, we had valuation allowances of $47.4 million and $17.3 million, respectively. As of December 31, 2017, our valuation allowance consisted of $10.3 million for federal deferred tax assets related to FTC carryforwards, $17.7 million for the outside basis difference between book and tax of our EMEA and Pacific Rim businesses and $19.4 million for state deferred tax assets, primarily operating loss carryforwards. Our valuation allowance increased in comparison to December 31, 2016 primarily as a result of the 2017 Tax Act and the anticipated sale of our EMEA and Pacific Rim businesses.

(dollar amounts in millions, except share data)

We estimate we will need to generate future federal taxable foreign source income of $74.8 million to fully realize FTC carryforwards before they expire in 2022. We estimate we will need to generate future taxable income of approximately $506.8 million for state income tax purposes during the respective realization periods (ranging from 2018 to 2036) in order to fully realize the net deferred income tax assets discussed above.

Our ability to utilize deferred tax assets may be impacted by certain future events, such as changes in tax legislation or insufficient future taxable income prior to expiration of certain deferred tax assets.

	December 31, 2017	December 31, 2016
Deferred income tax assets (liabilities)		
Net operating losses	$ 35.6	$ 32.0
Postretirement benefits	23.3	38.1
Pension benefit liabilities	16.7	42.4
Deferred compensation	12.1	17.8
Undistributed foreign earnings	17.7	-
Foreign tax credit carryforwards	15.7	19.3
State tax credit carryforwards	10.5	9.1
Other	12.6	7.8
Total deferred income tax assets	144.2	166.5
Valuation allowances	(47.4)	(17.3)
Net deferred income tax assets	96.8	149.2
Intangibles	(136.3)	(211.8)
Accumulated depreciation	(56.1)	(49.2)
Prepaid pension costs	(20.4)	(18.9)
Inventories	(4.4)	(7.2)
Other	(1.7)	(1.8)
Total deferred income tax liabilities	(218.9)	(288.9)
Net deferred income tax liabilities	$ (122.1)	$ (139.7)
Deferred income taxes have been classified in the Consolidated Balance Sheet as:		
Deferred income tax assets - noncurrent	$ 19.6	$ 14.4
Deferred income tax liabilities - noncurrent	(141.7)	(154.1)
Net deferred income tax liabilities	$ (122.1)	$ (139.7)

(dollar amounts in millions, except share data)

	2017	2016	2015
Details of taxes			
Earnings (loss) from continuing operations before income taxes:			
Domestic	$ 224.1	$ 147.8	$ 92.7
Foreign	(2.0)	2.8	1.9
Total	$ 222.1	$ 150.6	$ 94.6
Income tax expense (benefit):			
Current:			
Federal	$ 26.2	$ 15.1	$ 16.8
Foreign	1.4	5.0	2.8
State	4.7	(6.7)	(4.8)
Total current	32.3	13.4	14.8
Deferred:			
Federal	(36.6)	22.6	12.7
Foreign	(0.1)	(1.1)	(1.2)
State	5.9	16.4	10.4
Total deferred	(30.8)	37.9	21.9
Total income tax expense	$ 1.5	$ 51.3	$ 36.7

We reviewed our position with regards to foreign unremitted earnings and determined that unremitted earnings will not be permanently reinvested as a result of the anticipated sale of our EMEA and Pacific Rim businesses. Accordingly, we have recorded foreign withholding taxes of $7.6 million, primarily within discontinued operations, on approximately $245.5 million of net undistributed earnings of foreign subsidiaries.

	2017	2016	2015
Reconciliation to U.S. statutory tax rate			
Continuing operations tax at statutory rate	$ 77.7	$ 52.7	$ 33.1
Increase in valuation allowances on deferred domestic income tax assets	9.1	0.8	4.1
State income tax expense, net of federal benefit	7.9	3.2	4.0
Separation costs	-	15.1	-
Domestic production activities	(5.8)	(1.9)	(5.2)
Federal statute closure	(2.3)	(15.2)	-
2017 Tax Act	(82.5)	-	-
Other	(2.6)	(3.4)	0.7
Tax expense at effective rate	$ 1.5	$ 51.3	$ 36.7

We recognize the tax benefits of an uncertain tax position only if those benefits are more likely than not to be sustained based on existing tax law. Additionally, we establish a reserve for tax positions that are more likely than not to be sustained based on existing tax law, but uncertain in the ultimate benefit to be sustained upon examination by the relevant taxing authorities. Unrecognized tax benefits are subsequently recognized at the time the more likely than not recognition threshold is met, the tax matter is effectively settled or the statute of limitations for the relevant taxing authority to examine and challenge the tax position has expired, whichever is earlier.

We have $53.4 million of Unrecognized Tax Benefits (“UTB”) as of December 31, 2017, $36.9 million ($35.2 million, net of federal benefit) of this amount, if recognized in future periods, would impact the reported effective tax rate.

It is reasonably possible that certain UTB’s may increase or decrease within the next twelve months due to tax examination changes, settlement activities, expirations of statute of limitations, or the impact on recognition and measurement considerations related to the results of published tax cases or other similar activities. Ov er the next twelve months we estimate that UTB's may decrease by $0.1 million related to state statutes expiring and increase by $2.8 million due to uncertain tax positions expected to be taken on domestic tax returns.

(dollar amounts in millions, except share data)

We account for all interest and penalties on uncertain income tax positions as income tax expense. We reported $3.5 million of interest and penalty exposure as noncurrent income tax payable in the Consolidated Balance Sheet as of December 31, 2017.

We had the following activity for UTB's for the years ended December 31, 2017, 2016 and 2015:

	2017	2016	2015
Unrecognized tax benefits balance at January 1,	$ 86.9	$ 150.6	$ 142.6
Gross change for current year positions	(2.2)	2.3	10.4
Increases for prior period positions	2.9	0.2	1.9
Decrease for prior period positions	(0.1)	(12.8)	(4.1)
Decrease due to settlements and payments	-	-	-
Decrease due to statute expirations	(34.1)	(53.4)	(0.2)
Unrecognized tax benefits balance at December 31,	$ 53.4	$ 86.9	$ 150.6

We file income tax returns in the U.S., various states and international jurisdictions. In the normal course of business, we are subject to examination by taxing authorities in Canada and the United States. Generally, we have open tax years subject to tax audit on average of between three years and six years. The statute of limitations is no longer open for U.S. federal returns before 2014. With few exceptions, the statute of limitations is no longer open for state or non-U.S. income tax examinations for the years before 2012. We have not significantly extended any open statutes of limitation for any major jurisdiction and have reviewed and accrued for, where necessary, tax liabilities for open periods.

	2017	2016	2015
Other taxes			
Payroll taxes	$ 14.2	$ 13.9	$ 14.0
Property, franchise and capital stock taxes	4.0	4.0	4.0

NOTE 15. DEBT

	December 31, 2017	Weighted Average Interest Rate for 2017	December 31, 2016	Weighted Average Interest Rate for 2016
Term loan A due 2021	$ 577.5	3.24%	$ 600.0	3.29%
Term loan B due 2023	245.6	4.25%	248.1	4.58%
Tax exempt bonds due 2041	35.0	0.79%	35.0	0.45%
Principal debt outstanding	858.1	3.43%	883.1	3.54%
Unamortized debt financing costs	(7.9)		(9.5)	
Long-term debt	850.2	3.43%	873.6	3.54%
Less current portion and short-term debt	32.5	3.32%	25.0	3.42%
Total long-term debt, less current portion	$ 817.7	3.43%	$ 848.6	3.54%

The weighted average interest rates above are inclusive of our interest rate swaps. See Note 18 to the Consolidated Financial Statements for further information.

We have a $1,050.0 million senior credit facility which is composed 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 revolving credit facility and Term Loan A are currently priced at 2.00% over LIBOR and the Term Loan B portion is priced at 2.75% over LIBOR with a 0.75% floor. The senior credit facility also has a $25.0 million letter of credit facility, also known as our bi-lateral facility. The revolving credit facility and Term Loan A mature in March 2021 and Term Loan B matures in November 2023.

(dollar amounts in millions, except share data)

On April 1, 2016, we refinanced our senior credit facility. In connection with this refinancing, we paid $9.3 million of bank, legal and other fees, of which $8.1 million were capitalized and recorded as a component of long-term debt and are being amortized into interest expense over the lives of the underlying loans. Additionally, we wrote off $1.1 million of unamortized debt financing costs, included as a component of interest expense, in 2016 related to our previo us credit facility. Finally, in connection with the refinancing, we executed new interest rate swaps. See Note 18 for additional details.

In February 2017, we repriced the interest rate on our Term Loan B borrowing, resulting in a lower LIBOR spread (2.75% vs. 3.25%). The maturity date remained unchanged along with all other terms and conditions. In connection with the repricing we paid $0.6 million of bank, legal and other fees, the majority of which were capitalized.

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 $100.0 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 50% of fiscal year Consolidated Excess Cash Flow. These annual payments would be made in the first quarter of the following year. No payment will be required in 2018 under the senior credit facility.

As of December 31, 2017, we were in compliance with all covenants of the amended senior credit facility. Our debt agreements include other restrictions, including restrictions pertaining to the acquisition of additional debt, the redemption, repurchase or retirement of our capital stock, payment of dividends, and certain financial transactions as it relates to specified assets. We currently believe that default under these covenants is unlikely. Fully borrowing under our revolving credit facility would not violate these covenants. In anticipation of net sales proceeds to be received from Knauf in connection with the sale of our EMEA and Pacific Rim businesses, we received a consent from Bank of America, N.A., the administrative agent and collateral agent of our amended senior credit facility, that among other conditions, waives any mandatory prepayment provisions under our credit facility related to this transaction. Our intention is to return a majority of the net proceeds from the sale of our EMEA and Pacific Rim businesses to our shareholders, in a manner and timing to be approved by our board of directors.

As of 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 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 by AWI. 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.

We have a $40.0 million Accounts Receivable Securitization Facility (the "funding entity") 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 sells 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 generated by the originators are continuously purchased by ARC with the proceeds from collections of receivables previously purchased. As of December 31, 2017, we had no borrowings under this facility.

None of our outstanding debt as of December 31, 2017 was secured with buildings and other assets. The credit lines under our revolving credit facility are subject to immaterial annual commitment fees.

Scheduled payments of long-term debt:

2018	$	32.5
2019		55.0
2020		62.5
2021		437.5
2022		2.5
2023 and later		268.1

(dollar amounts in millions, except share data)

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 ou r 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:

	As of December 31, 2017		
Financing Arrangement	**Limit**	**Used**	**Available**
Revolving credit facility	$ 150.0	$ -	$ 150.0
Bi-lateral facility	25.0	17.1	7.9
Accounts receivable securitization facility	29.6	36.2	(6.6)
Total	$ 204.6	$ 53.3	$ 151.3

The maximum limit for letters of credit availability under our accounts receivable securitization facility is subject to securitized accounts receivable balances and other collateral adjustments. As of December 31, 2017 and 2016, $6.6 million and $4.0 million of letters of credits 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 Consolidated Balance Sheets. This restriction will lapse upon replacement of collateral with accounts receivables and/or upon a change in the letter of credit limit as a result of higher securitized accounts receivable balances.

NOTE 16. PENSION AND OTHER BENEFIT PROGRAMS

DEFINED CONTRIBUTION BENEFIT PLANS

We sponsor several defined contribution plans, which cover substantially all U.S. and non-U.S. employees. Eligible employees may defer a portion of their pre-tax covered compensation on an annual basis. We match employee contributions up to pre-defined percentages. Employee contributions are 100% vested. Employer contributions are vested based on pre-defined requirements. Costs for worldwide defined contribution benefit plans were $6.2 million in 2017, $5.6 million in 2016 and $5.7 million in 2015.

DEFINED BENEFIT PENSION PLANS

Benefits from defined benefit pension plans are based primarily on an employee's compensation and years of service. We fund our pension plans when appropriate.

Our U.S. defined benefit pension plans include both the qualified, funded RIP and the Retirement Benefit Equity Plan, which is a nonqualified, unfunded plan designed to provide pension benefits in excess of the limits defined under Sections 415 and 401(a)(17) of the Internal Revenue Code.

Our RIP was amended to freeze accruals for salaried non-production employees, effective December 31, 2017. The impact of this amendment resulted in a reduction to our December 31, 2016 projected benefit obligation with a corresponding increase to unrecognized loss, resulting in no curtailment gain or loss. The impact of this amendment has been reflected in the net periodic pension credit for 2017.

In 2017, certain RIP participants with deferred vested benefits were offered an opportunity to elect a lump sum distribution of the participant's entire accrued benefit. These distributions resulted in a partial plan settlement necessitating a plan remeasurement as of August 31, 2017. Settlement losses of $12.5 million and $8.3 million were recorded as components of cost of goods sold and SG&A expenses, respectively, during the third quarter of 2017.

Effective December 31, 2017, AWI merged the Tectum, Inc. Pension Plan (the "Tectum Plan") with and into the RIP. Tectum sponsored the Tectum Plan for the benefit of its eligible employees, which are limited to certain union employees at Tectum's Newark, Ohio plant.

(dollar amounts in millions, except share data)

Our non-U.S. defined benefit pension plan represents an unfunded plan in Germany not acquired by Knauf in connection with the announce d sale of our EMEA and Pacific Rim segments. This plan utilizes assumptions which are consistent with, but not identical to, those of the U.S. plans.

The following tables summarize the balance sheet impact of our defined benefit pension plans, as well as the related benefit obligations, assets, funded status and rate assumptions. We use a December 31 measurement date for all our defined benefit pension plans.

	U.S. Pension Plans		Non-U.S. Pension Plan	
	2017	2016	2017	2016
Change in benefit obligation:				
Benefit obligation as of beginning of period	$ 1,522.4	$ 1,918.1	$ 2.5	$ 2.5
Service cost	8.6	10.1	-	-
Interest cost	48.1	69.8	-	0.1
Partial settlement	(58.1)	-	-	-
Foreign currency translation adjustment	-	-	0.4	(0.2)
Actuarial loss (gain)	77.2	0.6	(0.1)	0.2
Benefits paid	(103.2)	(111.0)	(0.1)	(0.1)
Merger of Tectum Plan	5.1	-	-	-
Separation of AFI	-	(365.2)	-	-
Benefit obligation as of end of period	$ 1,500.1	$ 1,522.4	$ 2.7	$ 2.5

	U.S. Pension Plans		Non-U.S. Pension Plan	
	2017	2016	2017	2016
Change in plan assets:				
Fair value of plan assets as of beginning of period	$ 1,512.9	$ 1,837.2	$ -	$ -
Actual return on plan assets	170.8	144.7	-	-
Employer contribution	3.9	4.2	0.1	0.1
Partial settlement	(58.1)	-	-	-
Benefits paid	(103.2)	(111.0)	(0.1)	(0.1)
Merger of Tectum Plan	3.4	-	-	-
Separation of AFI	-	(362.2)	-	-
Fair value of plan assets as of end of period	$ 1,529.7	$ 1,512.9	$ -	$ -
Funded status of the plans	$ 29.6	$ (9.5)	$ (2.7)	$ (2.5)

	U.S. Pension Plans		Non-U.S. Pension Plan	
	2017	2016	2017	2016
Weighted-average assumptions used to determine benefit obligations at end of period:				
Discount rate	3.63%	4.12%	1.50%	1.40%
Rate of compensation increase	3.05%	3.10%	-	-
Weighted-average assumptions used to determine net periodic benefit cost for the period:				
Discount rate	4.12%	4.40%	1.40%	2.00%
Expected return on plan assets	6.50%	6.75%	-	-
Rate of compensation increase	3.10%	3.10%	-	-

Basis of Rate-of-Return Assumption

Long-term asset class return assumptions for the RIP are determined based on input from investment professionals on the expected performance of the asset classes over 10 to 30 years. The forecasts were averaged to come up with consensus passive return forecasts for each asset class. Incremental components were added for the expected return from active management and asset class rebalancing based on historical information obtained from investment consultants.

These forecasted gross returns were reduced by estimated management fees and expenses, yielding a long-term return forecast of 6.50% and 6.75% for the years ended December 31, 2017 and 2016, respectively.

(dollar amounts in millions, except share data)

The accumulated benefit obligation for the U.S. defined benefit pension plans was $1,496.4 million and $1,518.0 million as of December 31, 2017 and 2016, respectively. The accumulated benefit obligation for the non-U.S. defined benefit pension plan was $2.7 million and $2.5 million as of December 31, 2017 and 2016, respectively.

	U.S. Pension Plans		Non-U.S. Pension Plan	
	2017	2016	2017	2016
Pension plans with benefit obligations in excess of assets				
Projected benefit obligation, December 31	$ 58.5	$ 58.2	$ 2.7	$ 2.5
Accumulated benefit obligation, December 31	58.5	58.1	2.7	2.5

The components of the pension (credit) cost are as follows:

	U.S. Pension Plans			Non-U.S. Pension Plan		
	2017	2016	2015	2017	2016	2015
Service cost of benefits earned during the period	$ 8.6	$ 10.1	$ 16.3	$ 2.2	$ 2.2	$ 2.4
Interest cost on projected benefit obligation	48.1	69.8	80.9	5.4	6.9	8.3
Expected return on plan assets	(98.7)	(110.6)	(140.3)	(6.8)	(7.8)	(9.0)
Amortization of prior service cost	1.5	1.6	1.9	-	-	-
Recognized net actuarial loss	17.5	48.3	72.8	1.3	1.2	2.8
Partial settlement	20.8	-	-	-	-	-
Net periodic pension (credit) cost	$ (2.2)	$ 19.2	$ 31.6	$ 2.1	$ 2.5	$ 4.5
Less: Discontinued operations	-	2.2	11.0	2.0	2.4	4.4
Net periodic pension (credit) cost, continuing operations	$ (2.2)	$ 17.0	$ 20.6	$ 0.1	$ 0.1	$ 0.1

The change in amortization of net actuarial loss for the U.S. defined-benefit plans for 2017 in comparison to 2016 was due to a reduction in active plan participants due to the separation of AFI. During 2016, actuarial gains and losses were amortized into future earnings over the expected remaining service period of plan participants, which was approximately 8 years for our U.S. defined-benefit pension plans. For 2017, actuarial gains and losses were amortized over the remaining life expectancy of plan participants, which was approximately 19 years for our U.S. defined-benefit pension plans.

Investment Policies

U.S. Pension Plans

The RIP's primary investment objective is to maintain the funded status of the plan such that the likelihood that we will be required to make significant contributions to the plan is limited. This objective is expected to be achieved by (a) investing a substantial portion of the plan assets in high quality corporate bonds whose duration is at least equal to that of the plan's liabilities, (b) investing in publicly traded equities in order to increase the ratio of plan assets to liabilities over time, (c) limiting investment return volatility by diversifying among additional asset classes with differing expected rates of return and return correlations, and (d) using derivatives to either implement investment positions efficiently or to hedge risk but not to create investment leverage.

(dollar amounts in millions, except share data)

Each asset class utilized by the RIP has defined asset allocation targets and allowable ranges. The table below shows the asset allocation targets and the December 31, 2017 and 2016 positions for each asset class:

Asset Class	Target Weight at December 31, 2017	Position at December 31, 2017 (1)	Position at December 31, 2016
Long duration bonds	59.0%	59.0%	55.0%
Equities	30.0%	28.0%	26.0%
High yield bonds and real assets	6.0%	3.0%	7.0%
Real estate and private equity	4.0%	4.0%	5.0%
Other	1.0%	6.0%	7.0%

(1) Investments in collective trust funds as of December 31, 2017 have been categorized within the asset classes above based on the underlying investments in those funds.

Pension plan assets are required to be reported and disclosed at fair value. 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 on 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.

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 asset's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques used need to maximize the use of observable inputs and minimize the use of unobservable inputs.

The following table sets forth by level within the fair value hierarchy a summary of the RIP plan assets measured at fair value on a recurring basis:

Description	Value at December 31, 2017 Level 1	Level 2	Level 3	Total
Bonds	$ -	$ 879.5	$ -	$ 879.5
Collective trust fund	-	561.6	-	561.6
Other investments	-	-	2.7	2.7
Cash and other short-term investments	1.7	20.7	-	22.4
Net assets measured at fair value	$ 1.7	$ 1,461.8	$ 2.7	$ 1,466.2
Investments measured at net asset value				63.5
Net assets				$ 1,529.7

(dollar amounts in millions, except share data)

	Value at December 31, 2016			
Description	**Level 1**	**Level 2**	**Level 3**	**Total**
Bonds	$ -	$ 831.7	$ -	$ 831.7
Equities	329.0	60.1	-	389.1
High yield bonds	-	67.6	-	67.6
Real assets	-	32.5	-	32.5
Other investments	-	-	2.8	2.8
Cash and other short-term investments	34.2	78.2	-	112.4
Net assets measured at fair value	$ 363.2	$ 1,070.1	$ 2.8	$ 1,436.1
Investments measured at net asset value				76.8
Net assets				$ 1,512.9

RIP Level 3 assets remained relatively unchanged from December 31, 2016 to December 31, 2017, with the change in Level 3 assets during 2017 due primarily to unrealized gains and losses.

The RIP has investments in alternative investment funds as of December 31, 2017 and December 31, 2016 which are reported at fair value. Certain investments that are measured at fair value using the net asset value ("NAV") per share (or its equivalent) practical expedient have not been categorized in the fair value hierarchy. The fair value amounts presented in the tables above are intended to permit reconciliation of the fair value hierarchy to the total fair value of plan assets. We have concluded that the NAV reported by the underlying fund approximates the fair value of the investment. These investments are redeemable at NAV under agreements with the underlying funds. However, it is possible that these redemption rights may be restricted or eliminated by the funds in the future in accordance with the underlying fund agreements. Due to the nature of the investments held by the funds, changes in market conditions and the economic environment may significantly impact the NAV of the funds and, consequently, the fair value of the U.S. defined benefit pension plan asset's interest in the funds. Furthermore, changes to the liquidity provisions of the funds may significantly impact the fair value of the U.S. defined benefit pension plan asset's interest in the funds. As of December 31, 2017, there were no restrictions on redemption of these investments.

The following table sets forth a summary of the RIP's investments measured at NAV:

	Value at December 31, 2017			
Description	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**
Real estate	$ 59.9	$ 2.2	Quarterly	45-90 Days
Other investments	3.6	0.9	None	None
Investments measured at net asset value	$ 63.5	$ 3.1		

	Value at December 31, 2016			
Description	**Fair Value**	**Unfunded Commitments**	**Redemption Frequency**	**Redemption Notice Period**
Real estate	$ 73.3	$ 2.2	Quarterly	45-90 Days
Other investments	3.5	0.9	None	None
Investments measured at net asset value	$ 76.8	$ 3.1		

Following is a description of the valuation methodologies used for assets measured at fair value and at NAV.

Bonds: Consists of registered investment funds and common and collective trust funds investing in fixed income securities tailored to institutional investors. There are no readily available market quotations for registered investment company funds. The fair value of investment funds and common and collective trust funds have been classified as Level 2 assets above as their values were derived based on the underlying securities in the fund's portfolio which is typically the amount which the fund might reasonably expect to receive for the security upon a current sale. Investments in individual bonds were measured at fair value based on the closing price reported in the active market in which the bond is traded and investments in pooled funds traded in a non-active market were valued at bid price and classified as Level 2 assets above.

Collective Trust Fund: Consists of separately ma naged accounts comprised of equity investments, fixed income securities, commodity future contracts, cash and other short-term securities. The fair value of collective trust funds have been classified as Level 2 assets above as their values were derived b ased on the underlying securities in the fund's portfolio which is typically the amount which the fund might reasonably expect to receive for the security upon a current sale .

Equities: Consists of domestic and international investments in common and preferred stocks as well as investments in registered investment funds investing in equities tailored to institutional investors. Individual common and preferred stocks are valued at the closing price reported on the active market on which the individual securities are traded and classified as Level 1 assets above. There are no readily available market quotations for registered investment company funds. The fair value, classified as Level 2 assets above, is based on the underlying securities in the fund's portfolio which is typically the amount which the fund might reasonably expect to receive for the security upon a current sale.

High yield bonds: Consists of an investment in a registered investment fund investing in fixed income securities tailored to institutional investors. There are no readily available market quotations for registered investment company funds. The fair value is based on the underlying securities in the fund's portfolio which is typically the amount which the fund might reasonably expect to receive for the security upon a current sale.

Real assets: Consists of a fund that has underlying investments in commodity futures contracts, as well as cash and fixed income instruments used as collateral instruments against the commodity future contracts. The futures contracts are considered real assets as the underlying securities include natural resources such as oil or precious metals, livestock, or raw agricultural products. The fair value is based on the underlying securities in the fund's portfolio which is typically the amount which the fund might reasonably expect to receive for the security upon a current sale.

Real estate: Consists of both open-end and closed-end funds. There are no readily available market quotations for these real estate funds. These investments were measured at fair value using the NAV practical expedient.

Other investments: Consists of investments in a group insurance annuity contract and a limited partnership. Investments in the group insurance annuity contract were classified as Level 3 assets and measured at fair value by discounting the related cash flows based on current yields of similar instruments with comparable durations while considering the credit-worthiness of the issuer. The investments in the limited partnership were measured at fair value using the NAV practical expedient.

Cash and other short-term investments : Cash and short term investments consist primarily of cash and cash equivalents, and plan receivables/payables. The carrying amounts of cash and cash equivalents and receivables/payables approximate fair value due to the short-term nature of these instruments. Other payable and receivables consist primarily of margin on an account for a fund, accrued fees and receivables related to investment positions liquidated for which proceeds had not been received as of December 31.

U.S. DEFINED BENEFIT RETIREE HEALTH AND LIFE INSURANCE PLANS

We fund postretirement benefits on a pay-as-you-go basis, with the retiree paying a portion of the cost for health care benefits by means of deductibles and contributions.

(dollar amounts in millions, except share data)

The following tables summarize the balance sheet impact of the U.S. postretirement benefit pension plan, as well as the related benefit obligations, funded status and rate assumptions. We use a December 31 measurement date for all our defined benefit postretirement benefit plans.

	2017	2016
U.S. defined-benefit retiree health and life insurance plans		
Change in benefit obligation:		
Benefit obligation as of beginning of period	$ 93.1	$ 190.3
Service cost	0.4	0.4
Interest cost	3.0	4.7
Plan participants' contributions	2.8	3.2
Plan amendments	(1.1)	-
Actuarial (gain)	(1.3)	(7.7)
Benefits paid	(10.3)	(11.5)
Separation of AFI	-	(86.3)
Benefit obligation as of end of period	$ 86.6	$ 93.1

	2017	2016
Change in plan assets:		
Fair value of plan assets as of beginning of period	$ -	$ -
Employer contribution	7.5	8.3
Plan participants' contributions	2.8	3.2
Benefits paid	(10.3)	(11.5)
Fair value of plan assets as of end of period	$ -	$ -
Funded status of the plans	$ (86.6)	$ (93.1)

	2017	2016
U.S. defined-benefit retiree health and life insurance plans		
Weighted-average discount rate used to determine benefit obligations at end of period	3.60%	4.10%
Weighted-average discount rate used to determine net periodic benefit cost for the period	4.11%	4.17%

The components of postretirement benefit (credit) cost are as follows:

	2017	2016	2015
U.S. defined-benefit retiree health and life insurance plans			
Service cost of benefits earned during the period	$ 0.4	$ 0.4	$ 0.9
Interest cost on accumulated postretirement benefit obligation	3.0	4.7	8.1
Amortization of prior service (credit)	-	(0.3)	(0.6)
Amortization of net actuarial gain	(3.6)	(6.1)	(7.8)
Net periodic postretirement benefit (credit) cost	$ (0.2)	$ (1.3)	$ 0.6
Less: Discontinued operations	-	(0.2)	0.8
Net periodic postretirement benefit (credit), continuing operations	$ (0.2)	$ (1.1)	$ (0.2)

(dollar amounts in millions, except share data)

For measurement purposes, an average rate of annual increase in the per capita cost of covered health care benefits of 8.0% for pre-65 retirees and 9.2% to 10.9% for post-65 retirees (depending on plan type) was assumed for 201 7, decreasing ratably to an ultimate rate of 4.5% in 2026. Assumed health care cost trend rates can have a significant effect on the amounts reported for the health care plans. A one percentage point change in assumed health care cost trend rates would h ave the following effects:

	One percentage point	
	Increase	Decrease
U.S. defined benefit retiree health and life insurance benefits plans		
Effect on total service and interest cost components	$ (0.1)	$ 0.1
Effect on postretirement benefit obligation	(0.8)	0.7

Amounts recognized in assets (liabilities) on the consolidated balance sheets at year end consist of:

	U.S. Pension Plans		Non-U.S. Pension Plan		Retiree Health and Life Insurance Benefits	
	2017	2016	2017	2016	2017	2016
Prepaid pension costs	$ 88.3	$ 48.7	$ -	$ -	$ -	$ -
Accounts payable and accrued expenses	(4.1)	(3.9)	(0.1)	-	(7.4)	(8.3)
Postretirement benefit liabilities	-	-	-	-	(79.2)	(84.8)
Pension benefit liabilities	(54.6)	(54.3)	(2.6)	(2.5)	-	-
Net amount recognized	$ 29.6	$ (9.5)	$ (2.7)	$ (2.5)	$ (86.6)	$ (93.1)

Pre-tax amounts recognized in accumulated other comprehensive (loss) income at year end consist of:

	U.S. Pension Plans		Non-U.S. Pension Plan		Retiree Health and Life Insurance Benefits	
	2017	2016	2017	2016	2017	2016
Net actuarial (loss) gain	$ (520.2)	$ (553.5)	$ (8.9)	$ (22.4)	$ 49.5	$ 51.7
Prior service (cost) credit	-	(1.5)	(0.5)	(0.6)	1.1	0.1
Accumulated other comprehensive (loss) income	$ (520.2)	$ (555.0)	$ (9.4)	$ (23.0)	$ 50.6	$ 51.8

For U.S. pension plans, we expect to amortize $20.1 million of previously unrecognized prior service cost and net actuarial losses into pension cost in 2018 and expect to contribute $4.0 million in 2018.

For our non-U.S. pension plan, we do not expect to amortize any previously unrecognized net actuarial losses or unrecognized prior service cost into pension cost in 2018 and do not expect to contribute any amounts in 2018.

For our U.S. postretirement benefit plans, we expect to amortize $5.3 million of previously unrecognized net actuarial gains and prior service credits into postretirement benefit cost in 2018 and expect to contribute $7.4 million in 2018.

(dollar amounts in millions, except share data)

The following benefit payments, which reflect expected future service, as appropriate, are expected to be paid over the next ten years for our U.S. and non-U.S plans:

	U.S. Pension Benefits (1)	Non-U.S. Pension Benefits	Retiree Health and Life Insurance Benefits, Net
2018	$ 106.4	$ 0.1	$ 7.4
2019	105.3	0.1	7.4
2020	104.4	0.1	7.1
2021	102.4	0.1	6.9
2022	101.5	0.1	6.6
2023 - 2027	482.6	0.6	28.8

(1) We were not required and did not make contributions to the RIP during 2017, 2016 or 2015 as, based on guidelines established by the Pension Benefit Guaranty Corporation, the RIP had sufficient assets to fund its distribution obligations. Benefit payments to participants have been made directly from the RIP to participants from the assets of the plan.

NOTE 17. FINANCIAL INSTRUMENTS

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

	December 31, 2017		December 31, 2016	
	Carrying amount	Estimated fair value	Carrying amount	Estimated fair value
Assets/(Liabilities), net:				
Total debt, including current portion	$ (850.2)	$ (850.8)	$ (873.6)	$ (873.7)
Foreign currency contracts	(0.8)	(0.8)	1.3	1.3
Natural gas contracts	(0.6)	(0.6)	1.0	1.0
Interest rate swap contracts	8.9	8.9	6.9	6.9

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 primarily based upon quotes from a major financial institution of recently observed trading levels of our Term Loan A and Term Loan B debt. The fair value estimates of foreign currency contracts 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, 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. Refer to Note 18 for a discussion of the fair value and the related inputs used to measure fair value.

The fair value measurement of assets and liabilities is summarized below:

	December 31, 2017		December 31, 2016	
	Fair value based on		Fair value based on	
	Quoted, active markets	Other observable inputs	Quoted, active markets	Other observable inputs
	Level 1	Level 2	Level 1	Level 2
Assets/(Liabilities), net:				
Foreign currency contracts	$ (0.8)	$ -	$ 1.3	$ -
Natural gas contracts	-	(0.6)	-	1.0
Interest rate swap contracts	-	8.9	-	6.9

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

NOTE 18. 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. Forward swaps and option contracts are entered into for periods consistent with underlying exposure and do not constitute positions independent of those 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 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 of reducing North American natural gas price volatility 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 December 31, 2017 and December 31, 2016, the notional amount of these hedges was $9.2 million and $7.4 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 years ended December 31, 2017, 2016 and 2015.

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 historical 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 December 31, 2017, 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 $18.9 million and $26.5 million at December 31, 2017 and December 31, 2016, respectively. 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 immediate ly. The earnings impact of the ineffective portion of these hedges was not material for the years ended December 31, 2017, 2016 and 2015.

(dollar amounts in millions, except share data)

Interest Rate Risk

We utilize interest rate swaps to minimize the fluctuations in earnings caused by interest rate volatility. The following table summarizes our interest rate swaps as of December 31, 2017:

Trade Date		Notional Amount	Coverage Period	Risk Coverage
November 13, 2016	$	250.0	November 2016 to March 2018	Term Loan A
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

In connection with the refinancing of our credit facilities in April 2016, $450.0 million of notional amount Term Loan B swaps with a trade date of March 27, 2012 were settled and $10.7 million of losses recorded as a component of accumulated other comprehensive income were reclassified to interest expense in 2016.

During the fourth quarter of 2016, we elected to change the floating rate basis for interest payments due under our Term Loan A credit facility from 3-month LIBOR to 1-month LIBOR. In connection with the change in our underlying interest payments, in November 2016 we entered into $450.0 million forward-starting notional amount basis rate swaps to convert the floating rate risk under our Term Loan A Swaps from 3-month LIBOR to 1-month LIBOR and jointly designated the basis swaps with our Term Loan A Swaps in cash flow hedging relationships. As a result of this transaction, $2.4 million of gains recorded as a component of accumulated other comprehensive income were reclassified as a reduction to interest expense during the fourth quarter of 2016. Since the basis rate swaps had a non-zero fair value upon designation as cash flow hedges, mark-to-market gains or losses on ineffective portions of these hedges are recorded as a component of interest expense. Under the terms of our Term Loan B swap with a trade date of April 1, 2016, 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 were 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 years ended December 31, 2017 and 2016. There was no earnings impact of the ineffective portion of these hedges for the years ended December 31, 2015.

Financial Statement Impacts

The following tables detail amounts related to our derivatives as of December 31, 2017 and December 31, 2016. We did not have any derivative assets or liabilities not designated as hedging instruments for the years ended December 31, 2017 and 2016. The derivative asset and liability amounts below are shown in gross amounts; we have not netted assets with liabilities.

	Derivative Assets			Derivative Liabilities		
		Fair Value			Fair Value	
	Balance Sheet Location	December 31, 2017	December 31, 2016	Balance Sheet Location	December 31, 2017	December 31, 2016
Derivatives designated as hedging instruments						
Natural gas commodity contracts	Other current assets	$ -	$ 1.0	Accounts payable and accrued expenses	$ 0.5	$ -
Foreign exchange contracts	Other current assets	-	1.2	Accounts payable and accrued expenses	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	-	0.1	Other long-term liabilities	0.1	-
Interest rate swap contracts	Other non-current assets	8.7	7.4	Other long-term liabilities	-	0.5
Total derivatives designated as hedging instruments		$ 8.9	$ 9.7		$ 1.4	$ 0.5

(dollar amounts in millions, except share data)

	Amount of (Loss) Gain Recognized in Accumulated Other Comprehensive Income ("AOCI") (Effective Portion)			Location of Gain (Loss) Reclassified from AOCI into Income (Effective Portion)	Gain (Loss) Reclassified from AOCI into Income (Effective Portion)		
	2017	2016	2015		2017	2016	2015
Derivatives in Cash Flow Hedging Relationships							
Natural gas commodity contracts	$ (1.3)	$ 0.6	$ (2.3)	Cost of goods sold	$ 0.3	$ (1.2)	$ (4.4)
Foreign exchange contracts – purchases	(0.5)	-	1.2	Cost of goods sold	-	-	1.8
Foreign exchange contracts – sales	(1.8)	(2.9)	4.7	Net sales	0.1	1.4	3.8
Interest rate swap contracts	2.2	6.8	(2.1)	Interest expense	(0.9)	(8.3)	(0.8)
Total	$ (1.4)	$ 4.5	$ 1.5	Total gain (loss) from continuing operations	(0.5)	(8.1)	0.4
				Total (loss) gain from discontinued operations	(0.1)	0.2	-
				Total gain (loss)	$ (0.6)	$ (7.9)	$ 0.4

As of December 31, 2017, the amount of existing losses in AOCI expected to be recognized in earnings over the next twelve months is $1.3 million.

NOTE 19. PRODUCT WARRANTIES

We provide limited warranties for defects in materials or factory workmanship, sagging and warping, and certain other manufacturing defects. 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.

The following table summarizes the activity for the accrual of product warranties for December 31, 2017 and 2016:

	2017	2016
Balance at beginning of period	$ 0.2	$ 0.3
Current year warranty accruals	3.2	8.0
Reductions for payments	(3.3)	(8.1)
Balance at end of period	$ 0.1	$ 0.2

NOTE 20. OTHER LONG-TERM LIABILITIES

	December 31, 2017	December 31, 2016
Long-term deferred compensation arrangements	$ 15.3	$ 15.9
Environmental liabilities	13.5	4.7
Long-term portion of derivative liabilities	0.2	0.5
Other	6.5	5.9
Total other long-term liabilities	$ 35.5	$ 27.0

NOTE 21. SHARE-BASED COMPENSATION PLANS

The 2016 Long-Term Incentive Plan ("2016 LTIP") authorizes us to issue stock options, stock appreciation rights, restricted stock awards, stock units, performance-based awards and cash awards to officers and key employees and expires on July 8, 2026, after which time no further awards may be made. The 2016 LTIP authorizes us to issue up to 8,949,000 shares of common stock, which includes all shares that have been issued under the 2016 LTIP. As of December 31, 2017, 2,543,180 shares were available for future grants under the 2016 LTIP.

(dollar amounts in millions, except share data)

The 2016 Directors Stock Unit Plan ("2016 Director's Plan") authorizes us to issue stock units to non-employee directors until July 2026. The 2016 Director's Plan authorizes us to issue up to 550,000 shares of common stock, which includes all shares that have been issued under the 2016 Director's Plans. As of December 31, 2017, 202,535 shares were available for future grants under the 2016 Director's Plan.

The following table presents stock option activity for the year ended December 31, 2017:

	Number of shares (thousands)	Weighted-average exercise price	Weighted-average remaining contractual term (years)	Aggregate intrinsic value (millions)
Option shares outstanding, December 31, 2016	1,350.6	$ 34.66		
Option shares exercised	(78.2)	(41.62)		
Option shares outstanding, December 31, 2017	1,272.4	$ 34.23	3.4	$ 33.5
Option shares exercisable, vested and expected to vest, December 31, 2017	1,272.4	34.23	3.4	$ 33.5

We have reserved sufficient authorized shares to allow us to issue new shares upon exercise of all outstanding options. Options generally become exercisable in three years and expire 10 years from the date of grant. When options are exercised, we may issue new shares, use treasury shares (if available), acquire shares held by investors, or a combination of these alternatives in order to satisfy the option exercises.

The following table presents information related to stock option exercises:

	2017	2016	2015
Total intrinsic value of stock options exercised	$ 0.9	$ 0.4	$ 3.5
Cash proceeds received from stock options exercised	$ 3.3	$ 0.7	$ 6.4
Tax (expense) deduction realized from stock options exercised	$ (0.2)	$ (0.1)	$ 0.4

The fair value of option grants was estimated on the date of grant using the Black-Scholes option pricing model. There were no option grants in 2017, 2016 or 2015.

Historically, we have also granted non-vested stock awards in the form of restricted stock, RSUs, performance restricted stock and PSUs. As of December 31, 2017 and 2016, we have no outstanding restricted stock or performance restricted stock. A summary of the 2017 activity related to these awards follows:

	Non-Vested Stock Awards			
	RSUs		PSUs	
	Number of shares (thousands)	Weighted-average fair value at grant date	Number of shares (thousands)	Weighted-average fair value at grant date
December 31, 2016	224.5	$ 44.94	290.4	$ 40.29
Granted	54.2	47.18	139.4	44.65
Vested	(101.1)	(46.23)	(39.7)	(47.19)
Forfeited	(6.0)	(44.23)	(10.4)	(43.91)
December 31, 2017	171.6	$ 45.27	379.7	$ 41.08

RSUs entitle the recipient to a specified number of shares of AWI's common stock provided the prescribed service period is fulfilled. PSUs entitle the recipient to a specified number of shares of AWI's common stock provided the defined financial targets are achieved at the end of the performance period. RSUs and PSUs generally had vesting periods of three years at the grant date. RSUs and PSUs earn dividends during the vesting period that are forfeitable if the awards do not vest.

(dollar amounts in millions, except share data)

The table above contains 8,354 and 9,581 RSUs as of December 31, 2017 and 2016, respectively, which are accounted for as liability awards as they are able to be settled in cash. The table above contains 720 PSUs as of Decem ber 31, 2016, which are accounted for as liability awards as they are able to be settled in cash. Employee liability awards outstanding for all periods represent awards to employees of our EMEA and Pacific Rim businesses. The underlying liability is refl ected as a component of current liabilities from discontinued operations on our consolidated balance sheets.

RSUs and PSUs with non-market based performance conditions are measured at fair value based on the closing price of our stock on the date of grant. In 2017 and 2016, we granted 69,769 and 158,790 PSUs with market based performance conditions that are valued through the use of a Monte Carlo simulation. The weighted average assumptions for PSUs measured at fair value through the use of a Monte Carlo simulation is presented in the table below.

	2017	2016
Weighted-average grant date fair value of market based PSUs granted (dollars per award)	$ 43.29	$ 37.75
Assumptions		
Risk free rate of return	1.5%	0.8%
Expected volatility	28.0%	28.0%
Expected term (in years)	3.1	2.7
Expected dividend yield	0.0%	0.0%

The risk free rate of return was determined based on the implied yield available on zero coupon U.S. Treasury bills at the time of grant with a remaining term equal to the expected term of the PSUs. The expected volatility was based on an average of the actual historical volatilities of the stock prices of AWI and a peer group of companies. We elected to not rely solely on AWI's actual historical stock price volatility due to the separation of AFI. The expected life represented the performance period on the underlying award. The expected dividend yield was assumed to be zero because, at the time of each grant, we had no plans to declare a dividend.

In addition to the equity awards described above, as of December 31, 2017 we had 11,773 fully-vested phantom shares outstanding for non-employee directors under the 2006 Phantom Stock Unit Plan not reflected in the non-vested stock awards table above. These awards are settled in cash and had vesting periods of one to three years. The awards are generally payable six months following the director's separation from service on the Board of Directors. The total liability recorded for these shares as of December 31, 2017 was $1.3 million which includes associated non-forfeitable dividends. The 2006 Phantom Stock Unit Plan is still in place; however, no additional shares will be granted under the plan.

As of December 31, 2017 and 2016, there were 191,725 and 189,237 RSUs, respectively, outstanding under the 2016 Directors Stock Unit Plan not reflected in the Non-Vested Stock Awards table above. In 2017 and 2016, we granted 22,433 and 25,714 restricted stock units, respectively, to non-employee directors. These awards generally have a vesting period of one year, and as of December 31, 2017 and 2016, 169,292 and 163,523 shares, respectively, were vested but not yet delivered. The awards are generally payable six months following the director's separation from service on the Board of Directors and earn dividends during the vesting period that are non-forfeitable.

We recognize share-based compensation expense on a straight-line basis over the vesting period. Share-based compensation cost was $9.8 million ($5.9 million net of tax benefit) in 2017; $11.0 million ($6.6 million net of tax benefit) in 2016, and $10.2 million ($6.0 million net of tax benefit) in 2015.

As of December 31, 2017, there was $12.1 million of total unrecognized compensation cost related to non-vested share-based compensation arrangements. That cost is expected to be recognized over a weighted-average period of 1.6 years.

(dollar amounts in millions, except share data)

NOTE 22. EMPLOYEE COSTS

	2017	2016	2015
Wages, salaries and incentive compensation	$ 191.0	$ 179.1	$ 185.1
Payroll taxes	14.2	13.9	14.0
Defined contribution and defined benefit pension plan expense, net	4.1	22.7	26.4
Insurance and other benefit costs	24.0	21.4	18.8
Share-based compensation	9.8	11.0	10.2
Total	$ 243.1	$ 248.1	$ 254.5

NOTE 23. LEASES

We rent certain real estate and equipment. Several leases include options for renewal or purchase, and contain clauses for payment of real estate taxes and insurance. In most cases, management expects that in the normal course of business, leases will be renewed or replaced by other leases. Rent expense was $6.7 million in 2017, $5.2 million in 2016 and $5.2 million in 2015.

Future minimum payments at December 31, 2017 by year and in the aggregate, having non-cancelable lease terms in excess of one year are as follows:

	Total Minimum Lease Payments
Scheduled minimum lease payments	
2018	$ 2.4
2019	2.2
2020	1.8
2021	1.5
2022	1.1
Thereafter	4.3
Total	$ 13.3

NOTE 24. SHAREHOLDERS' EQUITY

Common Stock Repurchase Plan

On July 29, 2016, the Company announced that its Board of Directors had approved a share repurchase program pursuant to which the Company is authorized to repurchase up to $150.0 million of its 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 of our outstanding common stock under the Program. The Program was also extended through October 31, 2020.

(dollar amounts in millions, except share data)

Repurchases under the Program may be made through open market, block and privately-negotiated transactions, including Rule 10b5-1 plans, at times and in such amounts as management deems appropriate, subject to market and busines s conditions, regulatory requirements and other factors. The Program does not obligate the Company to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice. During 2017, 1.8 million shares were repurchased under the Program for a total cost of $80.4 million, or an average price of $43.58 per share. During 2016, 1.1 million shares were repurchased under the Program for a total cost of $43.8 million, or an average price of $39 .45 per share. Since inception of the Program, we have repurchased 2.95 million shares under the Program for a total cost of $124.2 million, or an average price of $42.03 per share.

Accumulated Other Comprehensive (Loss)

The balance of each component of accumulated other comprehensive (loss), net of tax as of December 31, 2017 and 2016 is presented in the table below.

	December 31, 2017	December 31, 2016
Foreign currency translation adjustments	$ (47.1)	$ (71.6)
Derivative gain, net	3.5	3.8
Pension and postretirement adjustments	(302.3)	(336.0)
Accumulated other comprehensive (loss)	$ (345.9)	$ (403.8)

The amounts and related tax effects allocated to each component of other comprehensive income for 2017, 2016, and 2015 are presented in the table below.

	Pre-tax Amount	Tax Benefit	After-tax Amount
2017			
Foreign currency translation adjustments	$ 24.5	$ -	$ 24.5
Derivative (loss), net	(0.8)	0.5	(0.3)
Pension and postretirement adjustments	50.4	(16.7)	33.7
Total other comprehensive income	$ 74.1	$ (16.2)	$ 57.9

	Pre-tax Amount	Tax Expense	After-tax Amount
2016			
Foreign currency translation adjustments	$ (33.2)	$ -	$ (33.2)
Derivative gain, net	11.9	(4.4)	7.5
Pension and postretirement adjustments	75.7	(26.4)	49.3
Total other comprehensive income	$ 54.4	$ (30.8)	$ 23.6

	Pre-tax Amount	Tax Benefit	After-tax Amount
2015			
Foreign currency translation adjustments	$ (25.5)	$ -	$ (25.5)
Derivative gain, net	1.1	(0.4)	0.7
Pension and postretirement adjustments	50.7	(17.8)	32.9
Total other comprehensive (loss) income	$ 26.3	$ (18.2)	$ 8.1

(dollar amounts in millions, except share data)

The following table summarizes the activity, by component, related to the change in AOCI for December 31, 2017 and 2016:

	Foreign Currency Translation Adjustments (1)	Derivative (Loss) Gain (1)	Pension and Postretirement Adjustments (1)	Total Accumulated Other Comprehensive (Loss) (1)
Balance, December 31, 2015	$ (33.8)	$ (3.3)	$ (450.3)	$ (487.4)
Separation of AFI, net of tax (benefit) of $-, $-, ($39.2), and ($39.2)	(4.6)	(0.4)	65.0	60.0
Other comprehensive (loss) income before reclassifications, net of tax expense (benefit) of $ -, ($1.8), ($10.9), and ($12.8)	(33.2)	3.0	20.2	(10.0)
Amounts reclassified from accumulated other comprehensive income	-	4.5	29.1	33.6
Net current period other comprehensive (loss) income	(33.2)	7.5	49.3	23.6
Balance, December 31, 2016	(71.6)	3.8	(336.0)	(403.8)
Other comprehensive income (loss) income before reclassifications, net of tax expense (benefit) of $ -, $0.8, ($3.6), and ($2.8)	24.5	(0.7)	9.3	33.1
Amounts reclassified from accumulated other comprehensive income	-	0.4	24.4	24.8
Net current period other comprehensive income (loss)	24.5	(0.3)	33.7	57.9
Balance, December 31, 2017	$ (47.1)	$ 3.5	$ (302.3)	$ (345.9)

(1) Amounts are net of tax

(dollar amounts in millions, except share data)

The amounts reclassified from AOCI and the affected line item of the Consolidated Statement of Earnings and Comprehensive Income are presented in the table below.

	Amounts Reclassified from AOCI		Affected Line Item in the Consolidated Statement of Earnings and Comprehensive Income
	2017	**2016**	
Derivative Adjustments:			
Natural gas commodity contracts	$ (0.3)	$ 1.2	Cost of goods sold
Foreign exchange contracts - purchases	0.1	(0.2)	Cost of goods sold
Foreign exchange contracts - sales	(0.1)	(1.4)	Net sales
Interest rate swap contracts	0.9	8.3	Interest expense
Total income from continuing operations, before tax	0.6	7.9	
Tax impact	(0.2)	(2.8)	Income tax expense
Total income from continuing operations, net of tax	0.4	5.1	
Total (loss) from discontinued operations, net of tax benefit of $- and ($0.3)	-	(0.6)	
Total income, net of tax	0.4	4.5	
Pension and Postretirement Adjustments:			
Prior service cost amortization	0.9	0.6	Cost of goods sold
Prior service cost amortization	0.6	0.6	SG&A expense
Amortization of net actuarial loss	7.4	20.7	Cost of goods sold
Amortization of net actuarial loss	7.8	18.4	SG&A expense
Partial settlement	12.5	-	Cost of goods sold
Partial settlement	8.3	-	SG&A expense
Total expense from continuing operations, before tax	37.5	40.3	
Tax impact	(13.1)	(14.1)	Income tax expense
Total expense from continuing operations, net of tax	24.4	26.2	
Total expense from discontinued operations net of tax expense of $- and $1.5	-	2.9	
Total expense, net of tax	24.4	29.1	
Total reclassifications for the period	$ 24.8	$ 33.6	

NOTE 25. SUPPLEMENTAL FINANCIAL INFORMATION

	2017	2016	2015
Selected operating expense			
Maintenance and repair costs	$ 42.5	$ 41.4	$ 42.2
Research and development costs	17.4	17.8	18.7
Advertising costs	6.0	5.4	5.5
Other non-operating (income)/expense			
Interest income	$ (1.8)	$ (1.0)	$ (0.6)
Foreign currency transaction (gain)/loss, net of hedging activity	(0.6)	(9.4)	13.8
Other	-	(0.8)	4.6
Total	$ (2.4)	$ (11.2)	$ 17.8

NOTE 26. RELATED PARTIES

In some markets, we purchase grid products from WAVE, our 50%-owned joint venture with Worthington Industries, for resale to customers. The total amount of these purchases was $18.2 million in 2017, $18.0 million in 2016 and $18.2 million in 2015. We also provide certain selling, promotional and administrative processing services to WAVE for which we receive reimbursement. Those services amounted to $14.9 million in 2017, $9.1 million in 2016, and $8.8 million in 2015. The net amount due to WAVE from us for all of our relationships was $2.6 million as of December 31, 2017 and $4.2 million as of December 31, 2016. See Note 9 to the Consolidated Financial Statements for additional information.

NOTE 27. 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.

In 2017 we entered settlement agreements totaling $30.5 million with legacy insurance carriers to resolve ongoing litigation and recover fees and costs previously incurred by us in connection with certain environmental sites. These settlements were recorded as an $11.2 million reduction to cost of goods sold and a $19.3 million reduction to SG&A expenses during the third and fourth quarters of 2017, reflecting the same income statement categories where environmental expenditures were historically recorded. We obtained court approval of these settlements in January 2018 and now expect payments to be released to us from escrow in the first quarter of 2018. We anticipate that we may enter into additional settlement agreements in the future that 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.

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 requires 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 requires 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). 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 Consent Judgment remains subject to a public comment period and subsequent entry and approval by the Columbia County Circuit Court, which we expect to occur in 2018.

Macon, GA

The U.S. Environmental Protection Agency (“EPA”) has listed two landfills located on a portion of our 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”). We concluded the investigative phase of the Removal Action for the WWTP Landfill and submitted our final Engineering Evaluation/Cost Analysis (“EE/CA”) to the EPA in 2013. The EPA subsequently approved the EE/CA and issued an Action Memorandum in July 2013 selecting our recommended remedy for the Removal Action. In July 2014, we entered into an Administrative Order on Consent for Removal Action with the EPA for the WWTP Landfill. The EPA approved the Removal Action Work Plan on March 30, 2015 and the removal work commenced in the third quarter of 2015. 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 an agreement 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. We and the other PRPs are in negotiations with the EPA on the agreement to conduct an

RI/FS for Operable Unit 2. 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 i n 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 parties have agreed upon tasks and timeframes to complete a feasibility study at the site, working toward a Proposed Plan and 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 $13.5 million as of December 31, 2017 and $4.7 million as of December 31, 2016 were recorded for potential environmental liabilities that we consider probable and for which a reasonable estimate of the probable liability could be made. During 2017, we recorded reserves for potential environmental liabilities of $10.1 million, including $8.6 million of reserves recorded in the fourth quarter for the above referenced St. Helens settlement. During 2016, we recorded reserves for potential environmental liabilities of $2.9 million. 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.

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, if any, would be 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 are vigorously defending the matter.

We are involved in various other 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 ari sing 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 cla ims 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 co verage 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 28. EARNINGS PER SHARE

Earnings per share components may not add due to rounding.

The following table is a reconciliation of net earnings to net earnings attributable to common shares used in our basic and diluted EPS calculations for the years ended December 31, 2017, 2016, and 2015:

	2017	2016	2015
Earnings from continuing operations	$ 220.6	$ 99.3	$ 57.9
Earnings allocated to participating non-vested share awards	(0.7)	(0.3)	(0.2)
Earnings from continuing operations attributable to common shares	$ 219.9	$ 99.0	$ 57.7

	2017	2016 (in millions)	2015
Basic shares outstanding	53.3	55.4	55.5
Dilutive effect of common stock equivalents	0.6	0.3	0.4
Diluted shares outstanding	53.9	55.7	55.9

Options to purchase 319,836, 632,799 and 203,527 shares of common stock were outstanding as of December 31, 2017, 2016, and 2015, respectively, but not included in the computation of diluted earnings per share, because the options were anti-dilutive.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCO UNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Our management, with the participation of our chief executive officer and our chief financial officer, performed an evaluation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934 (“Exchange Act”)) as of December 31, 2017. Our chief executive officer and our chief financial officer have concluded that our disclosure controls and procedures were effective insofar as they are designed to provide reasonable assurance that information required to be disclosed by us in the reports we file or submit under the Exchange Act is (i) recorded, processed, summarized and reported, within the time periods specified in the Commission’s rules and forms, and (ii) accumulated and communicated to our management, including our principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. We believe that a controls system, no matter how well designed and operated, cannot provide absolute assurance that the objectives of the controls system are met, and no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within a company have been detected.

There have been no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2017 that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

Management’s Report on Internal Control over Financial Reporting and the Report of Independent Registered Public Accounting Firm are incorporated by reference to Item 8.

ITEM 9B. OT HER INFORMATION

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Executive Officers of the Company (as of February 26, 2018):

Name	Age	Present Position and Business Experience During the Last Five Years*
Victor D. Grizzle	56	Armstrong World Industries, Inc. President & CEO, Director since April 2016 Executive Vice President & CEO, Armstrong Building Products (2011 to April 2016)
Charles M. Chiappone	55	Armstrong World Industries, Inc. Senior Vice President, Ceiling Solutions since April 2016 Vice President of Global Marketing & Commercial Excellence, Armstrong Building Products (January 2012 to April 2016)
David S. Cookson	60	Armstrong World Industries, Inc. Senior Vice President, Americas since 2008
Mark A. Hershey	48	Armstrong World Industries, Inc. Senior Vice President, General Counsel since July 2011 Chief Compliance Officer since February 2012 Secretary (July 2011 to June 2014 and since April 2016)
Brian L. MacNeal	51	Armstrong World Industries, Inc. Senior Vice President, Chief Financial Officer since April 2016 Vice President, Global Finance and CFO, Armstrong Building Products (2014 to April 2016) Heartland Energy Solutions Interim Chief Financial Officer (2013 to 2014) Campbell Soup Company Vice President of Finance (2011 to 2013)
Stephen F. McNamara	51	Armstrong World Industries, Inc. Vice President, Controller since July 2008
Ellen R. Romano	56	Armstrong World Industries, Inc. Senior Vice President, Human Resources since July 2013 Vice President, Human Resources, Armstrong Building Products (2009 to 2013)

* *Information in parentheses regarding previously held positions indicates either the duration the Executive Officer held the position or the year in which service in the position began.*

All executive officers are elected by the Board of Directors to serve in their respective capacities until their successors are elected and qualified or until their earlier resignation or removal.

Code of Ethics

We have adopted a Code of Business Conduct that applies to all employees, executives and directors, specifically including our Chief Executive Officer, our Chief Financial Officer and our Controller. We have also adopted a Code of Ethics for Financial Professionals (together with the Code of Business Conduct, the "Codes of Ethics") that applies to all professionals in our finance and accounting functions worldwide, including our Chief Financial Officer and our Controller.

The Codes of Ethics are intended to deter wrongdoing and to promote:

- honest and ethical conduct, including the ethical handling of actual or apparent conflicts of interest between personal and professional relationships;
- full, fair, accurate, timely and understandable public disclosures;
- compliance with applicable governmental laws, rules and regulations;

- the prompt internal reporting of violations of the Codes of Ethics; and
- accountability for compliance with the Codes of Ethics.

The Codes of Ethics are available at http://www.armstrongceilings.com/corporate/codes-policies.html and in print free of charge. Any waiver of the Company's Code of Business Conduct, particularly its conflicts-of-interest provisions, which may be proposed to apply to any director or executive officer, must be reviewed in advance by the Nominating and Governance Committee of the Board of Directors, which would be responsible for making a recommendation to the Board of Directors for approval or disapproval. The Board of Directors' decision on any such matter would be disclosed publicly in compliance with applicable legal standards and the rules of the New York Stock Exchange. We intend to satisfy these requirements by making disclosures concerning such matters available on the "For Investors" page of our website. There were no waivers or exemptions from the Code of Business Conduct in 2017 applicable to any director or executive officer.

Other information required by Item 10 is incorporated by reference to the sections entitled "Election of Directors," "Corporate Governance," and "Section 16(a) Beneficial Ownership Reporting Compliance" in the Company's proxy statement for its 2018 annual meeting of shareholders to be filed no later than April 30, 2018.

ITEM 11. EXECUTIVE COMPENSATION

The information required by Item 11 is incorporated by reference to the sections entitled "Compensation Discussion and Analysis," "Compensation Committee Report," "Summary Compensation Table," "Grants of Plan-Based Awards," "Outstanding Equity Awards at Fiscal Year-End," "Option Exercises and Stock Vested," "Pension Benefits," "Nonqualified Deferred Compensation," "Potential Payments Upon Termination or Change in Control," "Board of Directors – Board's Role in Risk Management Oversight," "Compensation Committee Interlocks and Insider Participation" and "Compensation of Directors" in the Company's proxy statement for its 2018 annual meeting of shareholders to be filed no later than April 30, 2018.

ITEM 12. SECURITY OWNERSHIP OF CER TAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information required by Item 12 is incorporated by reference to the sections entitled "Security Ownership of Certain Beneficial Owners," "Security Ownership of Management," and "Equity Compensation Plan Information" in the Company's proxy statement for its 2018 annual meeting of shareholders to be filed no later than April 30, 2018.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required by Item 13 is incorporated by reference to the sections entitled "Certain Relationships and Related Transactions" and "Director Independence" in the Company's proxy statement for its 2018 annual meeting of shareholders to be filed no later than April 30, 2018.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by Item 14 is incorporated by reference to the sections entitled "Audit Committee Report" and "Relationship with Independent Auditors" in the Company's proxy statement for its 2018 annual meeting of shareholders to be filed no later than April 30, 2018.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) Listing of Documents

1. The financial statements and schedule of Armstrong World Industries, Inc. filed as a part of this 2017 Annual Report on Form 10-K is listed in the "Index to Financial Statements and Schedules" on Page 34.

2. The financial statements required to be filed pursuant to Item 15 of Form 10-K are:

   Worthington Armstrong Venture consolidated financial statements for the years ended December 31, 2017, 2016, and 2015 (filed herewith as Exhibit 99.1).

3. The following exhibits are filed as part of this 2017 Annual Report on Form 10-K:

Exhibit No.	Description
2.1	Armstrong World Industries, Inc.'s Fourth Amended Plan of Reorganization dated May 23, 2003 (as modified by modifications filed with the Bankruptcy Court on October 17, 2003, November 10, 2003, December 3, 2004 and February 21, 2006) is incorporated by reference from the Annual Report on Form 10-K, filed on February 24, 2006, wherein it appeared as Exhibit 2.3.
2.2	Separation and Distribution Agreement, dated March 11, 2016, by and between Armstrong World Industries, Inc. and Armstrong Flooring, Inc. is incorporated by reference from the Current Report on Form 8-K filed on March 15, 2016, wherein it appeared as Exhibit 2.1.
2.3	Plan of Division, adopted by Armstrong World Industries, Inc. on March 11, 2016 is incorporated by reference from the Current Report on Form 8-K filed on March 15, 2016, wherein in appeared as Exhibit 2.2.
3.1	Amended and Restated Articles of Incorporation of Armstrong World Industries, Inc. is incorporated by reference from the Current Report on Form 10-Q filed on May 1, 2017, wherein it appeared as Exhibit 3.1.
3.2	Amended and Restated Bylaws of Armstrong World Industries, Inc., are incorporated by reference from the Current Report on Form 8-K filed on December 8, 2017, wherein it appeared as Exhibit 3.1.
10.1	Amended and Restated Credit Agreement, dated April 1, 2016, by and among Armstrong World Industries, Inc., as Borrower, certain subsidiaries of Armstrong World Industries, Inc. identified therein, as the Guarantors, Bank of America, N.A., as Administrative Agent and Collateral Agent, the other lenders party thereto, JPMorgan Chase Bank, N.A. and Citibank, N.A., as Co-Syndication Agents, Manufacturers and Traders Trust, The Bank of Nova Scotia, Fifth Third Bank, Citizens Bank of Pennsylvania, TD Bank National Association and Bank of Montreal, as Co-Documentation Agents, and Merrill Lynch, Pierce, Fenner & Smith Incorporated, JPMorgan Chase Bank, N.A. and Citibank, N.A., as joint lead arrangers and joint lead managers is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.8.
10.2	Amended and Restated Security Agreement, dated April 1, 2016, by and among Armstrong World Industries, Inc., the grantors named therein and Bank of America, N.A., as collateral agent. †
10.3	Amended and Restated Pledge Agreement dated, April 1, 2016, by and among Armstrong World Industries, Inc., the pledgors named therein and Bank of America, N.A., as collateral agent. †
10.4	Amended and Restated Canadian Pledge Agreement dated, April 1, 2016, by and among Armstrong World Industries, Inc. and Bank of America, N.A., as collateral agent. †
10.5	Receivables Purchase Agreement dated as of December 10, 2010, by and among Armstrong World Industries, Inc., as initial servicer and collection agent, Armstrong Receivables Company LLC, as seller, Atlantic Asset Securitization LLC, as conduit purchaser, and Credit Agricole Corporate and Investment Bank, as administrative agent, an issuer of letters of credit and related committed purchaser, is incorporated by reference from the Current Report on Form 8-K filed on December 14, 2010, wherein it appeared as Exhibit 10.1.
10.6	Purchase and Sale Agreement dated as of December 10, 2010, by and among Armstrong World Industries, Inc., as originator and as initial servicer, Armstrong Hardwood Flooring Company, as originator, and Armstrong Receivables Company LLC, is incorporated by reference from the Current Report on Form 8-K filed on December 14, 2010, wherein it appeared as Exhibit 10.2.

Exhibit No.	Description
10.7	Omnibus Amendment to Receivables Purchase Agreement and Purchase and Sale Agreement dated as of August 1, 2011, by and among Armstrong World Industries, Inc., Armstrong Receivables Company LLC, Armstrong Hardwood Flooring Company, Atlantic Asset Securitization LLC, and Credit Agricole Corporate and Investment Bank, is incorporated by reference from the Annual Report on Form 10-K filed on February 27, 2012, wherein it appeared as Exhibit 10.9.
10.8	Second Omnibus Amendment to Receivables Purchase Agreement and Purchase and Sale Agreement dated as of December 21, 2011, by and among Armstrong World Industries, Inc., Armstrong Receivables Company LLC, as seller, Armstrong Hardwood Flooring Company, as originator, Atlantic Asset Securitization LLC, as resigning conduit purchaser, Credit Agricole Corporate and Investment Bank, as resigning administrative agent, resigning related committed purchaser and resigning LC bank, The Bank of Nova Scotia, as successor administrative agent, successor related committed purchaser and successor LC bank, and Liberty Street Funding LLC, as successor conduit purchaser, is incorporated by reference from the Annual Report on Form 10-K filed on February 27, 2012, wherein it appeared as Exhibit 10.10.
10.9	Third Omnibus Amendment Agreement, dated as of March 28, 2013, by and among Armstrong Receivables Company, LLC, Armstrong World Industries, Inc., Armstrong Hardwood Flooring Company, The Bank of Nova Scotia, and Liberty Street Funding LLC, is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 29, 2013, wherein it appeared as Exhibit 10.1.
10.10	Fourth Amendment Agreement, dated as of December 18, 2014, by and among Armstrong Receivables Company, LLC, Armstrong World Industries, Inc., Armstrong Hardwood Flooring Company, The Bank of Nova Scotia, and Liberty Street Funding LLC, is incorporated by reference from the Annual Report on Form 10-K filed on February 23, 2015, wherein it appeared as Exhibit 10.10.
10.11	Fourth Omnibus Amendment Agreement, dated as of March 30, 2016, by and among Armstrong Receivables Company, LLC, Armstrong World Industries, Inc., Armstrong Hardwood Flooring Company, The Bank of Nova Scotia, and Liberty Street Funding LLC, is incorporated by reference from the Annual Report on Form 10-K filed on February 27, 2017, wherein it appeared as Exhibit 10.11.
10.12	Sixth Amendment Agreement, dated as of December 21, 2016, by and among Armstrong Receivables Company, LLC, Armstrong World Industries, Inc., The Bank of Nova Scotia, and Liberty Street Funding LLC, is incorporated by reference from the Annual Report on Form 10-K filed on February 27, 2017, wherein it appeared as Exhibit 10.12.
10.13	Seventh Amendment to Receivables Purchase Agreement, dated March 24, 2017, by and among Armstrong Receivables Company, LLC, Armstrong World Industries, Inc., The Bank of Nova Scotia, and Liberty Street Funding LLC, is incorporated by reference from the Quarterly Report on Form 10-Q filed on May 1, 2017, wherein it appeared as Exhibit 10.1.
10.14	Amended and Restated Joint Venture Agreement, dated February 22, 2016 between Armstrong Ventures, Inc. and Worthington Ventures, Inc., is incorporated by reference from the Annual Report on Form 10-K filed on February 22, 2016, wherein it appeared as Exhibit 10.12.
10.15	Transition Services Agreement, dated as of April 1, 2016, by and between Armstrong World Industries, Inc. and Armstrong Flooring, Inc. is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.1.
10.16	Tax Matters Agreement, dated as of April 1, 2016, by and between Armstrong World Industries, Inc. and Armstrong Flooring, Inc. is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.2.

Exhibit No.	Description
10.17	Employee Matters Agreement, dated as of April 1, 2016, by and between Armstrong World Industries, Inc. and Armstrong Flooring, Inc. is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.3.
10.18	Trademark License Agreement, dated as of April 1, 2016, by and between Armstrong World Industries, Inc. and Armstrong Flooring, Inc. is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.4.
10.19	Transition Trademark License Agreement, dated as of April 1, 2016, by and between Armstrong World Industries, Inc. and Armstrong Flooring, Inc. is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.5.
10.20	Campus Lease Agreement, dated as of April 1, 2016, by and between Armstrong World Industries, Inc. and Armstrong Flooring, Inc. is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.6.
10.21	Share Purchase Agreement, dated November 17, 2017, by and between Armstrong World Industries, Inc. and Knauf International GmbH is incorporated by reference from the Current Report on Form 8-K filed on November 20, 2017, wherein it appeared as Exhibit 2.1.
10.22	2006 Long-Term Incentive Plan, as amended February 23, 2009, is incorporated by reference from the Annual Report on Form 10-K, filed on February 26, 2009, wherein it appeared as Exhibit 10.13.*
10.23	Form of Stock Option Award under the 2006 Long-Term Incentive Plan is incorporated by reference from the Quarterly Report on Form 10-Q for the quarter ended March 31, 2008, filed on May 1, 2008, wherein it appeared as Exhibit 10.37.*
10.24	Form of Stock Option Award under the 2006 Long-Term Incentive Plan used in connection with award to Stephen F. McNamara is incorporated by reference from the Current Report on Form 8-K filed on April 6, 2010, wherein it appeared as Exhibit 10.2.*
10.25	Form of Stock Option and Restricted Stock Unit Award under the 2006 Long-Term Incentive Plan used in connection with awards to Victor D. Grizzle in connection with new hire grant, is incorporated by reference from the Annual Report on Form 10-K filed on February 27, 2012, wherein it appeared as Exhibit 10.26.*
10.26	Forms of Stock Option and Performance Restricted Stock Unit Award under the 2006 Long-Term Incentive Plan used in connection with March 2011 grants to officers (except Donald R. Maier) and new hire grant for Mark A. Hershey, is incorporated by reference from the Annual Report on Form 10-K filed on February 27, 2012, wherein it appeared as Exhibit 10.27.*
10.27	2011 Long-Term Incentive Plan, effective as of June 24, 2011, is incorporated by reference to Armstrong World Industries, Inc.'s Definitive Proxy Statement on Schedule 14A for the Armstrong World Industries, Inc 2011 Annual Meeting of Shareholders held on June 24, 2011 filed on April 28, 2011, wherein it appeared as Exhibit A.*
10.28	Form of 2011 Long-Term Incentive Plan Terms and Conditions (Grant of Nonqualified Stock Options — U.S. (Executive Officer), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 30, 2012, wherein it appeared as Exhibit 10.1.*
10.29	Form of 2011 Long-Term Incentive Plan Terms and Conditions (Grant of Nonqualified Stock Options — U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 30, 2012, wherein it appeared as Exhibit 10.2.*
10.30	Form of 2011 Long-Term Incentive Plan Terms and Conditions (Grant of Nonqualified Stock Options — Non-U.S. (Executive Officer)), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 30, 2012, wherein it appeared as Exhibit 10.3.*
10.31	Form of 2011 Long-Term Incentive Plan Terms and Conditions, as amended for 2013 (Grant of Nonqualified Stock Options – U.S. (Executive Officer)), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 29, 2013, wherein it appeared as Exhibit 10.2.*
10.32	Form of 2011 Long-Term Incentive Plan Terms and Conditions, as amended for 2013 (Grant of Nonqualified Stock Options – U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 29, 2013, wherein it appeared as Exhibit 10.3.*

Exhibit No.	Description
10.33	Form of 2011 Long-Term Incentive Plan Terms and Conditions, as amended for 2013 (Grant of Nonqualified Stock Options – Non-U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 29, 2013, wherein it appeared as Exhibit 10.4.*
10.34	Form of 2011 Long-Term Incentive Plan Terms and Conditions, as amended for 2014 (Grant of Nonqualified Stock Options – U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 28, 2014, wherein it appeared as Exhibit 10.1.*
10.35	Form of 2011 Long-Term Incentive Plan Terms and Conditions, as amended for 2014 (Grant of Nonqualified Stock Options – Non-U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 28, 2014, wherein it appeared as Exhibit 10.2.*
10.36	Form of 2011 Long-Term Incentive Plan Terms and Conditions (Grant of Time-Based Restricted Stock Units – U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 30, 2015, wherein it appeared as Exhibit 10.1.*
10.37	Form of 2011 Long-Term Incentive Plan Terms and Conditions (Grant of Time-Based Restricted Stock Units – Payable in Cash – Non-U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 30, 2015, wherein it appeared as Exhibit 10.2.*
10.38	Form of 2011 Long-Term Incentive Plan Terms and Conditions (Grant of Time-Based Restricted Stock Units – Payable in Shares – Non-U.S.), is incorporated by reference from the Quarterly Report on Form 10-Q filed on April 30, 2015, wherein it appeared as Exhibit 10.3.*
10.39	Form of 2016 Award Agreement for Performance-Based RSU Grants under the 2011 Long-Term incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on April 14, 2016, wherein it appeared as Exhibit 10.1. *
10.40	Form of 2016 Long-Term Time-Based Restricted Stock Unit Grant under the 2011 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.4.*
10.41	Form of 2016 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Absolute TSR for Tier I) for Senior Executives under the 2011 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.5.*
10.42	Form of 2016 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Absolute TSR for Tier II) under the 2011 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.6.*
10.43	Form of 2016 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Cumulative Free Cash Flow for Tier II) under the 2011 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.7.*
10.44	Form of 2016 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Cumulative Free Cash Flow for Tier I) for Senior Executives under the 2011 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.8.*
10.45	Armstrong World Industries, Inc. 2016 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.2.*
10.46	Form of 2017 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Absolute TSR for Tier I) for Senior Executives under the 2016 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 10-Q filed on May 1, 2017, wherein it appeared as Exhibit 10.2.*
10.47	Form of 2017 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Absolute TSR for Tier II) for Senior Executives under the 2016 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 10-Q filed on May 1, 2017, wherein it appeared as Exhibit 10.4.*

Exhibit No.	Description
10.48	Form of 2017 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Cumulative Free Cash Flow for Tier I) under the 2016 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 10-Q filed on May 1, 2017, wherein it appeared as Exhibit 10.3.*
10.49	Form of 2017 Long-Term Performance-Based Restricted Stock Unit Grant (Performance Goals Based on Cumulative Free Cash Flow for Tier II) under the 2016 Long-Term Incentive Plan is incorporated by reference from the Current Report on Form 10-Q filed on May 1, 2017, wherein it appeared as Exhibit 10.5.*
10.50	Nonqualified Deferred Compensation Plan effective January 2005, as amended July 23, 2010, is incorporated by reference from the Annual Report on Form 10-K, filed on February 28, 2011, wherein it appeared as Exhibit 10.4.*
10.51	Retirement Benefit Equity Plan, effective January 1, 2005, as amended October 29, 2007 and December 8, 2008, is incorporated by reference from the Annual Report on Form 10-K, filed on February 26, 2009, wherein it appeared as Exhibit 10.2.*
10.52	2006 Phantom Stock Unit Plan, as amended December 8, 2008, is incorporated by reference from the 2008 Annual Report on Form 10-K, filed on February 26, 2009, wherein it appeared as Exhibit 10.18.*
10.53	2006 Phantom Stock Unit Agreement is incorporated by reference from the Current Report on Form 8-K filed on October 26, 2006, wherein it appeared as Exhibit 10.3. A Schedule of Participating Directors is incorporated by reference from the 2006 Annual Report on Form 10-K, filed on March 30, 2007, wherein it appeared as Exhibit 10.36.*
10.54	2007 Award Agreement under the 2006 Phantom Stock Unit Plan is incorporated by reference from the Current Report on Form 8-K filed on October 23, 2007, wherein it appeared as Exhibits 10.1.*
10.55	Schedule of Participating Directors, is incorporated by reference from the Current Report on Form 8-K filed on October 23, 2007, wherein it appeared as Exhibits 10.2.*
10.56	The 2008 Directors Stock Unit Plan, as amended December 8, 2008, November 30, 2010 and June 24, 2011 is incorporated by reference to the Current Report on Form 8-K filed on June 13, 2011, wherein it appeared as Exhibit 99.2.*
10.57	Form of 2009 and 2010 Award under the 2008 Director Stock Unit Plan, as amended, is incorporated by reference from the Quarterly Report on Form 10-Q for the quarter ended September 30, 2009, filed on October 28, 2009, wherein it appeared as Exhibit 10.27.*
10.58	Form of 2011, 2012, 2013 and 2014 Award under the 2008 Directors Stock Unit Plan, as amended, is incorporated by reference from the Annual Report on Form 10-K filed on February 27, 2012, wherein it appeared as Exhibit 10.40.*
10.59	Armstrong World Industries, Inc. 2016 Directors Stock Unit Plan, is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.1.*
10.60	Form of 2016 and 2017 Stock Unit Grant Agreement under the Armstrong World Industries, Inc. 2016 Directors Stock Unit Plan, is incorporated by reference from the Current Report on Form 8-K filed on July 11, 2016, wherein it appeared as Exhibit 10.3.*
10.61	Offer Letter to Victor D. Grizzle dated January 4, 2011, is incorporated by reference from the Current Report on Form 8-K filed on January 10, 2011, wherein it appeared as Exhibit 99.2.*
10.62	Offer Letter to Mark A. Hershey dated April 21, 2011, is incorporated by reference from the Current Report on Form 8-K filed on April 27, 2011, wherein it appeared as Exhibit 99.1.*
10.63	Severance Agreement and Release, dated as of March 30, 2016, by and between Armstrong World Industries, Inc. and Matthew Espe is incorporated by reference from the Current Report on Form 8-K filed on April 4, 2016, wherein it appeared as Exhibit 10.7.*
10.64	Form of Indemnification Agreement for Officers and Directors of Armstrong World Industries, Inc. is incorporated by reference from the Report on Form 8-K filed on June 4, 2010, wherein it appeared as Exhibit 10.1.*
10.65	Form of Severance Agreement with Certain Officers, approved for use on October 26, 2016 is incorporated by reference from the Report on Form 8-K filed on October 31, 2016, wherein it appeared as Exhibit 10.1.*
11	Computation of Earnings Per Share .†
12	Computation of Ratio of Earnings to Fixed Charges.†

Exhibit No.	Description
14	The Armstrong Code of Business Conduct, revised as of July 29, 2011, is incorporated by reference from the Current Report on Form 8-K filed on August 1, 2011, wherein it appeared as Exhibit 14.1.
21	Armstrong World Industries, Inc.'s Subsidiaries.†
23.1	Consent of Independent Registered Public Accounting Firm.†
23.2	Consent of Independent Auditors.†
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 (furnished herewith).
32.2	Certification of Chief Financial Officer required by Rule 13a and 18 U.S.C. Section 1350 (furnished herewith).
99.1	Worthington Armstrong Venture consolidated financial statements as of December 31, 2017 and 2016 and for the years ended December 31, 2017, 2016 and 2015.†
99.2	Armstrong World Industries, Inc. Asbestos Personal Injury Settlement Trust Agreement dated as of October 2, 2006, by and among Armstrong World Industries, Inc. and trustees, is incorporated by reference from the Current Report on Form 8-K filed on October 2, 2006, wherein it appeared as Exhibit 10.2.
99.3	Stockholder and Registration Rights Agreement, dated as of October 2, 2006, by and between Armstrong World Industries, Inc. and the Armstrong World Industries, Inc. Asbestos Personal Injury Settlement Trust is incorporated by reference from the Current Report on Form 8-K filed on October 2, 2006, wherein it appeared as Exhibit 10.3.
99.4	Nomination and Shareholder Agreement with the persons or entities identified on Schedule I attached thereto (collectively the "ValueAct Group" and each individually, a "member" of the ValueAct Group), and Gregory P. Spivy in his individual capacity and as a member of the ValueAct Group (the "ValueAct Designee"), is incorporated by reference from the Report on Form 8-K filed on December 15, 2014, wherein it appeared as Exhibit 99.1.
101	Interactive Data Files**

* Management Contract or Compensatory Plan.

† Filed herewith.

** XBRL – Information is furnished and not filed or a part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act of 1933, as amended, is deemed not filed for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and otherwise is not subject to liability under these sections.

SIGNA TURES

Pursuant to the requirements of Section 13 or 15(d) 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.
(Registrant)

By: /s/ Victor D. Grizzle
Director, President and Chief Executive Officer

Date: February 26, 2018

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this Report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Victor D. Grizzle Victor D. Grizzle	Director, President and Chief Executive Officer (Principal Executive Officer)	February 26, 2018
/s/ Brian L. MacNeal Brian L. MacNeal	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 26, 2018
/s/ Stephen F. McNamara Stephen F. McNamara	Vice President and Controller (Principal Accounting Officer)	February 26, 2018
/s/ Stanley A. Askren Stanley A. Askren	Director	February 26, 2018
/s/ Tao Huang Tao Huang	Director	February 26, 2018
/s/ Larry S. McWilliams Larry S. McWilliams	Director	February 26, 2018
/s/ James C. Melville James C. Melville	Director	February 26, 2018
/s/ James J. O’Connor James J. O’Connor	Director	February 26, 2018
/s/ John J. Roberts John J. Roberts	Director	February 26, 2018
/s/ Gregory P. Spivy Gregory P. Spivy	Director	February 26, 2018
/s/ Roy W. Templin Roy W. Templin	Director	February 26, 2018
/s/ Cherryl T. Thomas Cherryl T. Thomas	Director	February 26, 2018

SCHEDU LE II

Armstrong World Industries, Inc., and Subsidiaries
Valuation and Qualifying Reserves
(amounts in millions)

	Balance at beginning of year	Additions charged to earnings	Deductions	Balance at end of year
2015				
Provision for bad debts	$ 1.3	$ -	$ (0.2)	$ 1.1
Provision for discounts	2.0	15.8	(17.0)	0.8
Provision for warranties	-	1.6	(1.3)	0.3
2016				
Provision for bad debts	$ 1.1	$ -	$ (0.7)	$ 0.4
Provision for discounts	0.8	16.9	(16.4)	1.3
Provision for warranties	0.3	8.0	(8.1)	0.2
2017				
Provision for bad debts	$ 0.4	$ -	$ (0.1)	$ 0.3
Provision for discounts	1.3	17.6	(17.4)	1.5
Provision for warranties	0.2	3.2	(3.3)	0.1

Exhibit 10.2

AMENDED AND RESTATED SECURITY AGREEMENT

THIS AMENDED AND RESTATED SECURITY AGREEMENT (this "Security Agreement"), dated as of April 1, 2016, is by and among the parties identified as "Grantors" on the signature pages hereto and such other parties as may become Grantors hereunder after the date hereof (individually a "Grantor", and collectively the "Grantors") and BANK OF AMERICA, N.A., as collateral agent (in such capacity, the "Collateral Agent") for the holders of the Secured Obligations referenced below.

WITNESSETH

WHEREAS, revolving credit and term loan facilities were established in favor of Armstrong World Industries, Inc., a Pennsylvania corporation (the "Borrower"), pursuant to the terms of that certain amended and restated credit agreement dated as of March 15, 2013 (as amended and modified prior to the Closing Date, the "Existing Credit Agreement") among the Borrower, Armstrong Wood Products, Inc., a Delaware corporation ("AWP"), certain of their respective Subsidiaries, as guarantors thereunder, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent for the lenders thereunder;

WHEREAS, in connection with the Existing Credit Agreement, the Borrower, AWP, and certain of their respective Subsidiaries entered into that certain Amended and Restated Security Agreement dated as of March 15, 2013 (the "Existing Security Agreement");

WHEREAS, the Borrower has requested certain modifications to the revolving credit and term loan facilities under the Existing Credit Agreement;

WHEREAS, the Lenders have agreed to the requested modifications on the terms and conditions provided in that certain Amended and Restated Credit Agreement, dated as of the date hereof (as amended and modified, the "Credit Agreement"), among the Borrower, certain of its Subsidiaries, as guarantors thereunder, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent for the lenders thereunder; and

WHEREAS, this Security Agreement is required under the terms of the Credit Agreement, and is given in amendment to, restatement of and substitution for the Existing Security Agreement provided in connection with the Existing Credit Agreement.

NOW, THEREFORE, in consideration of these premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Definitions.

(a) Capitalized terms used and not otherwise defined herein shall have the meanings provided in the Credit Agreement. In addition, the following terms, which are defined in the UCC as in effect in the State of New York on the date hereof, are used as defined therein: Accession, Account, Chattel Paper, Commercial Tort Claim, Deposit Account, Document, Equipment, Fixtures, General Intangible, Goods, Instrument, Inventory, Investment Property, Letter-of-Credit Right, Proceeds, Software, and Supporting Obligation.

(b) As used herein, the following terms shall have the meaning set forth below: "Borrower" has the meaning provided in the recitals hereof.

"Collateral" has the meaning provided in Section 2 hereof.

"Collateral Agent" has the meaning provided in the introductory paragraph hereof, together with successors and assigns.

"Copyright License" means any written agreement, naming any Grantor as licensor, granting any right under any Copyright.

"Copyrights" means (a) all registered United States copyrights in all Works, now existing or hereafter created or acquired, all registrations and recordings thereof, and all applications in connection therewith, including registrations, recordings and applications in the United States Copyright Office, and (b) all renewals thereof.

"Credit Agreement" has the meaning provided in the recitals hereof.

"Event of Default" has the meaning provided in Section 7 hereof.

"Existing Credit Agreement" has the meaning provided in the recitals hereof.

"Existing Security Agreement" has the meaning provided in the recitals hereof.

"Grantor" has the meaning provided in the introductory paragraph hereof.

"Indemnified Party" has the meaning provided in Section 8(b) hereof.

"Patent License" means any written agreement providing for the grant by or to a Grantor of any right under a Patent.

"Patents" means (a) all letters patent of the United States and all reissues and extensions thereof, and (b) all applications for letters patent of the United States and all divisions, continuations and continuations-in-part thereof.

"Secured Obligations" means, without duplication, (a) all Obligations and (b) all costs and expenses incurred in connection with enforcement and collection of the Secured Obligations, including reasonable attorneys' fees and expenses.

"Security Agreement" has the meaning provided in the introductory paragraph hereof, as amended and modified.

"Trademark License" means any written agreement providing for the grant by or to a Grantor of any right to use any Trademark.

"Trademarks" means (a) all trademarks, trade names, corporate names, company names, business names, fictitious business names, trade styles, service marks, logos and other source or business identifiers, and the goodwill associated therewith, now existing or hereafter adopted or acquired, all registrations and recordings thereof, and all applications in connection therewith, whether in the United States Patent and Trademark Office or in any similar office or agency of the United States or any state thereof and (b) all renewals thereof.

"UCC" means the Uniform Commercial Code as in effect in the state of New York from time to time.

"Work" means any work that is subject to copyright protection pursuant to Title 17 of the United States Code.

2. Grant of Security Interest in the Collateral. To secure the prompt payment and performance in full when due, whether by lapse of time, acceleration, mandatory prepayment or otherwise, of the Secured Obligations, each Grantor hereby grants to the Collateral Agent, for the benefit of the holders of the Secured Obligations, a continuing security interest in, and a right to set off against, any and all right, title and interest of such Grantor in and to all of the following, whether now owned or existing or owned, acquired, or arising hereafter (collectively, the "Collateral"):

(a) all Accounts;

(b) all cash and currency;

(c) all Chattel Paper;

(d) those Commercial Tort Claims identified on Schedule 2(d) attached hereto;

(e) all Copyrights;

(f) all Copyright Licenses;

(g) all Deposit Accounts;

(h) all Documents;

(i) all Equipment;

(j) all Fixtures;

(k) all General Intangibles;

(l) all Instruments;

(m) all Inventory;

(n) all Investment Property;

(o) all Letter-of-Credit Rights;

(p) all Patents;

(q) all Patent Licenses;

(r) all Software;

(s) all Supporting Obligations;

(t) all Trademarks;

(u) all Trademark Licenses;

(v) all other personal property of such Grantor of whatever type or description; and

(w) to the extent not otherwise included, all Accessions and all Proceeds of any and all of the foregoing.

Notwithstanding anything to the contrary contained herein, the security interests granted under this Security Agreement shall not extend to, and the "Collateral" shall not include, any Excluded Property.

The Grantors and the Collateral Agent, on behalf of the holders of the Secured Obligations, hereby acknowledge and agree that the security interest created hereby in the Collateral (i) constitutes continuing collateral security for all of the Secured Obligations, whether now existing or hereafter arising and (ii) is not to be construed as an assignment of any Copyrights, Copyright Licenses, Patents, Patent Licenses, Trademarks or Trademark Licenses.

3. Provisions Relating to Accounts.

(a) Anything herein to the contrary notwithstanding, each of the Grantors shall remain liable under each of the Accounts to observe and perform all the conditions and obligations to be observed and performed by it thereunder, all in accordance with the terms of any agreement giving rise to each such Account. Neither the Collateral Agent nor any holder of the Secured Obligations shall have any obligation or liability under any Account (or any agreement giving rise thereto) by reason of or arising out of this Security Agreement or the receipt by the Collateral Agent or any holder of the Secured Obligations of any payment relating to such Account pursuant thereto, nor shall the Collateral Agent or any holder of the Secured Obligations be obligated in any manner to perform any of the obligations of a Grantor under or pursuant to any Account (or any agreement giving rise thereto), to make any payment, to make any inquiry as to the nature or the sufficiency of any payment received by it or as to the sufficiency of any performance by any party under any Account (or any agreement giving rise thereto), to present or file any claim, to take any action to enforce any performance or to collect the payment of any amounts that may have been assigned to it or to which it may be entitled at any time or times.

(b) At any time after the occurrence and during the continuation of an Event of Default, (i) the Collateral Agent shall have the right, but not the obligation, to make test verifications of the Accounts in any manner and through any medium that it reasonably considers advisable, and the Grantors shall furnish all such assistance and information as the Collateral Agent may reasonably require in connection with such test verifications, (ii) upon the Collateral Agent's request and at the expense of the Grantors, the Grantors shall furnish to the Collateral Agent reports showing reconciliations, aging and test verifications of, and trial balances for, the Accounts, and (iii) the Collateral Agent in its own name or in the name of others may communicate with account debtors on the Accounts to verify with them to the Collateral Agent's satisfaction the existence, amount and terms of any Accounts.

4. Representations and Warranties. Each Grantor hereby represents and warrants to the Collateral Agent, for the benefit of the holders of the Secured Obligations, that:

(a) Legal Name; Chief Executive Office. As of the date hereof:

(i) Each Grantor's exact legal name, state of incorporation or formation and chief executive office are (and for the prior four months has been) as set forth in Schedule 6.20(a)(i) and Schedule 6.20(b) to the Credit Agreement.

(ii) Other than as set forth on Schedule 6.20(b) of the Credit Agreement, no Grantor has been party to a merger, consolidation or other change in structure in the prior four months.

(b) Ownership. Each Grantor is the legal and beneficial owner of the Collateral that it is pledging and has the right to pledge, sell, assign or transfer the same.

(c) Security Interest/Priority. This Security Agreement creates a valid security interest in favor of the Collateral Agent, for the benefit of the holders of the Secured Obligations, in the Collateral of such Grantor and, when properly perfected by filing, shall constitute a valid perfected security interest in such Collateral, to the extent such security interest can be perfected by filing under the UCC, free and clear of all Liens except for Permitted Liens.

(d) Accounts. (i) Each Account of such Grantor and the papers and documents relating thereto are genuine and in all material respects what they purport to be and (ii) each Account of such Grantor arises out of (A) a bona fide sale of Goods sold and delivered by such Grantor (or to be sold and delivered) or (B) services theretofore actually rendered by such Grantor (or to be actually rendered) to, the account debtor named therein.

(e) Copyrights, Patents and Trademarks.

(i) Schedule 6.17 of the Credit Agreement includes all material Copyrights, Copyright Licenses, Patents, Patent Licenses, Trademarks and Trademark Licenses owned by any Grantor in its own name, or to which any Grantor is a party, as of the date hereof.

(ii) All registrations or letters pertaining material Copyrights, Patents and Trademarks have been duly and properly filed, and to each Grantor's knowledge, each material Copyright, Patent and Trademark of such Grantor is valid, subsisting, unexpired, enforceable and has not been abandoned.

(iii) Except as set forth in Schedule 6.17 of the Credit Agreement, none of such material Copyrights, Patents and Trademarks is the subject of any licensing agreement or similar arrangement as of the date hereof.

(iv) Except as could not reasonably be expected to have a Material Adverse Effect, to each Grantor's knowledge, no holding, decision or judgment has been rendered by any Governmental Authority that would limit, cancel or question the validity of such Copyright, Patent or Trademark.

(v) No action or proceeding is pending seeking to limit, cancel or question the validity of any Copyright, Patent or Trademark that could reasonably be expected to have a Material Adverse Effect.

5. Covenants. Each Grantor covenants that, so long as any of the Secured Obligations remains outstanding and until all of the commitments relating thereto have been terminated, such Grantor shall:

(a) Other Liens; Disposition of Collateral. Defend the Collateral against the claims and demands of all other parties claiming an interest therein, keep the Collateral free from all Liens, except for Permitted Liens, and not sell, exchange, transfer, assign, lease or otherwise dispose of the Collateral or any interest therein; provided, however, that each Grantor shall be permitted to effect the dispositions described in clauses (i) through (ix) of the definition of Disposition under the Credit Agreement and to otherwise dispose of property as permitted under the Credit Agreement.

(b) Perfection of Security Interest. Execute and deliver to the Collateral Agent such agreements, assignments or instruments (including affidavits, notices, reaffirmations and amendments and restatements of existing documents, as the Collateral Agent may reasonably request) and do all such other things as the Collateral Agent may reasonably deem necessary, appropriate or convenient (i) to assure to the Collateral Agent the effectiveness and priority of its security interests hereunder, including (A) filing or authorizing the Collateral Agent to file such financing statements (including renewal statements), amendments and supplements or such other instruments as the Collateral Agent may from time to time reasonably request in order to perfect and maintain the security interests granted hereunder in accordance with the UCC, (B) with regard to material Copyrights, executing and delivering a Notice of Grant of Security Interest in Copyrights for filing with the United States Copyright Office in the form of Exhibit 5(b)-1 attached hereto, (C) with regard to material Patents, executing and delivering a Notice of Grant of Security Interest in Patents for filing with the United States Patent and Trademark Office in the form of Exhibit 5(b)-2 attached hereto and (D) with regard to material Trademarks, executing and delivering a Notice of Grant of Security Interest in Trademarks for filing with the United States Patent and Trademark Office in the form of Exhibit 5(b)-3 attached hereto, (ii) to consummate the transactions contemplated hereby and (iii) to otherwise protect and assure the Collateral Agent of its rights and interests hereunder. To that end, each Grantor authorizes the Collateral Agent to file one or more financing statements (which may describe the collateral as "all assets" or "all personal property") disclosing the Collateral Agent's security interest in any or all of the Collateral of such Grantor without such Grantor's signature thereon, and further each Grantor also hereby irrevocably makes, constitutes and appoints the Collateral Agent, its nominee or any other Person whom the Collateral Agent may designate, as such Grantor's attorney-in-fact with full power and for the limited purpose to sign in the name of such Grantor any such financing statements (including renewal statements), amendments and supplements, notices or any similar documents that in the Collateral Agent's reasonable discretion would be necessary, appropriate or convenient in order to perfect and maintain perfection of the security interests granted hereunder, such power, being coupled with an interest, being and remaining irrevocable so long as the Secured Obligations remain unpaid and until the commitments relating thereto shall have been terminated. In the event for any reason the Law of any U.S. jurisdiction other than the State of New York becomes or is applicable to the Collateral of any Grantor or any part thereof, or to any of the Secured Obligations, such Grantor agrees to execute and deliver all such instruments and to do all such other things as the Collateral Agent in its sole discretion reasonably deems necessary, appropriate or convenient to preserve, protect and enforce the security interests of the Collateral Agent under the Law of such other U.S. jurisdiction (and, if a Grantor shall fail to do so promptly upon the request of the Collateral Agent, then the Collateral Agent may execute any and all such requested documents on behalf of such Grantor pursuant to the power of attorney granted hereinabove).

(c) Treatment of Accounts. Not grant or extend the time for payment of any Account, or compromise or settle any Account for less than the full amount thereof, or release any Person or property, in whole or in part, from payment thereof, or allow any credit or discount thereon, other than in the ordinary course of a Grantor's business or as required by Law.

(d) Covenants Relating to Copyrights. Not knowingly do any act or omit to do any act whereby any material Copyright may reasonably be expected to become invalidated and (i) not knowingly do any act or omit to do any act whereby any material Copyright may become part of the public domain (other than pursuant to the natural term thereof); (ii) promptly notify the Collateral Agent if it knows that any material Copyright may become part of the public domain or of any materially adverse determination or development (including the institution of, or any such determination or development in, any court or tribunal in the United States) regarding a Grantor's ownership of any such Copyright or its validity; (iii) take such actions as it shall deem appropriate under the circumstances, to maintain and pursue each application (and to obtain the relevant registration) and to maintain each registration of each material Copyright owned by a Grantor including filing of applications for renewal where necessary; and (iv) promptly notify the Collateral Agent of any material infringement of any material Copyright of a Grantor of which it becomes aware and take such actions as it shall reasonably deem appropriate under the circumstances to protect such Copyright, including, where appropriate, the bringing of suit for infringement, seeking injunctive relief and seeking to recover any and all damages for such infringement.

(e) Covenants Relating to Patents and Trademarks.

(i) To the extent reasonable under the circumstances, Grantor shall (A) continue to use each material Trademark on each and every trademark class of Goods applicable to its current line as reflected in its current catalogs, brochures and price lists in order to maintain such Trademark in full force free from any claim of abandonment for non-use, (B) maintain as in the past the quality of products and services offered under such Trademark, (C) employ such Trademark with the appropriate notice of registration, (D) not adopt or use any mark that is confusingly similar or a colorable imitation of such Trademark unless the Collateral Agent, for the ratable benefit of the holders of the Secured Obligations, shall obtain a perfected security interest in such mark pursuant to this Security Agreement, and (E) not (and not permit any licensee or sublicensee thereof to) knowingly do any act or omit to do any act whereby any material Trademark may become invalidated.

(ii) To the extent reasonable under the circumstances, Grantor shall not do any act, or omit to do any act, whereby any material Patent may become abandoned or dedicated to the public.

(iii) Promptly notify the Collateral Agent if it knows that any application or registration relating to any material Patent or Trademark may become abandoned or dedicated to the public (other than pursuant to the natural terms thereof), or of any materially adverse determination or development (including the institution of, or any such determination or development in, any proceeding in the United States Patent and Trademark Office other than routine prosecution matters) regarding a Grantor's ownership of any material Patent or Trademark or its right to register the same or to keep and maintain the same.

(iv) Take such actions as it shall reasonably deem appropriate under the circumstances, including in any proceeding before the United States Patent and Trademark Office, to maintain and pursue each application (and to obtain the relevant registration) and to maintain each registration of the material Patents and Trademarks, including filing of applications for renewal, affidavits of use and affidavits of incontestability.

(v) Promptly notify the Collateral Agent after it learns that any material Patent or Trademark included in the Collateral is materially infringed, misappropriated or diluted by a third party and take such actions as it shall reasonably deem appropriate under the circumstances to sue for infringement, misappropriation or dilution, to seek injunctive relief where appropriate and to recover any and all damages for such infringement, misappropriation or dilution, or to otherwise protect such Patent or Trademark.

(f) Commercial Tort Claims.

(i) Concurrently with financial statements under Section 7.01 (a) of the Credit Agreement, notify the Collateral Agent in writing of the initiation of any Commercial Tort

Claim in excess of $5,000,000 before any Governmental Authority by or in favor of such Grantor.

(ii) Execute and deliver such statements, documents and notices and do and cause to be done all such things as the Collateral Agent may reasonably deem necessary, appropriate or convenient, or as are required by Law, to create, perfect and maintain the Collateral Agent's security interest in any Commercial Tort Claim.

6. Advances by Holders of the Secured Obligations. On failure of any Grantor to perform any of the covenants and agreements contained herein, the Collateral Agent may, at its sole option and in its sole discretion, perform the same and in so doing may expend such sums as the Collateral Agent may reasonably deem advisable in the performance thereof, including the payment of any insurance premiums, the payment of any taxes, a payment to obtain a release of a Lien or potential Lien, expenditures made in defending against any adverse claim and all other expenditures that the Collateral Agent may make for the protection of the security hereof or may be compelled to make by operation of Law. All such sums and amounts so expended shall be repayable by the Grantors on a joint and several basis promptly upon timely notice thereof and demand therefor, shall constitute additional Secured Obligations and shall, subject to Section 2.08 of the Credit Agreement, bear interest from the date said amounts are expended at the rate then applicable to Revolving Loans that are Base Rate Loans. No such performance of any covenant or agreement by the Collateral Agent on behalf of any Grantor, and no such advance or expenditure therefor, shall relieve the Grantors of any default under the terms of this Security Agreement, the other Loan Documents or any other documents relating to the Secured Obligations. The Collateral Agent may make any payment hereby authorized in accordance with any bill, statement or estimate procured from the appropriate public office or holder of the claim to be discharged without inquiry into the accuracy of such bill, statement or estimate or into the validity of any tax assessment, sale, forfeiture, tax lien, title or claim except to the extent such payment is being contested in good faith by a Grantor in appropriate proceedings and against which adequate reserves are being maintained in accordance with GAAP.

7. Events of Default. The occurrence of an event that would constitute an Event of Default under the Credit Agreement shall be an Event of Default hereunder (an "Event of Default").

8. Remedies.

(a) General Remedies. Upon the occurrence of an Event of Default and during the continuation thereof, the Collateral Agent and the holders of the Secured Obligations shall have, in addition to the rights and remedies provided herein, in the Loan Documents, in any other documents relating to the Secured Obligations, or by Law (including levy of attachment and garnishment), the rights and remedies of a secured party under the UCC of the jurisdiction applicable to the affected Collateral and, further, the Collateral Agent may, with or without judicial process or the aid and assistance of others, (i) enter on any premises on which any of the Collateral may be located and, without resistance or interference by the Grantors, take possession of the Collateral, (ii) dispose of any Collateral on any such premises, (iii) require the Grantors to assemble and make available to the Collateral Agent at the expense of the Grantors any Collateral at any place and time designated by the Collateral Agent that is reasonably convenient to both parties, (iv) remove any Collateral from any such premises for the purpose of effecting sale or other disposition thereof, and/or (v) without demand and without advertisement, notice, hearing or process of Law, all of which each of the Grantors hereby waives to the fullest extent permitted by Law, at any place and time or times, sell and deliver any or all Collateral held by or for it at public or private sale, by one or more contracts, in one or more parcels, for cash, upon credit or otherwise, at such prices and upon such terms as the Collateral Agent deems advisable, in its sole discretion (subject to any and all mandatory legal requirements). Each of the Grantors acknowledges that any private sale referenced above may be at prices and on terms less favorable to the seller than the prices and terms that might have been obtained at a public sale and waives any claims against the Collateral Agent arising by reason that any such private sale shall not have been made in a commercially reasonable manner. The Collateral Agent's disclaimer of warranties relating to the Collateral shall not be considered to adversely affect the commercial reasonableness of any sale. In addition to all other sums due the Collateral Agent and the holders of the Secured Obligations with respect to the Secured Obligations, the Grantors shall pay the Collateral Agent and each of the holders of the Secured Obligations all reasonable documented costs and expenses incurred by the Collateral Agent or any such holder of the Secured Obligations (including reasonable attorneys' fees and expenses and court costs) in obtaining or liquidating the Collateral, in enforcing payment of the Secured Obligations, or in the prosecution or defense of any action or proceeding by or against the Collateral Agent or the holders of the Secured Obligations or the Grantors concerning any matter arising out of or connected with this Security Agreement, any Collateral or the Secured Obligations, including any of the foregoing arising in, arising under or related to a case under Debtor Relief Laws. To the extent the rights of notice cannot be legally waived hereunder, each Grantor agrees that any requirement of reasonable notice shall be met if such notice is personally served on or mailed, postage prepaid, to the Borrower in accordance with the notice provisions of Section 11.02 of the Credit Agreement at least ten (10) Business Days before the time of sale or other event giving rise to the requirement of such notice. The Collateral Agent and the holders of the Secured Obligations shall not be obligated to make any sale or other disposition of the Collateral regardless of notice having been given. To the extent permitted by Law, any holder of the Secured Obligations may be a purchaser at any such sale. To the extent permitted by applicable Law, each of the Grantors hereby waives all of its rights of redemption with respect to any such sale. Subject to the provisions of applicable Law, the Collateral Agent and the holders of the Secured Obligations may postpone or cause the postponement of the sale of all or any portion of the Collateral by announcement at the time and place of such sale, and such sale may, without further notice, to the extent permitted by Law, be made at the time and place to which the sale was postponed, or the Collateral Agent and the holders of the Secured Obligations may further postpone such sale by announcement made at such time and place.

(b) Remedies relating to Accounts. Upon the occurrence of an Event of Default and during the continuation thereof, whether or not the Collateral Agent has exercised any or all of its rights and remedies hereunder, each Grantor will promptly upon request of the Collateral Agent instruct all account debtors to remit all payments in respect of Accounts to a mailing location selected by the Collateral Agent. In addition, the Collateral Agent shall have the right to enforce any Grantor's rights against its customers and account debtors, and the Collateral Agent or its designee may notify any Grantor's customers and account debtors that the Accounts of such Grantor have been assigned to the Collateral Agent or of the Collateral Agent's security interest therein, and may (either in its own name or in the name of a Grantor or both) demand, collect (including by way of a lockbox arrangement), receive, take receipt for, sell, sue for, compound, settle, compromise and give acquittance for any and all amounts due or to become due on any Account, and, in the Collateral Agent's discretion, file any claim or take any other action or proceeding to protect and realize upon the security interest of the holders of the Secured Obligations in the Accounts. Each Grantor acknowledges and agrees that the Proceeds of its Accounts remitted to or on behalf of the Collateral Agent in accordance with the provisions hereof shall be solely for the Collateral Agent's own convenience and that such Grantor shall not have any right, title or interest in such Accounts or in any such other amounts except as expressly provided herein. The Collateral Agent and the holders of the Secured Obligations shall have no liability or responsibility to any Grantor for acceptance of a check, draft or other order for payment of money bearing the legend "payment in full" or words of similar import or any other restrictive legend or endorsement or be responsible for determining the correctness of any remittance. Each Grantor hereby agrees to indemnify the Collateral Agent and the holders of the Secured Obligations from and against all liabilities, damages, losses, actions, claims, judgments, costs, expenses and charges, including reasonable attorneys' fees and expenses, suffered or incurred by the Collateral Agent or the holders of the Secured Obligations (each, an "Indemnified

Party") because of the maintenance of the foregoing arrangements except as relating to or arising out of the gross negligence or willful misconduct of an Indemnified Party or its officers, employees or agents. In the case of any investigation, litigation or other proceeding, the foregoing indemnity shall be effective whether or not such investigation, litigation or proceeding is brought by a Grantor, its directors, shareholders or creditors or an Indemnified Party or any other Person or any other Indemnified Party is otherwise a party thereto. All amounts due under this subsection shall be payable within ten (10) Business Days after demand therefor.

(c) Access. In addition to the rights and remedies hereunder, upon the occurrence of an Event of Default and during the continuation thereof, the Collateral Agent shall have the right to enter and remain upon the various premises of the Grantors without cost or charge to the Collateral Agent, and use the same, together with materials, supplies, books and records of the Grantors for the purpose of collecting and liquidating the Collateral, or for preparing for sale and conducting the sale of the Collateral, whether by foreclosure, auction or otherwise. In addition, the Collateral Agent may remove Collateral, or any part thereof, from such premises and/or any records with respect thereto, in order to effectively collect or liquidate such Collateral.

(d) Nonexclusive Nature of Remedies. Failure by the Collateral Agent or the holders of the Secured Obligations to exercise any right, remedy or option under this Security Agreement, any other Loan Document, any other documents relating to the Secured Obligations, or as provided by Law, or any delay by the Collateral Agent or the holders of the Secured Obligations in exercising the same, shall not operate as a waiver of any such right, remedy or option. No waiver hereunder shall be effective unless it is in writing, signed by the party against whom such waiver is sought to be enforced and then only to the extent specifically stated, which in the case of the Collateral Agent or the holders of the Secured Obligations shall only be granted as provided herein. To the extent permitted by Law, neither the Collateral Agent, the holders of the Secured Obligations, nor any party acting as attorney for the Collateral Agent or the holders of the Secured Obligations, shall be liable hereunder for any acts or omissions or for any error of judgment or mistake of fact or Law other than their gross negligence or willful misconduct hereunder. The rights and remedies of the Collateral Agent and the holders of the Secured Obligations under this Security Agreement shall be cumulative and not exclusive of any other right or remedy that the Collateral Agent or the holders of the Secured Obligations may have.

(e) Retention of Collateral. To the extent permitted under applicable Law, in addition to the rights and remedies hereunder, upon the occurrence and continuance of an Event of Default, the Collateral Agent may, after providing the notices required by Sections 9-620 and 9-621 of the UCC or otherwise complying with the requirements of applicable Law of the relevant jurisdiction, accept or retain all or any portion of the Collateral in satisfaction of the Secured Obligations. Unless and until the Collateral Agent shall have provided such notices, however, the Collateral Agent shall not be deemed to have accepted or retained any Collateral in satisfaction of any Secured Obligations for any reason.

(f) Deficiency. In the event that the proceeds of any sale, collection or realization are insufficient to pay all amounts to which the Collateral Agent or the holders of the Secured Obligations are legally entitled, the Grantors shall be jointly and severally liable for the deficiency (subject to Section 25 hereof), together with interest thereon at the Default Rate, together with the costs of collection and reasonable attorneys' fees and expenses. Any surplus remaining after the full payment and satisfaction of the Secured Obligations shall be returned to the Grantors or to whomsoever a court of competent jurisdiction shall determine to be entitled thereto.

9. Release of Collateral. Upon request, the Collateral Agent shall promptly deliver to the applicable Grantor (at such Grantor's expense) appropriate release documentation to the extent the release of

Collateral is permitted under, and on the terms and conditions set forth in, the Credit Agreement; provided that any such release, or the substitution of any of the Collateral for other Collateral, will not alter, vary or diminish in any way the force, effect, lien, pledge or security interest of this Security Agreement as to any and all Collateral not expressly released or substituted, and this Security Agreement shall continue as a first priority lien (subject to Permitted Liens) on any and all Collateral not expressly released or substituted.

10. Rights of the Collateral Agent.

(a) Power of Attorney. In addition to other powers of attorney contained herein, each Grantor hereby designates and appoints the Collateral Agent, on behalf of the holders of the Secured Obligations, and each of its designees or agents, as attorney-in-fact of such Grantor, irrevocably and with power of substitution, with authority to take any or all of the following actions upon the occurrence and during the continuation of an Event of Default:

(i) to demand, collect, settle, compromise and adjust, and give discharges and releases concerning the Collateral, all as the Collateral Agent may reasonably deem appropriate;

(ii) to commence and prosecute any actions at any court for the purposes of collecting any of the Collateral and enforcing any other right in respect thereof;

(iii) to defend, settle or compromise any action brought and, in connection therewith, give such discharge or release as the Collateral Agent may reasonably deem appropriate;

(iv) to receive, open and dispose of mail addressed to a Grantor and endorse checks, notes, drafts, acceptances, money orders, bills of lading, warehouse receipts or other instruments or documents evidencing payment, shipment or storage of the Goods giving rise to the Collateral on behalf of and in the name of such Grantor, or securing, or relating to such Collateral;

(v) to pay or discharge taxes, liens, security interests or other encumbrances levied or placed on or threatened against the Collateral;

(vi) to direct any parties liable for any payment in connection with any of the Collateral to make payment of any and all monies due and to become due thereunder directly to the Collateral Agent or as the Collateral Agent shall direct;

(vii) to receive payment of and receipt for any and all monies, claims, and other amounts due and to become due at any time in respect of or arising out of any Collateral;

(viii) to sell, assign, transfer, make any agreement in respect of, or otherwise deal with or exercise rights in respect of, any Collateral or the Goods or services that have given rise thereto, as fully and completely as though the Collateral Agent were the absolute owner thereof for all purposes;

(ix) to adjust and settle claims under any insurance policy relating thereto;

(x) to execute and deliver all assignments, conveyances, statements, financing statements, renewal financing statements, security and pledge agreements, affidavits, notices and other agreements, instruments and documents that the Collateral Agent may reasonably deem appropriate in order to perfect and maintain the security interests and liens granted in this Security Agreement and in order to fully consummate all of the transactions contemplated therein;

(xi) to institute any foreclosure proceedings that the Collateral Agent may reasonably deem appropriate; and

(xii) to do and perform all such other acts and things as the Collateral Agent may reasonably deem appropriate or convenient in connection with the Collateral.

This power of attorney is a power coupled with an interest and shall be irrevocable for so long as any of the Secured Obligations shall remain outstanding and until all of the commitments relating thereto shall have been terminated. The Collateral Agent shall be under no duty to exercise or withhold the exercise of any of the rights, powers, privileges and options expressly or implicitly granted to the Collateral Agent in this Security Agreement, and shall not be liable for any failure to do so or any delay in doing so. The Collateral Agent shall not be liable for any act or omission or for any error of judgment or any mistake of fact or Law in its individual capacity or its capacity as attorney-in-fact except acts or omissions resulting from its gross negligence or willful misconduct. This power of attorney is conferred on the Collateral Agent solely to protect, preserve and realize upon its security interest in the Collateral.

(b) Performance by the Collateral Agent of Obligations. If any Grantor fails to perform any agreement or obligation contained herein, the Collateral Agent itself may perform, or cause performance of, such agreement or obligation, and the expenses of the Collateral Agent incurred in connection therewith shall be payable by the Grantors on a joint and several basis (subject to Section 25 hereof).

(c) Assignment by the Collateral Agent. The Collateral Agent may assign the Secured Obligations and any portion thereof and/or the Pledged Collateral and any portion thereof to a successor collateral agent appointed pursuant to Section 10.06 of the Credit Agreement, and the assignee shall be entitled to all of the rights and remedies of the Collateral Agent under this Pledge Agreement in relation thereto.

(d) The Collateral Agent's Duty of Care. Other than the exercise of reasonable care to assure the safe custody of the Collateral while being held by the Collateral Agent hereunder, the Collateral Agent shall have no duty or liability to preserve rights pertaining thereto, it being understood and agreed that the Grantors shall be responsible for preservation of all rights in the Collateral, and the Collateral Agent shall be relieved of all responsibility for the Collateral upon surrendering it or tendering the surrender of it to the Grantors. The Collateral Agent shall be deemed to have exercised reasonable care in the custody and preservation of the Collateral in its possession if such Collateral is accorded treatment substantially equal to that which the Collateral Agent accords its own property, which shall be no less than the treatment employed by a reasonable and prudent agent in the industry, it being understood that the Collateral Agent shall not have responsibility for taking any necessary steps to preserve rights against any parties with respect to any of the Collateral. In the event of a public or private sale of Collateral pursuant to Section 8 hereof, the Collateral Agent shall have no obligation to clean, repair or otherwise prepare the Collateral for sale.

11. Rights of Required Lenders. All rights of the Collateral Agent hereunder, if not exercised by the Collateral Agent, may be exercised by the Required Lenders.

12. Application of Proceeds. Upon the occurrence and during the continuation of an Event of Default, any payments in respect of the Secured Obligations and any proceeds of the Collateral, when received by the Collateral Agent or any of the holders of the Secured Obligations in cash or its equivalent, will be applied in reduction of the Secured Obligations in the order set forth in Section 9.03 of the Credit Agreement as though the word "Obligations" therein were deleted and replaced with the phrase "Secured Obligations," and each Grantor irrevocably waives the right to direct the application of such payments and proceeds and acknowledges and agrees that the Collateral Agent shall have the continuing and exclusive right to apply and reapply any and all such payments and proceeds in the Collateral Agent's sole discretion, notwithstanding any entry to the contrary upon any of its books and records.

13. Costs of Counsel. At all times hereafter, whether or not upon the occurrence of an Event of Default, the Grantors agree to promptly pay upon demand any and all reasonable costs and expenses (including reasonable attorneys' fees and expenses) of the Collateral Agent and the holders of the Secured Obligations (a) as required under Section 11.04 of the Credit Agreement and (b) as necessary to protect the Collateral or to exercise any rights or remedies under this Security Agreement or with respect to any of the Collateral. All of the foregoing costs and expenses shall constitute Secured Obligations hereunder.

14. Continuing Agreement.

(a) This Security Agreement shall be a continuing agreement in every respect and shall remain in full force and effect so long as any of the Secured Obligations remains outstanding (other than contingent indemnity obligations that are not yet due and payable) and until all of the commitments relating thereto have been terminated. Upon such payment and termination, this Security Agreement shall be automatically terminated and the Collateral Agent shall, upon the request and at the expense of the Grantors, forthwith release all of its liens and security interests hereunder and shall execute and deliver all UCC termination statements and/or other documents reasonably requested by the Grantors evidencing such termination. Notwithstanding the foregoing, all indemnities provided hereunder shall survive termination of this Security Agreement.

(b) This Security Agreement shall continue to be effective or be automatically reinstated, as the case may be, if at any time payment, in whole or in part, of any of the Secured Obligations is rescinded or must otherwise be restored or returned by the Collateral Agent or any holder of the Secured Obligations as a preference, fraudulent conveyance or otherwise under any bankruptcy, insolvency or similar Law, all as though such payment had not been made; provided that in the event payment of all or any part of the Secured Obligations is rescinded or must be restored or returned, all reasonable costs and expenses (including reasonable attorneys' fees and expenses) incurred by the Collateral Agent or any holder of the Secured Obligations in defending and enforcing such reinstatement shall be deemed to be included as a part of the Secured Obligations.

15. Amendments and Waivers. This Security Agreement and the provisions hereof may not be amended, waived, modified, changed, discharged or terminated except as set forth in Section 11.01 of the Credit Agreement; provided that any update or revision to Schedule 2(d) hereof shall not constitute an amendment for purposes of this Section 15 or Section 11.01 of the Credit Agreement.

16. Successors in Interest. This Security Agreement shall create a continuing security interest in the Collateral and shall be binding upon each Grantor, its successors and assigns, and shall inure, together with the rights and remedies of the Collateral Agent and the holders of the Secured Obligations hereunder, to the benefit of the Collateral Agent and the holders of the Secured Obligations and their successors and permitted assigns; provided, however, that none of the Grantors may assign its rights or delegate its duties

hereunder without the prior written consent of the requisite Lenders under the Credit Agreement (or in a transaction permitted by Section 8.04 of the Credit Agreement).

17. Notices. All notices required or permitted to be given under this Security Agreement shall be given as provided in Section 11.02 of the Credit Agreement.

18. Counterparts. This Security Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be an original, but all of which shall constitute one and the same instrument. It shall not be necessary in making proof of this Security Agreement to produce or account for more than one such counterpart.

19. Headings. The headings of the sections and subsections hereof are provided for convenience only and shall not in any way affect the meaning or construction of any provision of this Security Agreement.

20. Governing Law; Jurisdiction; Waiver of Right to Trial by Jury; Etc.

(a) THIS SECURITY AGREEMENT AND THE OTHER LOAN DOCUMENTS AND ANY CLAIMS, CONTROVERSY, DISPUTE OR CAUSE OF ACTION (WHETHER IN CONTRACT OR TORT OR OTHERWISE) BASED UPON, ARISING OUT OF OR RELATING TO THIS SECURITY AGREEMENT OR ANY OTHER LOAN DOCUMENT (EXCEPT, AS TO ANY OTHER LOAN DOCUMENT, AS EXPRESSLY SET FORTH THEREIN) AND THE TRANSACTIONS CONTEMPLATED HEREBY AND THEREBY SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK APPLICABLE TO AGREEMENTS MADE AND TO BE PERFORMED ENTIRELY WITHIN SUCH STATE; PROVIDED THAT THE COLLATERAL AGENT SHALL RETAIN ALL RIGHTS ARISING UNDER FEDERAL LAW.

(b) EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY AGREES THAT IT WILL NOT COMMENCE ANY ACTION, LITIGATION OR PROCEEDING OF ANY KIND OR DESCRIPTION, WHETHER IN LAW OR EQUITY, WHETHER IN CONTRACT OR IN TORT OR OTHERWISE, AGAINST THE COLLATERAL AGENT, OR ANY RELATED PARTY OF THE FOREGOING IN ANY WAY RELATING TO THIS SECURITY AGREEMENT OR ANY OTHER LOAN DOCUMENT OR THE TRANSACTIONS RELATING HERETO OR THERETO, IN ANY FORUM OTHER THAN THE COURTS OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY AND OF THE UNITED STATES DISTRICT COURT OF THE SOUTHERN DISTRICT OF NEW YORK, AND ANY APPELLATE COURT FROM ANY THEREOF, AND EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY SUBMITS TO THE JURISDICTION OF SUCH COURTS AND AGREES THAT ALL CLAIMS IN RESPECT OF ANY SUCH ACTION, LITIGATION OR PROCEEDING MAY BE HEARD AND DETERMINED IN SUCH NEW YORK STATE COURT OR, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, IN SUCH FEDERAL COURT. EACH OF THE PARTIES HERETO AGREES THAT A FINAL JUDGMENT IN ANY SUCH ACTION, LITIGATION OR PROCEEDING SHALL BE CONCLUSIVE AND MAY BE ENFORCED IN OTHER JURISDICTIONS BY SUIT ON THE JUDGMENT OR IN ANY OTHER MANNER PROVIDED BY LAW. NOTHING IN THIS SECURITY AGREEMENT OR IN ANY OTHER LOAN DOCUMENT SHALL AFFECT ANY RIGHT THAT THE COLLATERAL AGENT MAY OTHERWISE HAVE TO BRING ANY LEGAL ACTION OR PROCEEDING RELATING TO THIS SECURITY AGREEMENT OR ANY OTHER LOAN DOCUMENT AGAINST THE BORROWER, OR ANY OTHER LOAN PARTY OR THEIR PROPERTIES IN THE COURTS OF ANY JURISDICTION.

(c) EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY OBJECTION

THAT IT MAY NOW OR HEREAFTER HAVE TO THE LAYING OF VENUE OF ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO THIS SECURITY AGREEMENT OR ANY OTHER LOAN DOCUMENT IN ANY COURT REFERRED TO IN PARAGRAPH (B) OF THIS SECTION. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE DEFENSE OF AN INCONVENIENT FORUM TO THE MAINTENANCE OF SUCH ACTION OR PROCEEDING IN ANY SUCH COURT.

(d) EACH OF THE PARTIES HERETO IRREVOCABLY CONSENTS TO SERVICE OF PROCESS IN THE MANNER PROVIDED FOR NOTICES IN SECTION 11.02 OF THE CREDIT AGREEMENT. NOTHING IN THIS SECURITY AGREEMENT WILL AFFECT THE RIGHT OF ANY PARTY HERETO TO SERVE PROCESS IN ANY OTHER MANNER PERMITTED BY APPLICABLE LAW.

(e) EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS SECURITY AGREEMENT OR ANY OTHER LOAN DOCUMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY). EACH PARTY HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PERSON HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PERSON WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS SECURITY AGREEMENT AND THE OTHER LOAN DOCUMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION.

21. Severability. If any provision of this Security Agreement or any related document is held to be illegal, invalid or unenforceable, (a) the legality, validity and enforceability of the remaining provisions of this Security Agreement and any other related document shall not be affected or impaired thereby and (b) the parties shall endeavor in good faith negotiations to replace the illegal, invalid or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the illegal, invalid or unenforceable provisions. The invalidity of a provision in a particular jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

22. Entirety. This Security Agreement, the other Loan Documents and the other documents relating to the Secured Obligations comprise the complete and integrated agreement of the parties on the subject matter hereof and thereof and supersedes all prior agreements, written or oral, on such subject matter. This Security Agreement was drafted with the joint participation of the respective parties thereto and shall be construed neither against nor in favor of any party, but rather in accordance with the fair meaning thereof.

23. Survival. All representations and warranties made hereunder or other document delivered pursuant hereto or thereto or in connection herewith or therewith shall survive the execution and delivery hereof and thereof. Such representations and warranties have been or will be relied upon by the Administrative Agent, the Collateral Agent, and each Lender, regardless of any investigation made by the Administrative Agent, the Collateral Agent or any Lender or on their behalf and notwithstanding that the Administrative Agent, the Collateral Agent or any Lender may have had notice or knowledge of any Default at the time of any Credit Extension, and shall continue in full force and effect as long as any Loan or any other Obligation shall remain unpaid or unsatisfied or any Letter of Credit shall remain outstanding.

24. Other Security. To the extent that any of the Secured Obligations are now or hereafter secured by property other than the Collateral (including real property and securities owned by a Grantor), or by a guarantee, endorsement or property of any other Person, then the Collateral Agent shall have the right to proceed against such other property, guarantee or endorsement upon the occurrence of any Event of Default, and the Collateral Agent shall have the right, in its sole discretion, to determine which rights, security, liens, security interests or remedies the Collateral Agent shall at any time pursue, relinquish, subordinate, modify or take with respect thereto, without in any way modifying or affecting any of them or the Secured Obligations or any of the rights of the Collateral Agent or the holders of the Secured Obligations under this Security Agreement, under any of the other Loan Documents or under any other document relating to the Secured Obligations.

25. Joint and Several Obligations of Grantors.

(a) Subject to subsection (c) of this Section 25, each of the Grantors is accepting joint and several liability hereunder in consideration of the financial accommodation to be provided by the holders of the Secured Obligations, for the mutual benefit, directly and indirectly, of each of the Grantors and in consideration of the undertakings of each of the Grantors to accept joint and several liability for the obligations of each of them.

(b) Subject to subsection (c) of this Section 25, each of the Grantors jointly and severally hereby irrevocably and unconditionally accepts joint and several liability with the other Grantors with respect to the payment of all of the Secured Obligations arising under this Security Agreement, the other Loan Documents and any other documents relating to the Secured Obligations, it being the intention of the parties hereto that all the payment Secured Obligations shall be the joint and several obligations of each of the Grantors without preferences or distinction among them.

(c) Notwithstanding any provision to the contrary contained herein, in any other of the Loan Documents or in any other documents relating to the Secured Obligations, the obligations of each Guarantor under the Credit Agreement and the other Loan Documents shall be limited to an aggregate amount equal to the largest amount that would not render such obligations subject to avoidance under Section 548 of the Bankruptcy Code of the United States or any other Debtor Relief Law (including any comparable provisions of any applicable state Law).

26. Joinder. At any time after the date of this Security Agreement, one or more additional Persons may become party hereto by executing and delivering to the Collateral Agent a Collateral Joinder Agreement. Immediately upon such execution and delivery of such Collateral Joinder Agreement (and without any further action), each such additional Person will become a party to this Security Agreement as a "Grantor" and have all of the rights and obligations of a Grantor hereunder and this Security Agreement and the schedules hereto shall be deemed amended by such Collateral Joinder Agreement.

27. Replacement of Existing Security Agreement. As of the date hereof, the Existing Security Agreement shall be amended, restated and superseded and replaced in its entirety by this Security Agreement.

278. Termination and Release.

(a) This Security Agreement and all security interests granted hereby shall terminate when (i) all of the Obligations under the Loan Documents (excluding contingent obligations as to which no claim has been made) have been paid in full in cash, (ii) all Commitments have terminated or expired and (iii) the aggregate amount available to be drawn under Letters of Credit has been reduced to zero (including as a result of obtaining the consent of the applicable L/C Issuer through the provision of Cash Collateral or other arrangements satisfactory to the applicable L/C Issuer) and no L/C Issuer has any further obligation to issue or amend Letters of Credit under the Credit Agreement.

(b) All security interests granted hereby shall also terminate and be released at the time or times and in the manner set forth in Section 10.10 of the Credit Agreement.

(c) In connection with any termination or release pursuant to subsection (a) or (b) of this Section 28, the Collateral Agent shall execute and deliver to any Grantor, at such Grantor's expense, all documents that such Grantor shall reasonably request to evidence such termination or release so long as the applicable Grantor shall have provided the Collateral Agent such certifications or documents as the Collateral Agent shall reasonably request in order to demonstrate compliance with this Section 28. Any execution and delivery of documents by the Collateral Agent pursuant to this Section shall be without recourse to or warranty by the Collateral Agent.

[Signatures on Following Pages]

99060020002500 GRANTOR S :

ARMSTRONG WORLD INDUSTRIES, INC., a Pennsylvania corporation

By: /s/ Brian L. MacNeal
Name: Brian L. MacNeal
Title: Senior Vice President and Chief Financial Officer

ARMSTRONG REALTY GROUP, INC., a Pennsylvania corporation

By: /s/ Stephen F. McNamara Name: Stephen F. McNamara Title: Vice President

ARMSTRONG VENTURES, INC., a Delaware corporation

By: /s/ Stephen F. McNamara Name: Stephen F. McNamara Title: Vice President

AWI LICENSING LLC,
a Delaware limited liability company

By: /s/ Stephen F. McNamara
Name: Stephen F. McNamara
Title: Vice President and Controller

Accepted and agreed to as of the date first above written.

COLLATERAL AGENT:

BANK OF AMERICA, N.A., as Collateral Agent

By: /s/ Kimberly D. Williams Name: Kimberly D. Williams
Title: Vice President

SCHEDULES

Schedule 2(d) Commercial Tort Claims

EXHIBITS

Exhibit 5(b)-1 Form of Notice of Grant of Security Interest in C
opyrights Exhibit 5(b)-2 Form of Notice of Grant of Security In
terest in Patents Exhibit 5(b)-3 Form of Notice of Grant of Secur
ity Interest in Trademarks

SCHEDULE 2(d)

COMMERCIAL TORT CLAIMS

None.

EXHIBIT 5(b)-1

FORM OF NOTICE OF GRANT OF SECURITY INTEREST IN COPYRIGHTS

United States Copyright Office

Ladies and Gentlemen:

Please be advised that pursuant to the Amended and Restated Security Agreement, dated as of April 1, 2016 (as the same may be amended, modified, extended or restated from time to time, the "Security Agreement"), by and among the Grantors party thereto (each an "Grantor" and collectively, the "Grantors") and Bank of America, N.A., as Collateral Agent (the "Collateral Agent") for the holders of the Secured Obligations referenced therein, the undersigned Grantor has granted a continuing security interest in and continuing lien upon, the copyrights and copyright applications shown on Schedule 1 attached hereto to the Collateral Agent for the ratable benefit of the holders of the Secured Obligations.

The Grantors and the Collateral Agent, on behalf of the holders of the Secured Obligations, hereby acknowledge and agree that the security interest in the copyrights and copyright applications set forth on Schedule 1 attached hereto (i) may only be terminated in accordance with the terms of the Security Agreement and (ii) is not to be construed as an assignment of any copyright or copyright application.

Very truly yours,

[Grantor],
a [state] [entity type]

By:
Name:
Title:

Grantor's Address: [insert]

[Signature pages continue on following page]

Acknowledged and Accepted:

BANK OF AMERICA, N.A., as Collateral Agent

By: Name:
Title:

Collateral Agent's Address: [insert]

EXHIBIT 5(b)-2

FORM OF NOTICE OF GRANT OF SECURITY INTEREST IN PATENTS

United States Patent and Trademark Office

Ladies and Gentlemen:

Please be advised that pursuant to the Amended and Restated Security Agreement, dated as of April 1, 2016 (the "Security Agreement"), by and among the Grantors party thereto (each an "Grantor" and collectively, the "Grantors") and Bank of America, N.A., as Collateral Agent (the "Collateral Agent") for the holders of the Secured Obligations referenced therein, the undersigned Grantor has granted a continuing security interest in and continuing lien upon, the patents and patent applications set forth on Schedule 1 attached hereto to the Collateral Agent for the ratable benefit of the holders of the Secured Obligations.

The Grantors and the Collateral Agent, on behalf of the holders of the Secured Obligations, hereby acknowledge and agree that the security interest in the patents and patent applications set forth on Schedule 1 attached hereto (i) may only be terminated in accordance with the terms of the Security Agreement and (ii) is not to be construed as an assignment of any patent or patent application.

Very truly yours,

[Grantor],
a [state] [entity type]

By:
Name:
Title:

Grantor's Address: [insert]

[Signature pages continue on following page]

Acknowledged and Accepted:

BANK OF AMERICA, N.A., as Collateral Agent

By: Name:
Title:
Collateral Agent's Address: [insert]

<u>EXHIBIT 5(b)-3</u>

FORM OF NOTICE OF GRANT OF SECURITY INTEREST IN TRADEMARKS

United States Patent and Trademark Office

Ladies and Gentlemen:

Please be advised that pursuant to the Amended and Restated Security Agreement, dated as of April 1, 2016 (the "<u>Security Agreement</u>"), by and among the Grantors party thereto (each an "<u>Grantor</u>" and collectively, the "<u>Grantors</u>") and Bank of America, N.A., as Collateral Agent (the "<u>Collateral Agent</u>") for the holders of the Secured Obligations referenced therein, the undersigned Grantor has granted a continuing security interest in and continuing lien upon, the trademarks and trademark applications set forth on <u>Schedule 1</u> attached hereto to the Collateral Agent for the ratable benefit of the holders of the Secured Obligations.

The Grantors and the Collateral Agent, on behalf of the holders of the Secured Obligations, hereby acknowledge and agree that the security interest in the trademarks and trademark applications set forth on <u>Schedule 1</u> attached hereto (i) may only be terminated in accordance with the terms of the Security Agreement and (ii) is not to be construed as an assignment of any trademark or trademark application.

Very truly yours,

[Grantor], a [state] [entity type]

By:
Name:
Title:

Grantor's Address: [insert]

[Signature pages continue on following page]

Acknowledged and Accepted:

BANK OF AMERICA, N.A., as Collateral Agent

By: Name:
Title:

Collateral Agent's Address: [insert]

AMENDED AND RESTATED PLEDGE AGREEMENT

THIS AMENDED AND RESTATED PLEDGE AGREEMENT (this "Pledge Agreement"), dated as of April 1, 2016, is by and among the parties identified as "Pledgors" on the signature pages hereto and such other parties as may become Pledgors hereunder after the date hereof (individually a "Pledgor", and collectively the "Pledgors") and BANK OF AMERICA, N.A., as collateral agent (in such capacity, the "Collateral Agent") for the holders of the Secured Obligations referenced below.

WITNESSETH

WHEREAS, revolving credit and term loan facilities were established in favor of Armstrong World Industries, Inc., a Pennsylvania corporation (the "Borrower"), pursuant to the terms of that certain amended and restated credit agreement dated as of March 15, 2013 (as amended and modified prior to the Closing Date, the "Existing Credit Agreement") among the Borrower, Armstrong Wood Products, Inc., a Delaware corporation ("AWP"), certain of their respective Subsidiaries, as guarantors thereunder, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent for the lenders thereunder;

WHEREAS, in connection with the Existing Credit Agreement, the Borrower, AWP and certain of their respective Subsidiaries entered into that certain Amended and Restated Pledge Agreement dated as of March 15, 2013 (the "Existing Pledge Agreement");

WHEREAS, the Borrower has requested certain modifications to the revolving credit and term loan facilities under the Existing Credit Agreement;

WHEREAS, the Lenders have agreed to the requested modifications on the terms and conditions provided in that certain Amended and Restated Credit Agreement, dated as of the date hereof (as amended and modified, the "Credit Agreement"), among the Borrower, certain of its Subsidiaries, as guarantors thereunder, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent for the lenders thereunder; and

WHEREAS, this Pledge Agreement is required under the terms of the Credit Agreement, and is given in amendment to, restatement of and substitution for the Existing Pledge Agreement provided in connection with the Existing Credit Agreement.

NOW, THEREFORE, in consideration of these premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Definitions.

(a) Capitalized terms used and not otherwise defined herein shall have the meanings provided in the Credit Agreement. In addition, the following terms, which are defined in the UCC as in effect in the State of New York on the date hereof, are used as defined therein: Accession, Financial Asset, Proceeds and Security.

(b) As used herein, the following terms shall have the meaning set forth below: "Borrower" has the meaning provided in the recitals hereof.

"Collateral Agent" has the meaning provided in the introductory paragraph hereof, together with its successors and assigns.

"Credit Agreement" has the meaning provided in the recitals hereof.

"Event of Default" has the meaning provided in Section 8 hereof.

"Existing Credit Agreement" has the meaning provided in the recitals hereof.

"Existing Pledge Agreement" has the meaning provided in the recitals hereof.

"Pledge Agreement" has the meaning provided in the introductory paragraph hereof, as amended and modified.

"Pledged Collateral" has the meaning provided in Section 2 hereof.

"Pledged Shares" has the meaning provided in Section 2(a) hereof.

"Pledgors" has the meaning provided in the introductory paragraph hereof.

"Secured Obligations" means, without duplication, (a) all Obligations and (b) all costs and expenses incurred in connection with enforcement and collection of the Secured Obligations, including reasonable attorneys' fees and expenses.

"UCC" means the Uniform Commercial Code as in effect in the state of New York from time to time.

2. Pledge and Grant of Security Interest. To secure the prompt payment and performance in full when due, whether by lapse of time, acceleration, mandatory prepayment or otherwise, of the Secured Obligations, each Pledgor hereby grants, pledges and assigns to the Collateral Agent, for the benefit of the holders of the Secured Obligations, a continuing security interest in, and a right to set-off against, any and all right, title and interest of such Pledgor in and to the following, whether now owned or existing or owned, acquired, or arising hereafter (collectively, the "Pledged Collateral"):

(a) Pledged Shares. (i) One hundred percent (100%) (or, if less, the full amount owned by such Pledgor) of the issued and outstanding Capital Stock owned by such Pledgor of each Material Domestic Subsidiary set forth on Schedule 2(a) attached hereto and (ii) sixty-five percent (65%) (or, if less, the full amount owned by such Pledgor) of the issued and outstanding voting Capital Stock (or 100% of the non-voting Capital Stock) owned by such Pledgor of each Material First-Tier Foreign Subsidiary and each Excluded Subsidiary set forth on Schedule 2(a) attached hereto, in each case together with the certificates (or other agreements or instruments), if any, representing such Capital Stock, and all options and other rights, contractual or otherwise, with respect thereto (collectively, together with the Capital Stock described in Section 2(b) and 2(c) below, the "Pledged Shares"), including the following:

(A) all shares, securities, membership interests or other equity interests representing a dividend on any of the Pledged Shares, or representing a distribution or return of capital upon or in respect of the Pledged Shares, or resulting from a stock split, revision, reclassification or other exchange therefor, and any subscriptions, warrants, rights or options issued to the holder of, or otherwise in respect of, the Pledged Shares; and

(B) without affecting the obligations of the Pledgors under any provision prohibiting such action hereunder or under the Credit Agreement, in the event of any consolidation or merger involving the issuer of any Pledged Shares and in which such issuer is not the surviving entity, all Capital Stock of the successor entity formed by or resulting from such consolidation or merger.

(b) Additional Shares. (i) One hundred percent (100%) (or, if less, the full amount owned by such Pledgor) of the issued and outstanding Capital Stock owned by such Pledgor of any Person that hereafter becomes a Material Domestic Subsidiary and (ii) sixty-five percent (65%) (or, if less, the full amount owned by such Pledgor) of the issued and outstanding voting Capital Stock (or 100% of the non-voting Capital Stock) owned by such Pledgor of any Person that hereafter becomes a Material First-Tier Foreign Subsidiary or an Excluded Subsidiary, including the certificates (or other agreements or instruments) representing such Capital Stock.

(c) Accessions and Proceeds. All Accessions and all Proceeds of any and all of the foregoing.

Without limiting the generality of the foregoing, it is hereby specifically understood and agreed that a Pledgor may from time to time hereafter deliver additional Capital Stock to the Collateral Agent as collateral security for the Secured Obligations. Upon delivery to the Collateral Agent, such additional Capital Stock shall be deemed to be part of the Pledged Collateral of such Pledgor and shall be subject to the terms of this Pledge Agreement whether or not Schedule 2(a) is amended to refer to such additional Capital Stock. Notwithstanding anything to the contrary contained herein, the security interests granted under this Pledge Agreement shall not extend to, and the "Pledged Collateral" shall not include, any Excluded Property.

3. Security for Secured Obligations. The security interest created hereby in the Pledged Collateral of each Pledgor constitutes continuing collateral security for all of the Secured Obligations.

4. Delivery of the Pledged Collateral. To the extent that Pledged Collateral is certificated, each Pledgor hereby agrees that:

(a) Such Pledgor shall (subject to the provisions of Section 7.14 of the Credit Agreement) deliver to the Collateral Agent (i) simultaneously with or prior to the execution and delivery of this Pledge Agreement, all certificates representing the Pledged Shares of such Pledgor and (ii) promptly upon the receipt thereof by or on behalf of such Pledgor, all other certificates and instruments constituting Pledged Collateral of such Pledgor. Prior to delivery to the Collateral Agent, all such certificates and instruments constituting Pledged Collateral of a Pledgor shall be held in trust by such Pledgor for the benefit of the Collateral Agent pursuant hereto. All such certificates shall be delivered in suitable form for transfer by delivery or shall be accompanied by duly executed instruments of transfer or assignment in blank, substantially in the form provided in Exhibit 4(a) attached hereto.

(b) Additional Securities. If such Pledgor shall receive by virtue of its being or having been the owner of any Pledged Collateral, any (i) certificate, including any certificate representing a dividend or distribution in connection with any increase or reduction of capital, reclassification, merger, consolidation, sale of assets, combination of shares or other equity interests, stock splits, spin-off or split-off, promissory notes or other instruments; (ii) option or right, whether as an addition to, substitution for, or an exchange for, any Pledged Collateral or otherwise; (iii) dividends payable in securities; or (iv) distributions of securities in connection with a partial or total liquidation, dissolution or reduction of capital, capital surplus or paid-in surplus, then such Pledgor shall receive such certificate, instrument, option, right or distribution in trust for the benefit of the Collateral Agent, shall segregate it from such Pledgor's other property and shall deliver it forthwith to the Collateral Agent in the exact form received together with any necessary endorsement and/or appropriate stock power duly executed in blank, substantially in the form provided in Exhibit 4(a), to be held by the Collateral Agent as Pledged Collateral and as further collateral security for the Secured Obligations.

(c) Financing Statements. Each Pledgor authorizes the Collateral Agent to file one or more financing statements (which may describe the Collateral as "all assets" or "all personal property") disclosing the Collateral Agent's security interest in the Pledged Collateral. Each Pledgor shall execute and deliver to the Collateral Agent such other applicable financing statements and other filings as may be reasonably requested by the Collateral Agent in order to perfect and protect the security interest created hereby in the Pledged Collateral of such Pledgor.

5. Representations and Warranties. Each Pledgor hereby represents and warrants to the Collateral Agent, for the benefit of the holders of the Secured Obligations, that so long as any of the Secured Obligations remains outstanding and until all of the commitments relating thereto have been terminated:

(a) Authorization of Pledged Shares. The Pledged Shares are duly authorized and validly issued, are fully paid and nonassessable and are not subject to the preemptive rights of any Person.

(b) Title. Each Pledgor has good and indefeasible title to the Pledged Collateral of such Pledgor and is the legal and beneficial owner of such Pledged Collateral free and clear of any Lien, other than Permitted Liens. There exists no "adverse claim" within the meaning of Section 8-102 of the UCC with respect to the Pledged Shares of such Pledgor.

(c) Exercising of Rights. The exercise by the Collateral Agent of its rights and remedies hereunder will not violate any Law or governmental regulation or any material contractual restriction binding on or affecting a Pledgor or any of its property.

(d) Pledgor's Authority. No authorization, approval or action by, and no notice or filing with any Governmental Authority or with the issuer of any Pledged Shares is required either (i) for the pledge made by a Pledgor or for the granting of the security interest by a Pledgor pursuant to this Pledge Agreement (except as have been already obtained) or (ii) for the exercise by the Collateral Agent or the holders of the Secured Obligations of their rights and remedies hereunder (except as may be required by Laws affecting the offering and sale of securities).

(e) Security Interest/Priority. This Pledge Agreement creates a valid security interest in favor of the Collateral Agent for the benefit of the holders of the Secured Obligations, in the Pledged Collateral. The taking of possession, in the State of New York, by the Collateral Agent of the certificates representing the Pledged Shares, to the extent constituting Securities, and all other certificates and instruments constituting Pledged Collateral, will perfect and establish the first priority of the Collateral Agent's security interest in the Pledged Shares and, when properly perfected by filing or registration, in all other Pledged Collateral represented by such Pledged Shares and instruments securing the Secured Obligations. Except as set forth in this Section 5(e) hereof, no action is necessary to perfect or otherwise protect such security interest.

(f) Partnership and Membership Interests. Except as previously disclosed to the Collateral Agent, none of the Pledged Shares consisting of partnership or limited liability company interests (i) is dealt in or traded on a securities exchange or in a securities market, (ii) by its terms expressly provides that it is a security governed by Article 8 of the UCC, (iii) is an investment company security, (iv) is held in a securities account or (v) constitutes a Security or a Financial Asset.

(g) No Other Interests. As of the Closing Date, pursuant to the terms of the Credit Agreement, no Pledgor is required to pledge any Capital Stock in any Subsidiary other than as set forth on Schedule 2(a) attached hereto or as pledged pursuant to any other pledge agreement by any Pledgor to the Collateral Agent to secure the Secured Obligations.

6. Covenants. Each Pledgor hereby covenants, that so long as any of the Secured Obligations remains outstanding and until all of the commitments relating thereto have been terminated, such Pledgor shall:

(a) Books and Records. Upon the reasonable request of the Collateral Agent, mark its books and records (and shall cause the issuer of the Pledged Shares of such Pledgor to mark its books and records) to reflect the security interest granted to the Collateral Agent, for the benefit of the holders of the Secured Obligations, pursuant to this Pledge Agreement.

(b) Defense of Title. Warrant and defend title to and ownership of the Pledged Collateral of such Pledgor at its own expense against the claims and demands of all other parties claiming an interest therein, keep the Pledged Collateral free from all Liens, except for Permitted Liens, and not sell, exchange, transfer, assign, lease or otherwise dispose of Pledged Collateral of such Pledgor or any interest therein, except as permitted under the Credit Agreement and the other Loan Documents.

(c) Further Assurances. Promptly execute and deliver at its expense all further instruments and documents and take all further action that may be necessary and desirable or that the Collateral Agent may reasonably request in order to (i) perfect and protect the security interest created hereby in the Pledged Collateral of such Pledgor (including any and all action necessary to satisfy the Collateral Agent that the Collateral Agent has obtained a first priority perfected security interest in all Pledged Collateral); (ii) enable the Collateral Agent to exercise and enforce its rights and remedies hereunder in respect of the Pledged Collateral of such Pledgor; and (iii) otherwise effect the purposes of this Pledge Agreement.

(d) Amendments. Not make or consent to any amendment or other modification or waiver with respect to any of the Pledged Collateral of such Pledgor or enter into any agreement or allow to exist any restriction with respect to any of the Pledged Collateral of such Pledgor other than pursuant hereto or as may be permitted under the Credit Agreement.

(e) Compliance with Securities Laws. File all reports and other information now or hereafter required to be filed by such Pledgor with the SEC and any other state, federal or foreign agency in connection with the ownership of the Pledged Collateral of such Pledgor.

(f) Issuance or Acquisition of Capital Stock Consisting of an Interest in a Partnership or a Limited Liability Company. Not, without executing and delivering, or causing to be executed and delivered, to the Collateral Agent such agreements, documents and instruments as the Collateral Agent may require, issue or acquire any Capital Stock of a Subsidiary consisting of an interest in a partnership or a limited liability company that (i) is dealt in or traded on a securities exchange or in a securities market, (ii) by its terms expressly provides that it is a security governed by Article 8 of the UCC, (iii) is an investment company security, (iv) is held in a securities account or (v) constitutes a Security or a Financial Asset.

7. Advances by Holders of the Secured Obligations. On failure of any Pledgor to perform any of the covenants and agreements contained herein and upon prior written notice to the Pledgor, the Collateral Agent may, at its sole option and in its sole discretion, perform the same and in so doing may expend such sums as the Collateral Agent may reasonably deem advisable in the performance thereof, including the payment of any insurance premiums, the payment of any taxes, a payment to obtain a release of a Lien or potential Lien, expenditures made in defending against any adverse claim and all other expenditures that the Collateral Agent may make for the protection of the security hereof or may be compelled to make by operation of Law. All such sums and amounts so expended shall be repayable by the Pledgors on a joint and several basis promptly upon timely notice thereof and demand therefor, shall constitute additional Secured Obligations and shall, subject to Section 2.08 of the Credit Agreement, bear interest from the date said amounts are expended at the rate then applicable to Revolving Loans that are Base Rate Loans. No such performance of any covenant or agreement by the Collateral Agent on behalf of any Pledgor, and no such advance or expenditure therefor, shall relieve the Pledgors of any default under the terms of this Pledge Agreement, the other Loan Documents or any other documents relating to the Secured Obligations. The Collateral Agent may make any payment hereby authorized in accordance with any bill, statement or estimate procured from the appropriate public office or holder of the claim to be discharged without inquiry into the accuracy of such bill, statement or estimate or into the validity of any tax assessment, sale, forfeiture, tax lien, title or claim except to the extent such payment is being contested in good faith by a Pledgor in appropriate proceedings and against which adequate reserves are being maintained in accordance with GAAP.

8. Events of Default. The occurrence of an event that would constitute an Event of Default under the Credit Agreement shall be an Event of Default hereunder (an "Event of Default").

9. Remedies.

(a) General Remedies. Upon the occurrence of an Event of Default and during the continuation thereof, the Collateral Agent and the holders of the Secured Obligations shall have, in addition to the rights and remedies provided herein, in the Loan Documents, in any other documents relating to the Secured Obligations, or by Law (including levy of attachment and garnishment), the rights and remedies of a secured party under the UCC of the jurisdiction applicable to the affected Pledged Collateral.

(b) Sale of Pledged Collateral. Upon the occurrence of an Event of Default and during the continuation thereof, without limiting the generality of this Section 9 and without notice, the Collateral Agent may, in its sole discretion, sell or otherwise dispose of or realize upon the Pledged Collateral, or any part thereof, in one or more parcels, at public or private sale, at any exchange or broker's board or elsewhere, at such price or prices and on such other terms as the Collateral Agent may deem commercially reasonable, for cash, credit or for future delivery or otherwise in accordance with applicable Law. To the extent permitted by Law, any holder of the Secured Obligations may in such event, bid for the purchase of such securities. Each Pledgor agrees that, to the extent notice of sale shall be required by Law and has not been waived by such Pledgor, any requirement of reasonable notice shall be met if notice, specifying the place of any public sale or the time after which any private sale is to be made, is personally served on or mailed, postage prepaid, to such Pledgor, in accordance with the notice provisions of Section 11.02 of the Credit Agreement at least ten (10) days before the time of such sale. The Collateral Agent shall not be obligated to make any sale of Pledged Collateral of such Pledgor regardless of notice of sale having been given. The Collateral Agent may adjourn any public or private sale from time to time by announcement at the time and place fixed therefor, and such sale may, without further notice, be made at the time and place to which it was so adjourned.

(c) Private Sale. Upon the occurrence of an Event of Default and during the continuation thereof, the Pledgors recognize that the Collateral Agent may deem it impracticable to effect a public sale of all or any part of the Pledged Shares or any of the securities constituting Pledged Collateral and that the Collateral Agent may, therefore, determine to make one or more private sales of any such Pledged Collateral to a restricted group of purchasers who will be obligated to agree, among other things, to acquire such Pledged Collateral for their own account, for investment and not with a view to the distribution or resale thereof. Each Pledgor hereby waives any claims against the Collateral Agent arising by reason that any such private sale shall not have been made in a commercially reasonable manner and that the Collateral Agent shall have no obligation to delay sale of any such Pledged Collateral for the period of time necessary to permit the issuer of such Pledged Collateral to register such Pledged Collateral for public sale under the Securities Act of 1933, as amended (the "Securities Act"). Each Pledgor further acknowledges and agrees that any offer to sell such Pledged Collateral that has been (i) publicly advertised on a bona fide basis in a newspaper or other publication of general circulation in the financial community of New York, New York (to the extent that such offer may be advertised without prior registration under the Securities Act), or (ii) made privately in the manner described above shall be deemed to involve a "public sale" under the UCC, notwithstanding that such sale may not constitute a "public offering" under the Securities Act, and the Collateral Agent may, in such event, bid for the purchase of such Pledged Collateral.

(d) Retention of Pledged Collateral. To the extent permitted under applicable Law, in addition to the rights and remedies hereunder, upon the occurrence and continuance of an Event of Default, the Collateral Agent may, after providing the notices required by Sections 9-620 and 9-621 of the UCC or otherwise complying with the requirements of applicable Law of the relevant jurisdiction, accept or retain all or any portion of the Pledged Collateral in satisfaction of the Secured Obligations. Unless and until the Collateral Agent shall have provided such notices, however, the Collateral Agent shall not be deemed to have accepted or retained any Pledged Collateral in satisfaction of any Secured Obligations for any reason.

(e) Deficiency. In the event that the proceeds of any sale, collection or realization are insufficient to pay all amounts to which the Collateral Agent or the holders of the Secured Obligations are legally entitled, the Pledgors shall be jointly and severally liable for the deficiency (subject to Section 25 hereof), together with interest thereon at the Default Rate, together with the costs of collection and reasonable attorneys' fees and expenses. Any surplus remaining after the full payment and satisfaction of the Secured Obligations shall be returned to the Pledgors or to whomsoever a court of competent jurisdiction shall determine to be entitled thereto.

10. Rights of the Collateral Agent.

(a) Power of Attorney. In addition to other powers of attorney contained herein, each Pledgor hereby designates and appoints the Collateral Agent, on behalf of the holders of the Secured Obligations, and each of its designees or agents, as attorney-in-fact of such Pledgor, irrevocably and with power of substitution, with authority to take any or all of the following actions upon the occurrence and during the continuation of an Event of Default:

(i) to demand, collect, settle, compromise and adjust, and give discharges and releases concerning the Pledged Collateral, all as the Collateral Agent may reasonably deem appropriate;

(ii) to commence and prosecute any actions at any court for the purposes of collecting any of the Pledged Collateral and enforcing any other right in respect thereof;

(iii) to defend, settle or compromise any action brought and, in connection therewith, give such discharge or release as the Collateral Agent may reasonably deem appropriate;

(iv) to pay or discharge taxes, liens, security interests or other encumbrances levied or placed on or threatened against the Pledged Collateral;

(v) to direct any parties liable for any payment in connection with any of the Pledged Collateral to make payment of any and all monies due and to become due thereunder directly to the Collateral Agent or as the Collateral Agent shall direct;

(vi) to receive payment of and receipt for any and all monies, claims, and other amounts due and to become due at any time in respect of or arising out of any Pledged Collateral;

(vii) to sign and endorse any drafts, assignments, proxies, stock powers, verifications, notices and other documents relating to the Pledged Collateral;

(viii) to execute and deliver all assignments, conveyances, statements, financing statements, renewal financing statements, security and pledge agreements, affidavits, notices and other agreements, instruments and documents that the Collateral Agent may reasonably deem appropriate in order to perfect and maintain the security interests and liens granted in this Pledge Agreement and in order to fully consummate all of the transactions contemplated therein;

(ix) to exchange any of the Pledged Collateral or other property upon any merger, consolidation, reorganization, recapitalization or other readjustment of the issuer thereof and, in connection therewith, deposit any of the Pledged Collateral with any committee, depository, transfer agent, registrar or other designated agency upon such terms as the Collateral Agent may reasonably deem appropriate;

(x) to vote for a shareholder resolution, or to sign an instrument in writing, sanctioning the transfer of any or all of the Pledged Collateral into the name of the Collateral Agent or one or more of the holders of the Secured Obligations or into the name of any transferee to whom the Pledged Collateral or any part thereof may be sold pursuant to <u>Section 9</u> hereof; and

(xi) to do and perform all such other acts and things as the Collateral Agent may reasonably deem appropriate or convenient in connection with the Pledged Collateral.

This power of attorney is a power coupled with an interest and shall be irrevocable for so long as any of the Secured Obligations shall remain outstanding and until all of the commitments relating thereto shall have been terminated. The Collateral Agent shall be under no duty to exercise or withhold the exercise of any of the rights, powers, privileges and options expressly or implicitly granted to the Collateral Agent in this Pledge Agreement, and shall not be liable for any failure to do so or any delay in doing so. The Collateral Agent shall not be liable for any act or omission or for any error of judgment or any mistake of fact or Law in its individual capacity or its capacity as attorney-in-fact except acts or omissions resulting from its gross negligence or willful misconduct. This power of attorney is conferred on the Collateral Agent solely to protect, preserve and realize upon its security interest in the Pledged Collateral.

(b) Assignment by the Collateral Agent. The Collateral Agent may assign the Secured Obligations and any portion thereof and/or the Pledged Collateral and any portion thereof to a successor collateral agent appointed pursuant to Section 10.06 of the Credit Agreement, and the assignee shall be entitled to all of the rights and remedies of the Collateral Agent under this Pledge Agreement in relation thereto.

(c) The Collateral Agent's Duty of Care. Other than the exercise of reasonable care to assure the safe custody of the Pledged Collateral while being held by the Collateral Agent hereunder, the Collateral Agent shall have no duty or liability to preserve rights pertaining thereto, it being understood and agreed that the Pledgors shall be responsible for preservation of all rights in the Pledged Collateral, and the Collateral Agent shall be relieved of all responsibility for the Pledged Collateral upon surrendering it or tendering the surrender of it to the Pledgors. The Collateral Agent shall be deemed to have exercised reasonable care in the custody and preservation of the Pledged Collateral in its possession if such Pledged Collateral is accorded treatment substantially equal to that which the Collateral Agent accords its own property, which shall be no less than the treatment employed by a reasonable and prudent agent in the industry, it being understood that the Collateral Agent shall not have responsibility for (i) ascertaining or taking action with respect to calls, conversions, exchanges, maturities, tenders or other matters relating to any Pledged Collateral, whether or not the Collateral Agent has or is deemed to have knowledge of such matters, or (ii) taking any necessary steps to preserve rights against any parties with respect to any of the Pledged Collateral.

(d) Voting Rights in Respect of the Pledged Collateral.

(i) So long as no Event of Default shall have occurred and be continuing, to the extent permitted by Law, each Pledgor may exercise any and all voting and other consensual rights pertaining to the Pledged Collateral of such Pledgor or any part thereof for any purpose not inconsistent with the terms of this Pledge Agreement or the Credit Agreement; and

(ii) Upon the occurrence and during the continuance of an Event of Default and notice from the Collateral Agent to the applicable Pledgor that the Collateral Agent intends to exercise its rights pursuant to this paragraph (ii), all rights of a Pledgor to exercise the voting and other consensual rights that it would otherwise be entitled to exercise pursuant to paragraph (i) of this subsection shall cease and all such rights shall thereupon become vested in the Collateral Agent, which shall then have the sole right to exercise such voting and other consensual rights.

(e) Dividend Rights in Respect of the Pledged Collateral.

(i) So long as no Event of Default shall have occurred and be continuing and subject to Section 4(b) hereof, each Pledgor may receive and retain any and all dividends (other than stock dividends and other dividends constituting Pledged Collateral addressed hereinabove) or interest paid in respect of the Pledged Collateral to the extent they are allowed under the Credit Agreement.

(ii) Upon the occurrence and during the continuance of an Event of Default and notice from the Collateral Agent to the applicable Pledgor that the Collateral Agent intends to exercise its rights pursuant to this paragraph (e):

(A) all rights of a Pledgor to receive the dividends and interest payments that it would otherwise be authorized to receive and retain pursuant to paragraph (i) of this subsection shall cease and all such rights shall thereupon be vested in the Collateral Agent, which shall then have the sole right to receive and hold as Pledged Collateral such dividends and interest payments; and

(B) all dividends and interest payments that are received by a Pledgor contrary to the provisions of paragraph (A) of this subsection shall be received in trust for the benefit of the Collateral Agent, shall be segregated from other property or funds of such Pledgor, and shall be forthwith paid over to the Collateral Agent as Pledged Collateral in the exact form received, to be held by the Collateral Agent as Pledged Collateral and as further collateral security for the Secured Obligations.

(f) Release of Pledged Collateral. The Collateral Agent may release any of the Pledged Collateral from this Pledge Agreement or may substitute any of the Pledged Collateral for other Pledged Collateral without altering, varying or diminishing in any way the force, effect, lien, pledge or security interest of this Pledge Agreement as to any Pledged Collateral not expressly released or substituted, and this Pledge Agreement shall continue as a first priority lien on all Pledged Collateral not expressly released or substituted.

11. Rights of Required Lenders. All rights of the Collateral Agent hereunder, if not exercised by the Collateral Agent, may be exercised by the Required Lenders.

12. Application of Proceeds. Upon the occurrence and during the continuation of an Event of Default, any payments in respect of the Secured Obligations and any proceeds of the Pledged Collateral, when received by the Collateral Agent or any of the holders of the Secured Obligations in cash or its equivalent, will be applied in reduction of the Secured Obligations in the order set forth in Section 9.03 of the Credit Agreement as though the word "Obligations" therein were deleted and replaced with the phrase "Secured Obligations," and each Pledgor irrevocably waives the right to direct the application of such payments and proceeds and acknowledges and agrees that the Collateral Agent shall have the continuing and exclusive right to apply and reapply any and all such payments and proceeds in the Collateral Agent's sole discretion, notwithstanding any entry to the contrary upon any of its books and records.

13. Costs of Counsel. At all times hereafter, whether or not upon the occurrence of an Event of Default, the Pledgors agree to promptly pay upon demand any and all reasonable costs and expenses (including reasonable attorneys' fees and expenses) of the Collateral Agent and the holders of the Secured Obligations (a) as required under Section 11.04 of the Credit Agreement and (b) as necessary to protect the Pledged Collateral or to exercise any rights or remedies under this Pledge Agreement or with respect to any of the Pledged Collateral. All of the foregoing costs and expenses shall constitute Secured Obligations hereunder.

14. Continuing Agreement.

(a) This Pledge Agreement shall be a continuing agreement in every respect and shall remain in full force and effect so long as any of the Secured Obligations remains outstanding (other than contingent indemnity obligations not yet due and payable) and until all of the commitments relating thereto have been terminated. Upon such payment and termination, this Pledge Agreement shall be automatically terminated and the Collateral Agent shall, upon the request and at the expense of the Pledgors, forthwith release all of its liens and security interests hereunder and shall execute and deliver all UCC termination statements and/or other documents reasonably requested by the Pledgors evidencing such termination. Notwithstanding the foregoing, all indemnities provided hereunder shall survive termination of this Pledge Agreement.

(b) This Pledge Agreement shall continue to be effective or be automatically reinstated, as the case may be, if at any time payment, in whole or in part, of any of the Secured Obligations is rescinded or must otherwise be restored or returned by the Collateral Agent or any holder of the Secured Obligations as a preference, fraudulent conveyance or otherwise under any bankruptcy, insolvency or similar Law, all as though such payment had not been made; provided that in the event payment of all or any part of the Secured Obligations is rescinded or must be restored or returned, all reasonable costs and expenses (including reasonable attorneys' fees and expenses) incurred by the Collateral Agent or any holder of the Secured Obligations in defending and enforcing such reinstatement shall be deemed to be included as a part of the Secured Obligations.

15. Amendments and Waivers. This Pledge Agreement and the provisions hereof may not be amended, waived, modified, changed, discharged or terminated except as set forth in Section 11.01 of the Credit Agreement; provided that any update or revision to Schedule 2(a) hereof shall not constitute an amendment for purposes of this Section 15 or Section 11.01 of the Credit Agreement.

16. Successors in Interest. This Pledge Agreement shall create a continuing security interest in the Collateral and shall be binding upon each Pledgor, its successors and assigns, and shall inure, together with the rights and remedies of the Collateral Agent and the holders of the Secured Obligations hereunder, to the benefit of the Collateral Agent and the holders of the Secured Obligations and their successors and permitted assigns; provided, however, that none of the Pledgors may assign its rights or delegate its duties hereunder without the prior written consent of the requisite Lenders under the Credit Agreement.

17. Notices. All notices required or permitted to be given under this Pledge Agreement shall be given as provided in Section 11.02 of the Credit Agreement.

18. Counterparts. This Pledge Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be an original, but all of which shall constitute one and the same instrument. It shall not be necessary in making proof of this Pledge Agreement to produce or account for more than one such counterpart.

19. Headings. The headings of the sections and subsections hereof are provided for convenience only and shall not in any way affect the meaning or construction of any provision of this Pledge Agreement.

20. Governing Law; Jurisdiction; Waiver of Right to Trial by Jury; Etc.

(a) THIS PLEDGE AGREEMENT AND THE OTHER LOAN DOCUMENTS AND ANY CLAIMS, CONTROVERSY, DISPUTE OR CAUSE OF ACTION (WHETHER IN CONTRACT OR TORT OR OTHERWISE) BASED UPON, ARISING OUT OF OR RELATING TO THIS PLEDGE AGREEMENT OR ANY OTHER LOAN DOCUMENT (EXCEPT, AS TO ANY OTHER LOAN DOCUMENT, AS EXPRESSLY SET FORTH THEREIN) AND THE TRANSACTIONS CONTEMPLATED HEREBY AND THEREBY SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK APPLICABLE TO AGREEMENTS MADE AND TO BE PERFORMED ENTIRELY WITHIN SUCH STATE; PROVIDED THAT THE COLLATERAL AGENT SHALL RETAIN ALL RIGHTS ARISING UNDER FEDERAL LAW.

(b) EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY AGREES THAT IT WILL NOT COMMENCE ANY ACTION, LITIGATION OR PROCEEDING OF ANY KIND OR DESCRIPTION, WHETHER IN LAW OR EQUITY, WHETHER IN CONTRACT OR IN TORT OR OTHERWISE, AGAINST THE COLLATERAL AGENT, OR ANY RELATED PARTY OF THE FOREGOING IN ANY WAY RELATING TO THIS PLEDGE AGREEMENT OR ANY OTHER LOAN DOCUMENT OR THE TRANSACTIONS RELATING HERETO OR THERETO, IN ANY FORUM OTHER THAN THE COURTS OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY AND OF THE UNITED STATES DISTRICT COURT OF THE SOUTHERN DISTRICT OF NEW YORK, AND ANY APPELLATE COURT FROM ANY THEREOF, AND EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY SUBMITS TO THE JURISDICTION OF SUCH COURTS AND AGREES THAT ALL CLAIMS IN RESPECT OF ANY SUCH ACTION, LITIGATION OR PROCEEDING MAY BE HEARD AND DETERMINED IN SUCH NEW YORK STATE COURT OR, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, IN SUCH FEDERAL COURT. EACH OF THE PARTIES HERETO AGREES THAT A FINAL JUDGMENT IN ANY SUCH ACTION, LITIGATION OR PROCEEDING SHALL BE CONCLUSIVE AND MAY BE ENFORCED IN OTHER JURISDICTIONS BY SUIT ON THE JUDGMENT OR IN ANY OTHER MANNER PROVIDED BY LAW. NOTHING IN THIS PLEDGE AGREEMENT OR IN ANY OTHER LOAN DOCUMENT SHALL AFFECT ANY RIGHT THAT THE COLLATERAL AGENT MAY OTHERWISE HAVE TO BRING ANY LEGAL ACTION OR PROCEEDING RELATING TO THIS PLEDGE AGREEMENT OR ANY OTHER LOAN DOCUMENT AGAINST THE BORROWER, OR ANY OTHER LOAN PARTY OR THEIR PROPERTIES IN THE COURTS OF ANY JURISDICTION.

(c) EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY OBJECTION THAT IT MAY NOW OR HEREAFTER HAVE TO THE LAYING OF VENUE OF ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO THIS PLEDGE AGREEMENT OR ANY OTHER LOAN DOCUMENT IN ANY COURT REFERRED TO IN PARAGRAPH (B) OF THIS SECTION. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE DEFENSE OF AN INCONVENIENT FORUM TO THE MAINTENANCE OF SUCH ACTION OR PROCEEDING IN ANY SUCH COURT.

(d) EACH OF THE PARTIES HERETO IRREVOCABLY CONSENTS TO SERVICE OF PROCESS IN THE MANNER PROVIDED FOR NOTICES IN SECTION 11.02 OF THE CREDIT AGREEMENT. NOTHING IN THIS PLEDGE AGREEMENT WILL AFFECT THE RIGHT OF ANY PARTY HERETO TO SERVE PROCESS IN ANY OTHER MANNER PERMITTED BY APPLICABLE LAW.

(e) EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS PLEDGE AGREEMENT OR ANY OTHER LOAN DOCUMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY OR THEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY). EACH PARTY HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PERSON HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PERSON WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS PLEDGE AGREEMENT AND THE OTHER LOAN DOCUMENTS BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION.

21. Severability. If any provision of this Pledge Agreement or any related document is held to be illegal, invalid or unenforceable, (a) the legality, validity and enforceability of the remaining provisions of this Pledge Agreement and any other related document shall not be affected or impaired thereby and (b) the parties shall endeavor in good faith negotiations to replace the illegal, invalid or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the illegal, invalid or unenforceable provisions. The invalidity of a provision in a particular jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

22. Entirety. This Pledge Agreement, the other Loan Documents and the other documents relating to the Secured Obligations comprise the complete and integrated agreement of the parties on the subject matter hereof and thereof and supersedes all prior agreements, written or oral, on such subject matter. This Pledge Agreement was drafted with the joint participation of the respective parties thereto and shall be construed neither against nor in favor of any party, but rather in accordance with the fair meaning thereof.

23. Survival. All representations and warranties made hereunder or other document delivered pursuant hereto or thereto or in connection herewith or therewith shall survive the execution and delivery hereof and thereof. Such representations and warranties have been or will be relied upon by the Administrative Agent, the Collateral Agent, and each Lender, regardless of any investigation made by the Administrative Agent, the Collateral Agent or any Lender or on their behalf and notwithstanding that the Administrative Agent, the Collateral Agent or any Lender may have had notice or knowledge of any Default at the time of any Credit Extension, and shall continue in full force and effect as long as any Loan or any other Obligation hereunder shall remain unpaid or unsatisfied or any Letter of Credit shall remain outstanding.

24. Other Security. To the extent that any of the Secured Obligations are now or hereafter secured by property other than the Pledged Collateral (including real and other personal property owned by a Pledgor), or by a guarantee, endorsement or property of any other Person, then the Collateral Agent shall have the right to proceed against such other property, guarantee or endorsement upon the occurrence of any Event of Default, and the Collateral Agent shall have the right, in its sole discretion, to determine which rights, security, liens, security interests or remedies the Collateral Agent shall at any time pursue, relinquish, subordinate, modify or take with respect thereto, without in any way modifying or affecting any of them or the Secured Obligations or any of the rights of the Collateral Agent or the holders of the Secured Obligations under this Pledge Agreement, under any of the other Loan Documents or under any other document relating to the Secured Obligations.

25. Joint and Several Obligations of Pledgors.

(a) Subject to subsection (c) of this Section 25, each of the Pledgors is accepting joint and several liability hereunder in consideration of the financial accommodation to be provided by the holders of the Secured Obligations, for the mutual benefit, directly and indirectly, of each of the Pledgors and in consideration of the undertakings of each of the Pledgors to accept joint and several liability for the obligations of each of them.

(b) Subject to subsection (c) of this Section 25, each of the Pledgors jointly and severally hereby irrevocably and unconditionally accepts joint and several liability with the other Pledgors with respect to the payment of all of the Secured Obligations arising under this Pledge Agreement, the other Loan Documents and any other documents relating to the Secured Obligations, it being the intention of the parties hereto that all the payment Secured Obligations shall be the joint and several obligations of each of the Pledgors without preferences or distinction among them.

(c) Notwithstanding any provision to the contrary contained herein, in any other of the Loan Documents or in any other documents relating to the Secured Obligations, the obligations of each Guarantor under the Credit Agreement and the other Loan Documents shall be limited to an aggregate amount equal to the largest amount that would not render such obligations subject to avoidance under Section 548 of the Bankruptcy Code of the United States or any other applicable Debtor Relief Law (including any comparable provisions of any applicable state law).

26. Joinder. At any time after the date of this Pledge Agreement, one or more additional Persons may become party hereto by executing and delivering to the Collateral Agent a Collateral Joinder Agreement. Immediately upon such execution and delivery of such Collateral Joinder Agreement (and without any further action), each such additional Person will become a party to this Pledge Agreement as a "Pledgor" and have all of the rights and obligations of a Pledgor hereunder and this Pledge Agreement and the schedules hereto shall be deemed amended by such Collateral Joinder Agreement.

27. Consent of Issuers of Pledged Shares. Each issuer of Pledged Shares party to this Pledge Agreement hereby acknowledges, consents and agrees to the grant of the security interests in such Pledged Shares by the applicable Pledgors pursuant to this Pledge Agreement, together with all rights accompanying such security interest as provided by this Pledge Agreement and applicable law, notwithstanding any anti-assignment provisions in any operating agreement, limited partnership agreement or similar organizational or governance documents of such issuer.

28. Replacement of Existing Pledge Agreement. As of the date hereof, the Existing Pledge Agreement shall be amended, restated and superseded and replaced in its entirety by this Pledge Agreement.

27. Termination and Release.

(a) This Pledge Agreement and all security interests granted hereby shall terminate when (i) all of the Obligations under the Loan Documents (excluding contingent obligations as to which no claim has been made) have been paid in full in cash, (ii) all Commitments have terminated or expired and (iii) the aggregate amount available to be drawn under Letters of Credit has been reduced to zero (including as a result of obtaining the consent of the applicable L/C Issuer through the provision of Cash Collateral or other arrangements satisfactory to the applicable L/C Issuer) and no L/C Issuer has any further obligation to issue or amend Letters of Credit under the Credit Agreement.

(b) All security interests granted hereby shall also terminate and be released at the time or times and in the manner set forth in Section 10.10 of the Credit Agreement.

(c) In connection with any termination or release pursuant to subsection (a) or (b) of this Section 29, the Collateral Agent shall execute and deliver to any Pledgor, at such Pledgor's expense, all documents that such Pledgor shall reasonably request to evidence such termination or release so long as the applicable Pledgor shall have provided the Collateral Agent such certifications or documents as the Collateral Agent shall reasonably request in order to demonstrate compliance with this Section 29. Any execution and delivery of documents by the Collateral Agent pursuant to this Section shall be without recourse to or warranty by the Collateral Agent.

[Signatures on Following Pages]

99060020002500 PLEDGOR S :

ARMSTRONG WORLD INDUSTRIES, INC., a Pennsylvania corporation

By: /s/ Brian L. MacNeal
Name: Brian L. MacNeal
Title: Senior Vice President and Chief Financial Officer

ARMSTRONG REALTY GROUP, INC., a Pennsylvania corporation

By: /s/ Stephen F. McNamara Name: Stephen F. McNamara Title: Vice President

ARMSTRONG VENTURES, INC., a Delaware corporation

By: /s/ Stephen F. McNamara Name: Stephen F. McNamara Title: Vice President

AWI LICENSING LLC,
a Delaware limited liability company

By: /s/ Stephen F. McNamara
Name: Stephen F. McNamara
Title: Vice President and Controller

Accepted and agreed to as of the date first above written.

COLLATERAL AGENT: BANK OF AMERICA, N.A., as Collateral Agent

By: /s/ Kimberly D. Williams Name: Kimberly D. Williams Title: Vice President

SCHEDULES

Schedule 2(a)	Pledged Stock

EXHIBITS

Exhibit 4(a)	Form of Stock Power

Schedule 2(a)

to

Amended and Restated Pledge Agreement
dated as of April 1, 2016
in favor of Bank of America, N.A., as
Collateral Agent
PLEDGED STOCK

Material Domestic Subsidiaries

Pledgor	Issuer	Number of Shares	Certificate Number	Percent Owned	Percent Pledged
Armstrong World Industries, Inc.	Armstrong Realty Group, Inc.	1,000	1	100%	100%
Armstrong World Industries, Inc.	Armstrong Ventures, Inc.	505	1	100%	100%
Armstrong World Industries, Inc.	AWI Licensing LLC	1,000	N/A	100%	100%

Material First-Tier Foreign Subsidiary

Pledgor	Issuer	Number of Shares	Certificate Number	Percent Owned	Percent Pledged
Armstrong World Industries, Inc.	Armstrong World Industries Canada Ltd.	500	C-1 (175), C-2 (325)	100%	65%

Excluded Subsidiaries

Pledgor	Issuer	Number of Shares	Certificate Number	Percent Owned	Percent Pledged
Armstrong World Industries, Inc.	Armstrong World Industries (Delaware) LLC	N/A	N/A	100%	65%

Exhibit 4(a)

to

Amended and Restated Pledge Agreement
dated as of April 1, 2016
in favor of Bank of America, N.A., as Collateral Agent

Form of Irrevocable Stock Power

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers to

the following shares of capital stock of **[ISSUER]**, a corporation: No. of Shares Certificate No.

and irrevocably appoints its agent and attorney-in-fact to

transfer all or any part of such capital stock and to take all necessary and appropriate action to effect any such transfer. The agent and attorney-in-fact may substitute and appoint one or more persons to act for him. The effectiveness of a transfer pursuant to this stock power shall be subject to any and all transfer restrictions referenced on the face of the certificates evidencing such interest or in the certificate of incorporation or bylaws of the subject corporation, to the extent they may from time to time exist.

[HOLDER]

By:
Name:
Title:

Exhibit 10.4

AMENDED AND RESTATED CANADIAN PLEDGE AGREEMENT

THIS AMENDED AND RESTATED CANADIAN PLEDGE AGREEMENT (this "Pledge Agreement"), dated as of April 1, 2016, is by and among ARMSTRONG WORLD INDUSTRIES, INC., a Pennsylvania corporation (the "Pledgor"), and BANK OF AMERICA, N.A., as collateral agent (in such capacity, the "Collateral Agent") for the holders of the Secured Obligations referenced below.

WITNESSETH

WHEREAS, revolving credit and term loan facilities were established in favour of the Pledgor pursuant to the terms of that certain amended and restated credit agreement dated as of March 15, 2013 (as amended and modified prior to the Closing Date, the "Existing Credit Agreement") among the Pledgor, Armstrong Wood Products, Inc., a Delaware corporation, certain of their respective Subsidiaries, as guarantors thereunder, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent for the lenders thereunder;

WHEREAS, in connection with the Existing Credit Agreement, the Pledgor entered into that certain Amended and Restated Canadian Pledge Agreement dated as of March 15, 2013 (the "Existing Pledge Agreement");

WHEREAS, the Pledgor has requested certain modifications to the revolving credit and term loan facilities under the Existing Credit Agreement;

WHEREAS, the Lenders have agreed to the requested modifications on the terms and conditions provided in that certain Amended and Restated Credit Agreement, dated as of the date hereof (as amended and modified, the "Credit Agreement"), among the Pledgor, certain of its Subsidiaries, as guarantors thereunder, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent for the lenders thereunder; and

WHEREAS, this Pledge Agreement is required under the terms of the Credit Agreement, and is given in amendment to, restatement of and substitution for the Existing Pledge Agreement provided in connection with the Existing Credit Agreement.

NOW, THEREFORE, in consideration of these premises and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

1. Definitions.

(a) Capitalized terms used and not otherwise defined herein shall have the meanings ascribed to such terms in the definitions in Section 1.01 of the Credit Agreement provided however that for the purposes hereof, any references to the "Uniform Commercial Code" or "UCC" in such definitions shall and shall be deemed to mean "the UCC, the PPSA or the STA, as applicable". In addition, the following terms which are defined, as applicable, in (i) the UCC; (ii) the PPSA; or (iii) the STA are used as defined therein: Accession, Financial Asset, Investment Property, Proceeds and Security. For greater certainty, where any such term is defined in more than one of the UCC, PPSA or STA (each, an "Applicable Statute"), its meaning for the purposes of any provision of this Agreement where such term is used shall be the meaning ascribed to such term in the Applicable Statute that applies to such provision.

(b) As used herein, the following terms shall have the meanings set forth below:

"Collateral Agent" has the meaning provided in the introductory paragraph hereof, together with its successors and assigns.

"Credit Agreement" has the meaning provided in the recitals hereof.

"Event of Default" has the meaning provided in Section 8 hereof.

"Existing Credit Agreement" has the meaning provided in the recitals hereof.

"Existing Pledge Agreement" has the meaning provided in the recitals hereof.

"Pledge Agreement" has the meaning provided in the introductory paragraph hereof, as amended and modified.

"Pledged Collateral" has the meaning provided in Section 2 hereof.

"Pledged Shares" has the meaning provided in Section 2(a) hereof.

"Pledgor" has the meaning provided in the introductory paragraph hereof.

"PPSA" means the Personal Property Security Act as in force from time to time in the relevant province or territory of Canada.

"Secured Obligations" means, without duplication, (a) all Obligations and (b) all costs and expenses incurred in connection with enforcement and collection of the Secured Obligations, including reasonable legal fees and expenses.

"STA" means the Securities Transfer Act as in force from time to time in the relevant province or territory of Canada.

"UCC" means the Uniform Commercial Code as in effect in the state of New York from time to time.

2. Pledge and Grant of Security Interest. To secure the prompt payment and performance in full when due, whether by lapse of time, acceleration, mandatory prepayment or otherwise, of the Secured Obligations, the Pledgor hereby grants, pledges and assigns to the Collateral Agent, for the benefit of the holders of the Secured Obligations, a continuing security interest in any and all right, title and interest of the Pledgor in and to the following, whether now owned or existing or owned, acquired, or arising hereafter (collectively, the "Pledged Collateral"):

(a) Pledged Shares. Sixty-five percent (65%) (or, if less, the full amount owned by the Pledgor) of the issued and outstanding voting Capital Stock (or 100% of the non-voting Capital Stock) owned by the Pledgor of each Material First-Tier Foreign Subsidiary and each Excluded Subsidiary formed or existing under the laws of Canada, or any province or territory thereof, set forth on Schedule 2(a) attached hereto, in each case together with the certificates (or other agreements or instruments), if any, representing such Capital Stock, and all options and other rights, contractual or otherwise, with respect thereto (collectively, together with the Capital Stock described in Section 2(b) and 2(c) below, the "Pledged Shares"), including the following:

(A) all shares, securities, membership interests or other equity interests representing a dividend on any of the Pledged Shares, or representing a distribution or return of capital upon or in respect of the Pledged Shares, or resulting from a stock split, revision, reclassification or other exchange therefor, and any subscriptions, warrants, rights or options issued to the holder of, or otherwise in respect of, the Pledged Shares; and

(B) without affecting the obligations of the Pledgor under any provision prohibiting such action hereunder or under the Credit Agreement, in the event of any consolidation or merger involving the issuer of any Pledged Shares and in which such issuer is not the surviving entity, all Capital Stock of the successor entity formed by or resulting from such consolidation or merger.

(b) Additional Shares. Sixty-five percent (65%) (or, if less, the full amount owned by the Pledgor) of the issued and outstanding voting Capital Stock (or 100% of the non-voting Capital Stock) owned by the Pledgor of any Person that hereafter becomes a Material First-Tier Foreign Subsidiary or an Excluded Subsidiary, formed or existing under the laws of Canada, or any province or territory thereof, including the certificates (or other agreements or instruments) representing such Capital Stock.

(c) Proceeds. All Proceeds of any and all of the foregoing.

Without limiting the generality of the foregoing, it is hereby specifically understood and agreed that the Pledgor may from time to time hereafter deliver additional Capital Stock to the Collateral Agent as collateral security for the Secured Obligations. Upon delivery to the Collateral Agent, such additional Capital Stock shall be deemed to be part of the Pledged Collateral of the Pledgor and shall be subject to the terms of this Pledge Agreement whether or not Schedule 2(a) is amended to refer to such additional Capital Stock. Notwithstanding anything to the contrary contained herein, the security interests granted under this Pledge Agreement shall not extend to, and the "Pledged Collateral" shall not include, any Excluded Property.

3. Security for Secured Obligations. The security interest created hereby in the Pledged Collateral of the Pledgor constitutes continuing collateral security for all of the Secured Obligations.

4. Delivery of the Pledged Collateral. The Pledgor hereby agrees that:

(a) To the extent that Pledged Collateral is certificated, the Pledgor shall (subject to the provisions of Section 7.14 of the Credit Agreement) deliver to the Collateral Agent (i) simultaneously with or prior to the execution and delivery of this Pledge Agreement, all certificates representing the Pledged Shares of the Pledgor and (ii) promptly upon the receipt thereof by or on behalf of the Pledgor, all other certificates and instruments constituting Pledged Collateral of the Pledgor. The Collateral Agent hereby acknowledges that the certificate representing the Pledged Shares of the Pledgor as of the date hereof was previously delivered to its counsel in connection with the Existing Pledge Agreement. Prior to delivery to the Collateral Agent, all such certificates and instruments constituting Pledged Collateral of the Pledgor shall be held in trust by the Pledgor for the benefit of the Collateral Agent pursuant hereto. All such certificates shall be delivered in suitable form for transfer by delivery or shall be accompanied by duly executed instruments of transfer or assignment in blank, substantially in the form provided in Exhibit 4(a) attached hereto.

(b) Additional Securities. If the Pledgor shall receive by virtue of its being or having been the owner of any Pledged Collateral, any (i) certificate, including any certificate representing a dividend or distribution in connection with any increase or reduction of capital, reclassification, merger, consolidation, sale of assets, combination of shares or other equity interests, stock splits, spin-off or split-off, promissory notes or other instruments; (ii) option or right, whether as an addition to, substitution for, or an exchange for, any Pledged Collateral or otherwise; (iii) dividends payable in securities; or (iv) distributions of securities in connection with a partial or total liquidation, dissolution or reduction of capital, capital surplus or paid-in surplus, then the Pledgor shall receive such certificate, instrument, option, right or distribution in trust for the benefit of the Collateral Agent, shall segregate it from the Pledgor's other property and shall deliver it forthwith to the Collateral Agent in the exact form received together with any necessary endorsement and/or appropriate stock power duly executed in blank, substantially in the form provided in Exhibit 4(a), to be held by the Collateral Agent as Pledged Collateral and as further collateral security for the Secured Obligations.

(c) Financing Statements. To the extent required by applicable law, the Pledgor authorizes the Collateral Agent to file one or more financing statements disclosing the Collateral Agent's security interest in the Pledged Collateral. The Pledgor shall execute and deliver to the Collateral Agent such other applicable financing statements, other filings and other documents as may be reasonably requested by the Collateral Agent in order to perfect and protect the security interest created hereby in the Pledged Collateral of the Pledgor.

5. Representations and Warranties. The Pledgor hereby represents and warrants to the Collateral Agent, for the benefit of the holders of the Secured Obligations, that so long as any of the Secured Obligations remains outstanding and until all of the commitments relating thereto have been terminated:

(a) Authorization of Pledged Shares. The Pledged Shares have been duly authorized and validly issued, are fully paid and non-assessable and are not subject to the pre-emptive rights of any Person.

(b) Title. The Pledgor has good and indefeasible title to the Pledged Collateral of the Pledgor and is the legal and beneficial owner of such Pledged Collateral free and clear of any Lien, other than Permitted Liens. With respect to the Pledged Shares of the Pledgor, there exists no "adverse claim" within the meaning of (i) Section 8-102 of the UCC or (ii) any corresponding provision of the PPSA.

(c) Exercising of Rights. The exercise by the Collateral Agent of its rights and remedies hereunder will not violate any Law or governmental regulation or any material contractual restriction binding on or affecting the Pledgor or any of its property.

(d) Pledgor's Authority. No authorization, approval or action by, and no notice or filing with, any Governmental Authority or the issuer of any Pledged Shares, its directors or shareholders is required either (i) for the pledge made by the Pledgor or for the granting of the security interest by the Pledgor pursuant to this Pledge Agreement (except as have been already obtained) or (ii) for the exercise by the Collateral Agent or the holders of the Secured Obligations of their rights and remedies hereunder (except as may be required by Laws affecting the offering and sale of securities), except for such authorization, approvals or actions as have already been obtained or performed and are in full force and effect. Without limiting the generality of the foregoing, there are no restrictions in any of the Organization Documents of the issuer of the Pledged Shares which would limit or restrict the grant of security interest hereunder or the exercise of the rights and remedies conferred hereby except such restrictions as have already been complied with.

(e) Security Interest/Priority. This Pledge Agreement creates a valid security interest in favour of the Collateral Agent for the benefit of the holders of the Secured Obligations, in the Pledged Collateral. The taking of possession by the Collateral Agent or its duly authorized agent of the certificates representing the Pledged Shares, or the acknowledgement by such agent that it holds such certificates for the Agent, together with duly executed instruments of transfer or assignment in blank, substantially in the form provided in Schedule 4(a) attached hereto, and all other certificates and instruments constituting Pledged Collateral, will perfect and establish the first priority of the Collateral Agent's security interest in the Pledged Shares, and such possession will establish the first priority of such security interest in all other Pledged Collateral represented by such Pledged Shares and instruments securing the Secured Obligations. Except as set forth in this Section 5(e), no action is necessary at this time to perfect or otherwise protect such security interest.

(f) Partnership and Membership Interests. As of the date hereof, none of the Pledged Shares consist of partnership or limited liability company interests. Except as previously disclosed to the Collateral Agent, none of the Pledged Shares consisting of partnership or limited liability company interests (i) is dealt in or traded on a securities exchange or in a securities market, (ii) by its terms expressly provides that it is a security governed by Article 8 of the UCC or any corresponding provisions of the STA, (iii) is an investment company security, (iv) is held in a securities account or (v) constitutes a Security or a Financial Asset.

(g) No Other Interests. As of the Closing Date, pursuant to the terms of the Credit Agreement, the Pledgor is not required to pledge any Capital Stock in any Subsidiary other than as set forth on Schedule 2(a) attached hereto or as pledged pursuant to any other pledge agreement by the Pledgor to the Collateral Agent to secure the Secured Obligations.

(h) None of the issuers of the Pledged Shares are unlimited liability companies and neither the Collateral Agent nor any other person shall be liable for the obligations of any issuer of the Pledged Shares as a result of the grant of security interest hereunder or the exercise of the rights and remedies conferred hereby.

6. Covenants. The Pledgor hereby covenants, that so long as any of the Secured Obligations remains outstanding and until all of the commitments relating thereto have been terminated, the Pledgor shall:

(a) Books and Records. Upon the reasonable request of the Collateral Agent, mark its books and records (and shall cause the issuer of the Pledged Shares of the Pledgor to mark its books and records) to reflect the security interest granted to the Collateral Agent, for the benefit of the holders of the Secured Obligations, pursuant to this Pledge Agreement.

(b) Defense of Title. Warrant and defend title to and ownership of the Pledged Collateral of the Pledgor at its own expense against the claims and demands of all other parties claiming an interest therein, keep the Pledged Collateral free from all Liens, except for Permitted Liens, and not sell, exchange, transfer, assign, lease or otherwise dispose of Pledged Collateral of the Pledgor or any interest therein, except as permitted under the Credit Agreement and the other Loan Documents.

(c) Further Assurances. Promptly execute and deliver at its expense all further instruments and documents and take all further action that may be necessary and desirable or that the Collateral Agent may reasonably request in order to (i) perfect and protect the security interest created hereby in the Pledged Collateral of the Pledgor (including any and all action necessary to satisfy the Collateral Agent that the Collateral Agent has obtained a first priority perfected security interest in all Pledged Collateral); (ii) enable the Collateral Agent to exercise and enforce its rights and remedies hereunder in respect of the Pledged Collateral of the Pledgor; and (iii) otherwise effect the purposes of this Pledge Agreement.

(d) Amendments. Not make or consent to any amendment or other modification or waiver with respect to any of the Pledged Collateral of the Pledgor or enter into any agreement or allow to exist any restriction with respect to any of the Pledged Collateral of the Pledgor other than pursuant hereto or as may be permitted under the Credit Agreement.

(e) Compliance with Securities Laws. File all reports and other information now or hereafter required to be filed by the Pledgor with the SEC, the Ontario Securities Commission, and any other state, provincial, territorial, federal or foreign agency in connection with the ownership of the Pledged Collateral of the Pledgor.

(f) Issuance or Acquisition of Capital Stock Consisting of an Interest in a Partnership or a Limited Liability Company. Not, without executing and delivering, or causing to be executed and delivered, to the Collateral Agent such agreements, documents and instruments as the Collateral Agent may require, issue or acquire any Capital Stock of a Subsidiary consisting of an interest in a partnership or a limited liability company that (i) is dealt in or traded on a securities exchange or in a securities market, (ii) by its terms expressly provides that it is a security governed by Article 8 of the UCC or the STA, (iii) is an investment company security, (iv) is held in a securities account or (v) constitutes a Security or a Financial Asset.

7. Advances by Holders of the Secured Obligations. On failure of the Pledgor to perform any of the covenants and agreements contained herein and upon prior written notice to the Pledgor, the Collateral Agent may, at its sole option and in its sole discretion, perform the same and in so doing may expend such sums as the Collateral Agent may reasonably deem advisable in the performance thereof, including the payment of any insurance premiums, the payment of any taxes, a payment to obtain a release of a Lien or potential Lien, expenditures made in defending against any adverse claim and all other expenditures that the Collateral Agent may make for the protection of the security hereof or may be compelled to make by operation of Law. All such sums and amounts so expended shall be repayable by the Pledgor promptly upon timely notice thereof and demand therefor, shall constitute additional Secured Obligations and shall, subject to Section 2.08 of the Credit Agreement, bear interest from the date said amounts are expended at the rate then applicable to Revolving Loans that are Base Rate Loans. No such performance of any covenant or agreement by the Collateral Agent on behalf of the Pledgor, and no such advance or expenditure therefor, shall relieve the Pledgor of any default under the terms of this Pledge Agreement, the other Loan Documents or any other documents relating to the Secured Obligations. The Collateral Agent may make any payment hereby authorized in accordance with any bill, statement or estimate procured from the appropriate public office or holder of the claim to be discharged without inquiry into the accuracy of such bill, statement or estimate or into the validity of any tax assessment, sale, forfeiture, tax lien, title or claim except to the extent such payment is being contested in good faith by the Pledgor in appropriate proceedings and against which adequate reserves are being maintained in accordance with GAAP.

8. Events of Default. The occurrence of an event that would constitute an Event of Default under the Credit Agreement shall be an Event of Default thereunder (an "Event of Default").

9. Remedies.

(a) General Remedies. Upon the occurrence of an Event of Default and during the continuation thereof, the Collateral Agent and the holders of the Secured Obligations shall have, in addition to the rights and remedies provided herein, in the Loan Documents, in any other documents relating to the Secured Obligations, or by Law (including levy of attachment and garnishment), the rights and remedies of a secured party under the UCC or the PPSA, as the case may be, of the jurisdiction applicable to the enforcement of security interests in the affected Pledged Collateral.

(b) Sale of Pledged Collateral. Upon the occurrence of an Event of Default and during the continuation thereof, without limiting the generality of this Section 9 and without notice, the Collateral Agent may, in its sole discretion, sell or otherwise dispose of or realize upon the Pledged Collateral, or any part thereof, in one or more parcels, at public or private sale, at any exchange or broker's board or elsewhere, at such price or prices and on such other terms as the Collateral Agent may deem commercially reasonable, for cash, credit or for future delivery or otherwise in accordance with applicable Law. To the extent permitted by Law, any holder of the Secured Obligations may in such event, bid for the purchase of such securities. The Pledgor agrees that, to the extent notice of sale shall be required by Law and has not been waived by the Pledgor, any requirement of reasonable notice shall be met if notice, specifying the place of any public sale or the time after which any private sale is to be made, is personally served on or mailed, postage prepaid, to the Pledgor, in accordance with the notice provisions of Section 11.02 of the Credit Agreement at least ten (10) days before the time of such sale or such other notice as may be required by applicable Law. The Collateral Agent shall not be obligated to make any sale of Pledged Collateral of the Pledgor regardless of notice of sale having been given. The Collateral Agent may adjourn any public or private sale from time to time by announcement at the time and place fixed therefor, and such sale may, without further notice, be made at the time and place to which it was so adjourned.

(c) Private Sale. Upon the occurrence of an Event of Default and during the continuation thereof, the Pledgor recognizes that the Collateral Agent may deem it impractical to effect a public sale of all or any part of the Pledged Shares or any of the securities constituting Pledged Collateral and that the Collateral Agent may, therefore, determine to make one or more private sales of any such Pledged Collateral to a restricted group of purchasers who will be obligated to agree, among other things, to acquire such Pledged Collateral for their own account, for investment and not with a view to the distribution or resale thereof. The Pledgor hereby waives any claims against the Collateral Agent arising by reason that any such private sale shall not have been made in a commercially reasonable manner and agrees that the Collateral Agent shall have no obligation to delay sale of any such Pledged Collateral for the period of time necessary to permit the issuer of such Pledged Collateral to register such Pledged Collateral for public sale under the Securities Act of 1933, as amended (the "Securities Act") or qualify such Pledged Collateral for sale under the applicable Law as in force from time to time in the relevant province or territory of Canada. The Pledgor further acknowledges and agrees that any offer to sell such Pledged Collateral that has been (i) publicly advertised on a bona fide basis in a newspaper or other publication of general circulation in the financial community of New York, New York (to the extent that such offer may be advertised without prior registration under the Securities Act or the applicable Law as in force from time to time in the relevant province or territory of Canada), or (ii) made privately in the manner described above shall be deemed to involve a "public sale" under the UCC and the PPSA, as applicable, notwithstanding that such sale may not constitute a "public offering" under the Securities Act or the applicable Law as in force from time to time in the relevant province or territory of Canada, and the Collateral Agent may, in such event, bid for the purchase of such Pledged Collateral.

(d) Retention of Pledged Collateral. To the extent permitted under applicable Law, in addition to the rights and remedies hereunder, upon the occurrence and continuance of an Event of Default, the Collateral Agent may, after providing the notices required by Sections 9-620 and 9-621 of the UCC or Section 65 of the PPSA (Ontario) as applicable, or otherwise complying with the requirements of applicable Law of the relevant jurisdiction, accept or retain all or any portion of the Pledged Collateral in satisfaction of the Secured Obligations. Unless and until the Collateral Agent shall have provided such notices, however, the Collateral Agent shall not be deemed to have accepted or retained any Pledged Collateral in satisfaction of any Secured Obligations for any reason.

(e) Deficiency. In the event that the proceeds of any sale, collection or realization are insufficient to pay all amounts to which the Collateral Agent or the holders of the Secured Obligations are legally entitled, the Pledgor shall be liable for the deficiency, together with interest thereon at the Default Rate, together with the costs of collection and reasonable legal fees and expenses. Any surplus remaining after the full payment and satisfaction of the Secured Obligations shall be returned to the Pledgor or to whomsoever a court of competent jurisdiction shall determine to be entitled thereto.

10. Rights of the Collateral Agent.

(a) Power of Attorney. In addition to other powers of attorney contained herein, the Pledgor hereby designates and appoints the Collateral Agent, on behalf of the holders of the Secured Obligations, and each of its designees or agents, as attorney-in-fact of the Pledgor, irrevocably and with power of substitution, with authority to take any or all of the following actions upon the occurrence and during the continuation of an Event of Default:

(i) to demand, collect, settle, compromise and adjust, and give discharges and releases concerning the Pledged Collateral, all as the Collateral Agent may reasonably deem appropriate;

(ii) to commence and prosecute any actions at any court for the purposes of collecting any of the Pledged Collateral and enforcing any other right in respect thereof;

(iii) to defend, settle or compromise any action brought and, in connection therewith, give such discharge or release as the Collateral Agent may reasonably deem appropriate;

(iv) to pay or discharge taxes, liens, security interests or other encumbrances levied or placed on or threatened against the Pledged Collateral;

(v) to direct any parties liable for any payment in connection with any of the Pledged Collateral to make payment of any and all monies due and to become due thereunder directly to the Collateral Agent or as the Collateral Agent shall direct;

(vi) to receive payment of and receipt for any and all monies, claims, and other amounts due and to become due at any time in respect of or arising out of any Pledged Collateral;

(vii) to sign and endorse any drafts, assignments, proxies, stock powers, verifications, notices and other documents relating to the Pledged Collateral;

(viii) to execute and deliver all assignments, conveyances, statements, financing statements, renewal financing statements, security and pledge agreements, affidavits, notices and other agreements, instruments and documents that the Collateral Agent may reasonably deem appropriate in order to perfect and maintain the security interests and liens granted in this Pledge Agreement and in order to fully consummate all of the transactions contemplated therein;

(ix) to exchange any of the Pledged Collateral or other property upon any merger, consolidation, reorganization, recapitalization or other readjustment of the issuer thereof and, in connection therewith, deposit any of the Pledged Collateral with any committee, depositary, transfer agent, registrar or other designated agency upon such terms as the Collateral Agent may reasonably deem appropriate;

(x) to vote for a shareholder resolution, or to sign an instrument in writing, sanctioning the transfer of any or all of the Pledged Collateral into the name of the Collateral Agent or one or more of the holders of the Secured Obligations or into the name of any transferee to whom the Pledged Collateral or any part thereof may be sold pursuant to <u>Section 9 hereof</u>; and

(xi) to do and perform all such other acts and things as the Collateral Agent may reasonably deem appropriate or convenient in connection with the Pledged Collateral.

This power of attorney is a power coupled with an interest and shall be irrevocable for so long as any of the Secured Obligations shall remain outstanding and until all of the commitments relating thereto shall have been terminated. The Collateral Agent shall be under no duty to exercise or withhold the exercise of any of the rights, powers, privileges and options expressly or implicitly granted to the Collateral Agent in this Pledge Agreement, and shall not be liable for any failure to do so or any delay in doing so. The Collateral Agent shall not be liable for any act or omission or for any error of judgment or any mistake of fact or Law in its individual capacity or its capacity as attorney-in-fact except acts or omissions resulting from its gross negligence or wilful misconduct. This power of attorney is conferred on the Collateral Agent solely to protect, preserve and realize upon its security interest in the Pledged Collateral.

(b) <u>Assignment by the Collateral Agent</u>. The Collateral Agent may assign the Secured Obligations and any portion thereof and/or the Pledged Collateral and any portion thereof to a successor collateral agent appointed pursuant to Section 10.09 of the Credit Agreement, and the assignee shall be entitled to all of the rights and remedies of the Collateral Agent under this Pledge Agreement in relation thereto.

(c) <u>The Collateral Agent's Duty of Care</u>. Other than the exercise of reasonable care to assure the safe custody and preservation of the Pledged Collateral while being held by the Collateral Agent hereunder, the Collateral Agent shall have no duty or liability to preserve rights pertaining thereto, it being understood and agreed that the Pledgor shall be responsible for preservation of all rights in the Pledged Collateral, and the Collateral Agent shall be relieved of all responsibility for the Pledged Collateral upon surrendering it or tendering the surrender of it to the Pledgor. The Collateral Agent shall be deemed to have exercised reasonable care in the custody and preservation of the Pledged Collateral in its possession if such Pledged Collateral is accorded treatment substantially equal to that which the Collateral Agent accords its own property, which shall be no less than the treatment employed by a reasonable and prudent agent in the industry, it being understood that the Collateral Agent shall not have responsibility for (i) ascertaining or taking action with respect to calls, conversions, exchanges, maturities, tenders or other matters relating to any Pledged Collateral, whether or not the Collateral Agent has or is deemed to have knowledge of such matters, or (ii) taking any necessary steps to preserve rights against any parties with respect to any of the Pledged Collateral.

(d) Voting Rights in Respect of the Pledged Collateral.

(i) So long as no Event of Default shall have occurred and be continuing, to the extent permitted by Law, the Pledgor may exercise any and all voting and other consensual rights pertaining to the Pledged Collateral of the Pledgor or any part thereof for any purpose not inconsistent with the terms of this Pledge Agreement or the Credit Agreement; and

(ii) Upon the occurrence and during the continuance of an Event of Default and notice from the Collateral Agent to the Pledgor that the Collateral Agent intends to exercise its rights pursuant to this paragraph (ii), all rights of the Pledgor to exercise the voting and other consensual rights that it would otherwise be entitled to exercise pursuant to paragraph (i) of this subsection shall cease and all such rights shall thereupon become vested in the Collateral Agent, which shall then have the sole right to exercise such voting and other consensual rights.

(e) Dividend Rights in Respect of the Pledged Collateral.

(i) So long as no Event of Default shall have occurred and be continuing and subject to Section 4(b) hereof, the Pledgor may receive and retain any and all dividends (other than stock dividends and other dividends constituting Pledged Collateral addressed hereinabove) or interest paid in respect of the Pledged Collateral to the extent they are allowed under the Credit Agreement.

(ii) Upon the occurrence and during the continuance of an Event of Default and notice from the Collateral Agent to the Pledgor that the Collateral Agent intends to exercise its rights pursuant to this paragraph (e):

(A) all rights of the Pledgor to receive the dividends and interest payments that it would otherwise be authorized to receive and retain pursuant to paragraph (i) of this subsection shall cease and all such rights shall thereupon be vested in the Collateral Agent, which shall then have the sole right to receive and hold as Pledged Collateral such dividends and interest payments; and

(B) all dividends and interest payments that are received by the Pledgor contrary to the provisions of paragraph (A) of this subsection shall be received in trust for the benefit of the Collateral Agent, shall be segregated from other property or funds of the Pledgor, and shall be forthwith paid over to the Collateral Agent as Pledged Collateral in the exact form received, to be held by the Collateral Agent as Pledged Collateral and as further collateral security for the Secured Obligations.

(f) Release of Pledged Collateral. The Collateral Agent may release any of the Pledged Collateral from this Pledge Agreement or may substitute any of the Pledged Collateral for other Pledged Collateral without altering, varying or diminishing in any way the force, effect, lien, pledge or security interest of this Pledge Agreement as to any Pledged Collateral not expressly released or substituted, and this Pledge Agreement shall continue as a first priority lien on all Pledged Collateral not expressly released or substituted.

11. Rights of Required Lenders. All rights of the Collateral Agent hereunder, if not exercised by the Collateral Agent, may be exercised by the Required Lenders.

12. Application of Proceeds. Upon the occurrence and during the continuation of an Event of Default, any payments in respect of the Secured Obligations and any proceeds of the Pledged Collateral, when received by the Collateral Agent or any of the holders of the Secured Obligations in cash or its equivalent, will be applied in reduction of the Secured Obligations in the order set forth in Section 9.03 of the Credit Agreement as though the word "Obligations" therein were deleted and replaced with the phrase "Secured Obligations," and the Pledgor irrevocably waives the right to direct the application of such payments and proceeds and acknowledges and agrees that the Collateral Agent shall have the continuing and exclusive right to apply and reapply any and all such payments and proceeds in the Collateral Agent's sole discretion, notwithstanding any entry to the contrary upon any of its books and records.

13. Costs of Counsel. At all times hereafter, whether or not upon the occurrence of an Event of Default, the Pledgor agrees to promptly pay upon demand any and all reasonable costs and expenses (including reasonable legal fees and expenses) of the Collateral Agent and the holders of the Secured Obligations (a) as required under Section 11.04 of the Credit Agreement and (b) as necessary to protect the Pledged Collateral or to exercise any rights or remedies under this Pledge Agreement or with respect to any of the Pledged Collateral. All of the foregoing costs and expenses shall constitute Secured Obligations hereunder.

14. Continuing Agreement.

(a) This Pledge Agreement shall be a continuing agreement in every respect and shall remain in full force and effect so long as any of the Secured Obligations remains outstanding (other than contingent indemnity obligations not yet due and payable) and until all of the commitments relating thereto have been terminated. Upon such payment and termination, this Pledge Agreement shall be automatically terminated and the Collateral Agent shall, upon the request and at the expense of the Pledgor, forthwith release and discharge all of its liens and security interests hereunder and shall execute and deliver all UCC termination statements, PPSA discharges and/or other documents reasonably requested by the Pledgor evidencing such termination, release and discharge and shall re-deliver the certificates evidencing the Pledged Shares to the Pledgor or to such other Person as the Pledgor shall direct. Notwithstanding the foregoing, all indemnities provided hereunder shall survive termination of this Pledge Agreement.

(b) This Pledge Agreement shall continue to be effective or be automatically reinstated, as the case may be, if at any time payment, in whole or in part, of any of the Secured Obligations is rescinded or must otherwise be restored or returned by the Collateral Agent or any holder of the Secured Obligations as a preference, fraudulent conveyance or otherwise under any bankruptcy, insolvency or similar Law, all as though such payment had not been made; provided that in the event payment of all or any part of the Secured Obligations is rescinded or must be restored or returned, all reasonable costs and expenses (including reasonable legal fees and expenses) incurred by the Collateral Agent or any holder of the Secured Obligations in defending and enforcing such reinstatement shall be deemed to be included as a part of the Secured Obligations.

15. Amendments and Waivers. This Pledge Agreement and the provisions hereof may not be amended, waived, modified, changed, discharged or terminated except as set forth in Section 11.01 of the Credit Agreement; provided that any update or revision to Schedule 2(a) hereof shall not constitute an amendment for purposes of this Section 15 or Section 11.01 of the Credit Agreement.

16. Successors in Interest. This Pledge Agreement shall create a continuing security interest in the Collateral and shall be binding upon the Pledgor, its successors and assigns, and shall inure, together with the rights and remedies of the Collateral Agent and the holders of the Secured Obligations hereunder, to the benefit of the Collateral Agent and the holders of the Secured Obligations and their successors and permitted assigns; provided, however, that the Pledgor may not assign its rights or delegate its duties hereunder without the prior written consent of the requisite Lenders under the Credit Agreement.

17. Notices. All notices required or permitted to be given under this Pledge Agreement shall be given as provided in Section 11.02 of the Credit Agreement.

18. Counterparts. This Pledge Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be an original, but all of which shall constitute one and the same instrument. It shall not be necessary in making proof of this Pledge Agreement to produce or account for more than one such counterpart.

19. Headings. The headings of the sections and subsections hereof are provided for convenience only and shall not in any way affect the meaning or construction of any provision of this Pledge Agreement.

20. Governing Law; Jurisdiction; Waiver of Right to Trial by Jury; Etc.

(a) THIS PLEDGE AGREEMENT AND ANY CLAIMS, CONTROVERSY, DISPUTE OR CAUSE OF ACTION (WHETHER IN CONTRACT OR TORT OR OTHERWISE) BASED UPON, ARISING OUT OF OR RELATING TO THIS PLEDGE AGREEMENT AND THE TRANSACTIONS CONTEMPLATED HEREBY SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAWS OF THE PROVINCE OF ONTARIO AND THE FEDERAL LAWS OF CANADA APPLICABLE THEREIN.

(b) EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY AGREES THAT IT WILL NOT COMMENCE ANY ACTION, LITIGATION OR PROCEEDING OF ANY KIND OR DESCRIPTION, WHETHER IN LAW OR EQUITY, WHETHER IN CONTRACT OR IN TORT OR OTHERWISE, AGAINST THE COLLATERAL AGENT, OR ANY RELATED PARTY OF THE FOREGOING IN ANY WAY RELATING TO THIS PLEDGE AGREEMENT OR ANY OTHER LOAN DOCUMENT OR THE TRANSACTIONS RELATING THERETO, IN ANY FORUM OTHER THAN THE COURTS OF THE PROVINCE OF ONTARIO OR THE COURTS OF THE STATE OF NEW YORK SITTING IN NEW YORK COUNTY AND OF THE UNITED STATES

DISTRICT COURT OF THE SOUTHERN DISTRICT OF NEW YORK, AND ANY APPELLATE COURT FROM ANY THEREOF, AND EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY SUBMITS TO THE JURISDICTION OF SUCH COURTS AND AGREES THAT ALL CLAIMS IN RESPECT OF ANY SUCH ACTION, LITIGATION OR PROCEEDING MAY BE HEARD AND DETERMINED IN SUCH NEW YORK STATE COURT OR, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, IN SUCH FEDERAL COURT. EACH OF THE PARTIES HERETO AGREES THAT A FINAL JUDGMENT IN ANY SUCH ACTION, LITIGATION OR PROCEEDING SHALL BE CONCLUSIVE AND MAY BE ENFORCED IN OTHER JURISDICTIONS BY SUIT ON THE JUDGMENT OR IN ANY OTHER MANNER PROVIDED BY LAW. NOTHING IN THIS PLEDGE AGREEMENT OR IN ANY OTHER LOAN DOCUMENT SHALL AFFECT ANY RIGHT THAT THE COLLATERAL AGENT MAY OTHERWISE HAVE TO BRING ANY LEGAL ACTION OR PROCEEDING RELATING TO THIS PLEDGE AGREEMENT OR ANY OTHER LOAN DOCUMENT AGAINST THE BORROWER, OR ANY OTHER LOAN PARTY OR THEIR PROPERTIES IN THE COURTS OF ANY JURISDICTION.

(c) EACH OF THE PARTIES HERETO IRREVOCABLY AND UNCONDITIONALLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY OBJECTION THAT IT MAY NOW OR HEREAFTER HAVE TO THE LAYING OF VENUE OF ANY ACTION OR PROCEEDING ARISING OUT OF OR RELATING TO THIS PLEDGE AGREEMENT IN ANY COURT REFERRED TO IN PARAGRAPH (B) OF THIS SECTION. EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, THE DEFENSE OF AN INCONVENIENT FORUM TO THE MAINTENANCE OF SUCH ACTION OR PROCEEDING IN ANY SUCH COURT.

(d) EACH OF THE PARTIES HERETO IRREVOCABLY CONSENTS TO SERVICE OF PROCESS IN THE MANNER PROVIDED FOR NOTICES IN SECTION 11.02 OF THE CREDIT AGREEMENT. NOTHING IN THIS PLEDGE AGREEMENT WILL AFFECT THE RIGHT OF ANY PARTY HERETO TO SERVE PROCESS IN ANY OTHER MANNER PERMITTED BY APPLICABLE LAW.

(e) EACH OF THE PARTIES HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN ANY LEGAL PROCEEDING DIRECTLY OR INDIRECTLY ARISING OUT OF OR RELATING TO THIS PLEDGE AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY (WHETHER BASED ON CONTRACT, TORT OR ANY OTHER THEORY). EACH PARTY HERETO (A) CERTIFIES THAT NO REPRESENTATIVE, AGENT OR ATTORNEY OF ANY OTHER PERSON HAS REPRESENTED, EXPRESSLY OR OTHERWISE, THAT SUCH OTHER PERSON WOULD NOT, IN THE EVENT OF LITIGATION, SEEK TO ENFORCE THE FOREGOING WAIVER AND (B) ACKNOWLEDGES THAT IT AND THE OTHER PARTIES HERETO HAVE BEEN INDUCED TO ENTER INTO THIS PLEDGE AGREEMENT BY, AMONG OTHER THINGS, THE MUTUAL WAIVERS AND CERTIFICATIONS IN THIS SECTION.

21. Severability. If any provision of this Pledge Agreement or any related document is held to be illegal, invalid or unenforceable, (a) the legality, validity and enforceability of the remaining provisions of this Pledge Agreement and any other related document shall not be affected or impaired thereby and (b) the parties shall endeavor in good faith negotiations to replace the illegal, invalid or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the illegal, invalid or unenforceable provisions. The invalidity of a provision in a particular jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

22. Entirety. This Pledge Agreement, the other Loan Documents and the other documents relating to the Secured Obligations comprise the complete and integrated agreement of the parties on the subject matter hereof and thereof and supersedes all prior agreements, written or oral, on such subject matter. This Pledge Agreement was drafted with the joint participation of the respective parties thereto and shall be construed neither against nor in favour of any party, but rather in accordance with the fair meaning thereof.

23. Survival. All representations and warranties made hereunder or other document delivered pursuant hereto or thereto or in connection herewith or therewith shall survive the execution and delivery hereof and thereof. Such representations and warranties have been or will be relied upon by the Administrative Agent, the Collateral Agent and each Lender, regardless of any investigation made by the Administrative Agent, the Collateral Agent or any Lender or on their behalf and notwithstanding that the Administrative Agent, the Collateral Agent or any Lender may have had notice or knowledge of any Default at the time of any Credit Extension, and shall continue in full force and effect as long as any Loan or any other Obligation hereunder shall remain unpaid or unsatisfied or any Letter of Credit shall remain outstanding.

24. Other Security. To the extent that any of the Secured Obligations are now or hereafter secured by property other than the Pledged Collateral (including real and other personal property owned by the Pledgor), or by a guarantee, endorsement or property of any other Person, then the Collateral Agent shall have the right to proceed against such other property, guarantee or endorsement upon the occurrence of any Event of Default, and the Collateral Agent shall have the right, in its sole discretion, to determine which rights, security, liens, security interests or remedies the Collateral Agent shall at any time pursue, relinquish, subordinate, modify or take with respect thereto, without in any way modifying or affecting any of them or the Secured Obligations or any of the rights of the Collateral Agent or the holders of the Secured Obligations under this Pledge Agreement, under any of the other Loan Documents or under any other document relating to the Secured Obligations.

25. Replacement of Existing Pledge Agreement. As of the date hereof, the Existing Pledge Agreement shall be amended, restated and superseded and replaced in its entirety by this Pledge Agreement.

[Signatures on Following Pages]

TOR01: 6249206: v4

Each of the parties hereto has caused a counterpart of this Pledge Agreement to be duly executed and delivered as of the date first above written.

PLEDGOR: ARMSTRONG WORLD INDUSTRIES, INC., a Pennsylvania corporation

By: /s/ Brian L. MacNeal
Name: Brian L. MacNeal
Title: Senior Vice President and Chief Financial Officer

Accepted and agreed to as of the date first above written.

COLLATERAL AGENT:	BANK OF AMERICA, N.A., as Collateral Agent
	By: /s/ Kimberly D. Williams Name: Kimberly D. Williams Title: Vice President

SCHEDULES

Schedule 2(a)	Pledged Shares

EXHIBITS

Exhibit 4(a)	Form of Stock Power

Schedule 2 (a)

to

Amended and Restated Canadian Pledge Agreement dated as of April 1, 2016 in favour of Bank of America, N.A., as Collateral Agent

PLEDGED SHARES

Subsidiary	Class of Shares	Number held by Pledgor
Armstrong World Industries Canada Ltd.	Common	500

Exhibit 4(a)

to

Amended and Restated Canadian Pledge Agreement
dated as of April 1, 2016
in favour of Bank of America, N.A., as Collateral Agent

Form of Irrevocable Stock Power

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers to

the following shares of capital stock of **[ISSUER]**, a corporation:

No. of Shares Certificate No.

and irrevocably appoints its agent and attorney-in-fact to

transfer all or any part of such capital stock and to take all necessary and appropriate action to effect any such transfer. The agent and attorney-in-fact may substitute and appoint one or more persons to act for him. The effectiveness of a transfer pursuant to this stock power shall be subject to any and all transfer restrictions referenced on the face of the certificates evidencing such interest or in the certificate of incorporation or bylaws of the subject corporation, to the extent they may from time to time exist.

ARMSTRONG WORLD INDUSTRIES, INC.

By:
Name:
Title:

Armstrong World Industries, Inc. and Subsidiaries
Computation of Earnings Per Share
(amounts in millions, except per share data)

	2017	2016	2015
Basic earnings per share from continuing operations			
Earnings from continuing operations	$ 220.6	$ 99.3	$ 57.9
Earnings allocated to participating non-vested share awards	(0.7)	(0.3)	(0.2)
Earnings from continuing operations attributable to common shares	$ 219.9	$ 99.0	$ 57.7
Basic weighted average number of common shares outstanding	53.3	55.4	55.5
Basic earnings per share from continuing operations	$ 4.12	$ 1.79	$ 1.04
Diluted earnings per share from continuing operations			
Earnings from continuing operations	$ 220.6	$ 99.3	$ 57.9
Earnings allocated to participating non-vested share awards	(0.7)	(0.3)	(0.2)
Earnings from continuing operations attributable to common shares	$ 219.9	$ 99.0	$ 57.7
Basic weighted average number of common shares outstanding	53.3	55.4	55.5
Dilutive effect of common stock equivalents	0.6	0.3	0.4
Diluted weighted average number of common shares outstanding	53.9	55.7	55.9
Diluted earnings per share from continuing operations	$ 4.08	$ 1.78	$ 1.03

Exhibit No. 12

Armstrong World Industries, Inc. and Subsidiaries
Computation of Ratio of Earnings to Fixed Charges
(dollar amounts in millions)

	2017	2016	2015	2014	2013
Determination of Earnings					
Earnings from continuing operations before income taxes	$ 222.1	$ 150.6	$ 94.6	$ 154.5	$ 116.0
Equity earnings from joint venture	(67.0)	(73.1)	(66.1)	(65.1)	(59.4)
Earnings from continuing operations before income taxes and equity earnings	$ 155.1	$ 77.5	$ 28.5	$ 89.4	$ 56.6
Add:					
Fixed charges	38.9	51.5	47.1	48.9	73.0
Distributed income from equity affiliates (1)	-	-	-	-	-
Amortization of capitalized interest	0.1	0.2	0.2	-	0.3
Less:					
Capitalized interest	(1.3)	(0.3)	(0.8)	(0.6)	(0.4)
Total earnings as defined	$ 192.8	$ 128.9	$ 75.0	$ 137.7	$ 129.5
Fixed charges					
Interest expense	$ 35.4	$ 49.5	$ 44.6	$ 46.6	$ 71.0
Capitalized interest	1.3	0.3	0.8	0.6	0.4
Estimate of interest included in rent expense (2)	2.2	1.7	1.7	1.7	1.6
Total fixed charges	$ 38.9	$ 51.5	$ 47.1	$ 48.9	$ 73.0
Ratio of Earnings to Fixed Charges	5.0	2.5	1.6	2.8	1.8

(1) Includes only return on investment, not return of investment

(2) One-third of rental expense is considered to be representative of the interest factor in rental expense.

Exhibit No. 21

Subsidiaries of Armstrong World Industries, Inc.
December 31, 2017

The following is a list of subsidiaries of Armstrong World Industries, Inc., omitting certain subsidiaries, which, when not considered in the aggregate, but as a single subsidiary, would not constitute a significant subsidiary.

U.S. Subsidiaries	**Jurisdiction of Incorporation**
Armstrong Cork Finance LLC	Delaware
Armstrong Ventures, Inc.	Delaware
Armstrong World Industries (Delaware) LLC	Delaware
AWI Licensing Company	Delaware

Non U.S. Subsidiaries	**Jurisdiction of Incorporation**
Armstrong World Industries LTD	United Kingdom

Exhibit No. 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Armstrong World Industries, Inc.:

We consent to the incorporation by reference in the registration statements (Nos. 333-138034, 333-154765, 333-177072, and 333-212457) on Form S-8 and in the registration statement (No. 333-202253) on Form S-3 of Armstrong World Industries, Inc. of our reports dated February 26, 2108, with respect to the consolidated balance sheets of Armstrong World Industries, Inc. and subsidiaries as of December 31, 2017 and 2016, and the related consolidated statements of earnings and comprehensive income, equity, and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes and financial statement schedule of valuation and qualifying reserves (collectively, the "consolidated financial statements"), and the effectiveness of internal control over financial reporting as of December 31, 2017, which reports appear in the December 31, 2017 annual report on Form 10-K of Armstrong World Industries, Inc.

/s/ KPMG LLP

Philadelphia, Pennsylvania
February 26, 2018

Exhibit No. 23.2

Consent of Independent Auditors

The Board of Directors
Worthington Armstrong Venture:

We consent to the incorporation by reference in the registration statements (Nos. 333-138034, 333-154765, 333-177072 and 333-212457) on Form S-8 and in the registration statements (No. 333-202253) on Form S-3 of Armstrong World Industries, Inc. of our report dated February 19, 2018, with respect to the consolidated balance sheets of Worthington Armstrong Venture and its subsidiaries as of December 31, 2017 and 2016, and the related consolidated statements of income and comprehensive income, partners' deficit, and cash flows for each of the years in the three-year period ended December 31, 2017, and the related notes, which report appears in the December 31, 2017 annual report on Form 10-K of Armstrong World Industries, Inc.

/s/ KPMG LLP

Philadelphia, Pennsylvania
February 26, 2018

Exhibit No. 31.1

I, Victor D. Grizzle, certify that:

1) I have reviewed this report on Form 10-K of Armstrong World Industries, Inc.;

2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   a) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls over financial reporting.

Date: February 26, 2018

/s/ Victor D. Grizzle

Victor D. Grizzle
Director, President and Chief Executive Officer

Exhibit No. 31.2

I, Brian L. MacNeal, certify that:

1) I have reviewed this report on Form 10-K of Armstrong World Industries, Inc.;

2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) Disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and

5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal controls over financial reporting.

Date: February 26, 2018

/s/ Brian L. MacNeal
Brian L. MacNeal
Senior Vice President and Chief Financial Officer

Exhibit No. 32.1

Certification of Chief Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

I certify to the best of my knowledge and belief that the Annual Report on Form 10-K of Armstrong World Industries, Inc. (the "Company") containing its financial statements for the fiscal year ended December 31, 2017 fully complies with the requirements of Section 13(a) and 15(d) of the Securities Exchange Act of 1934, as amended, and that information contained in that report fairly presents, in all material respects, the financial condition and results of operations of the Company as of that date.

/s/ Victor D. Grizzle

Victor D. Grizzle
Director, President and Chief Executive Officer
Armstrong World Industries, Inc.

Dated: February 26, 2018

Exhibit No. 32.2

Certification of Chief Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

I certify to the best of my knowledge and belief that the Annual Report on Form 10-K of Armstrong World Industries, Inc. (the "Company') containing its financial statements for the fiscal year ended December 31, 2017 fully complies with the requirements of Section 13(a) and 15(d) of the Securities Exchange Act of 1934, as amended, and that information contained in that report fairly presents, in all material respects, the financial condition and results of operations of the Company as of that date.

/s/ Brian L. MacNeal

Brian L. MacNeal
Senior Vice President and Chief Financial Officer
Armstrong World Industries, Inc.

Dated: February 26, 2018

Exhibit No. 99.1

WORTHINGTON ARMSTRONG VENTURE

Consolidated Financial Statements

December 31, 2017 and 2016

(With Independent Auditors' Report Thereon)

WORTHINGTON ARMSTRONG VENTURE

Table of Contents

Independent Auditors' Report

The Board of Directors
Worthington Armstrong Venture:

We have audited the accompanying consolidated financial statements of Worthington Armstrong Venture and its subsidiaries, which comprise the consolidated balance sheets as of December 31, 2017 and 2016, and the related consolidated statements of income and comprehensive income, partners' deficit, and cash flows for each of the years in the three year period ended December 31, 2017, and the related notes to the consolidated financial statements.

Management's Responsibility for the Financial Statements
Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with U.S. generally accepted accounting principles; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility
Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Worthington Armstrong Venture and its subsidiaries as of December 31, 2017 and 2016, and the results of their operations and their cash flows for each of the years in the three year period ended December 31, 2017 in accordance with U.S. generally accepted accounting principles.

/s/ KPMG LLP

Philadelphia, Pennsylvania
February 19, 2018

WORTHINGTON ARMSTRONG VENTURE
Consolidated Balance Sheets
December 31, 2017 and 2016
(Dollar amounts in thousands)

Assets	2017	2016
Current assets:		
Cash and cash equivalents	$ 26,856	$ 34,387
Short-term investments	6,897	5,782
Accounts receivable, net	27,751	23,523
Receivables from affiliates	2,594	4,212
Inventory, net	32,586	28,196
Other current assets	97	172
Current assets of discontinued operations held for sale (Note 3)	36,439	16,863
Total current assets	133,220	113,135
Property, plant, and equipment, net	24,311	24,830
Goodwill	8,037	8,037
Other assets	218	41
Non-current assets of discontinued operations held for sale (Note 3)	—	17,373
Total assets	$ 165,786	$ 163,416
Liabilities and Partners' Deficit		
Accounts payable	$ 11,810	$ 14,117
Accounts payable to affiliates	1,145	751
Accrued expenses	5,021	4,095
Taxes payable	158	172
Short-term borrowings	—	14,000
Current liabilities of discontinued operations held for sale (Note 3)	8,095	8,173
Total current liabilities	26,229	41,308
Long-term liabilities:		
Long-term debt	243,508	239,522
Other long-term liabilities	3,104	4,489
Total long-term liabilities	246,612	244,011
Total liabilities	272,841	285,319
Partners' deficit:		
Accumulated deficit	(94,421)	(102,870)
Accumulated other comprehensive loss	(12,634)	(19,033)
Total partners' deficit	(107,055)	(121,903)
Total liabilities and partners' deficit	$ 165,786	$ 163,416

See accompanying notes to consolidated financial statements.

WORTHINGTON ARMSTRONG VENTURE
Consolidated Statements of Income and Comprehensive Income
Years ended December 31, 2017, 2016, and 2015
(Dollar amounts in thousands)

	2017	2016	2015
Net sales	$ 344,483	$ 330,717	$ 309,670
Cost of sales	(151,820)	(138,321)	(137,528)
Gross margin	192,663	192,396	172,142
Selling, general, and administrative expenses	(40,053)	(31,857)	(28,659)
	152,610	160,539	143,483
Other (expense), net	(239)	(183)	(185)
Interest income	31	13	4
Interest expense	(7,873)	(6,878)	(6,533)
Income from continuing operations before income tax expense	144,529	153,491	136,769
Income tax expense	(239)	(1,604)	(300)
Net income from continued operations	144,290	151,887	136,469
Discontinued Operations (Note 3)			
Net income from discontinued operations, net of tax expense	4,159	6,976	7,963
Total Net Income	148,449	158,863	144,432
Other comprehensive income (loss):			
Change in pension plan	461	(234)	(182)
Change in cash flow hedge	1,154	522	(259)
Foreign currency adjustments	4,784	(3,623)	(5,496)
Total other comprehensive income (loss)	6,399	(3,335)	(5,937)
Total comprehensive income	$ 154,848	$ 155,528	$ 138,495

See accompanying notes to consolidated financial statements.

WORTHINGTON ARMSTRONG VENTURE
Consolidated Statements of Partners' Deficit
Years ended December 31, 2017, 2016, and 2015
(Dollar amounts in thousands)

	Contributed capital				
	Armstrong Ventures, Inc.	The Worthington Steel Company	Accumulated deficit	Accumulated other comprehensive income (loss)	Total partners' deficit
Balance, December 31, 2014	$ —	$ —	$ (99,187)	$ (9,761)	$ (108,948)
Net income	—	—	144,432	—	144,432
Distributions	—	—	(131,000)	—	(131,000)
Change in pension plan	—	—	—	(182)	(182)
Change in cash flow hedge	—	—	—	(259)	(259)
Foreign currency translation adjustments	—	—	—	(5,496)	(5,496)
Balance, December 31, 2015	—	—	(85,755)	(15,698)	(101,453)
Net income	—	—	158,863	—	158,863
Other	—	—	22	—	22
Distributions	—	—	(176,000)	—	(176,000)
Change in pension plan	—	—	—	(234)	(234)
Change in cash flow hedge	—	—	—	522	522
Foreign currency translation adjustments	—	—	—	(3,623)	(3,623)
Balance, December 31, 2016	—	—	(102,870)	(19,033)	(121,903)
Net income	—	—	148,449	—	148,449
Distributions	—	—	(140,000)	—	(140,000)
Change in pension plan	—	—	—	461	461
Change in cash flow hedge	—	—	—	1,154	1,154
Foreign currency translation adjustments	—	—	—	4,784	4,784
Balance, December 31, 2017	$ —	$ —	$ (94,421)	$ (12,634)	$ (107,055)

See accompanying notes to consolidated financial statements.

WORTHINGTON ARMSTRONG VENTURE
Consolidated Statements of Cash Flows
Years ended December 31, 2017, 2016, and 2015
(Dollar amounts in thousands)

	2017	2016	2015
Cash flows from operating activities:			
Net income	$ 148,449	$ 158,863	$ 144,432
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	5,160	4,681	4,173
Deferred income taxes	476	388	27
Changes in assets and liabilities:			
Change in receivables	(102)	(5,392)	6,131
Change in inventory	(4,879)	(3,633)	5,933
Change in payables and accrued expenses	1,065	3,702	(2,405)
Other	(4,986)	71	(312)
Net cash provided by operating activities	145,183	158,680	157,979
Cash flows from investing activities:			
Purchases of property, plant, and equipment	(4,444)	(4,924)	(8,329)
Sale of property, plant, and equipment	34	38	(83)
Short-term investments	(1,115)	(348)	840
Acquisition of business, net of cash acquired	-	-	(8,400)
Net cash used in investing activities	(5,525)	(5,234)	(15,972)
Cash flows from financing activities:			
Proceeds from revolving credit facility	176,000	264,000	132,000
Issuance of short-term debt	—	14,000	—
Repayment of short-term debt	(14,000)	—	—
Repayment of revolving credit facility	(171,500)	(267,500)	(126,500)
Financing cost	(832)	—	—
Distributions paid	(140,000)	(176,000)	(131,000)
Net cash used in financing activities	(150,332)	(165,500)	(125,500)
Effect of exchange rate changes on cash and cash equivalents	3,143	(1,577)	(4,159)
Net increase (decrease) in cash and cash equivalents	(7,531)	(13,631)	12,348
Cash and cash equivalents at beginning of year	34,387	48,018	35,670
Cash and cash equivalents at end of year	$ 26,856	$ 34,387	$ 48,018
Supplemental disclosures:			
Interest paid	$ 7,873	$ 6,961	$ 6,736
Income taxes paid	168	2,728	2,457

See accompanying notes to consolidated financial statements.

(1) Description of Business

Worthington Armstrong Venture (the Company) is a general partnership, formed in June 1992, between Armstrong Ventures, Inc. (Armstrong), a subsidiary of Armstrong World Industries, Inc., and The Worthington Steel Company (Worthington), a Delaware corporation (a subsidiary of Worthington Industries, Inc.). Its business is to manufacture and market suspension systems for commercial and residential ceiling markets throughout the world. The Company has manufacturing plants located in the United States, France, the United Kingdom, the People's Republic of China, and India.

On November 17, 2017, Armstrong World Industries, Inc. entered into a Share Purchase Agreement (the Purchase Agreement) with Knauf International GmbH (Knauf) to sell certain subsidiaries comprising its business in Europe, the Middle East, Africa (EMEA) and the Pacific Rim. The sale also includes the corresponding businesses and operations of the Company, which was approved by both Armstrong and Worthington. The consideration to be paid by Knauf for the Company's businesses is approximately $90 million, 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, which is subject to regulatory approvals and other customary conditions, is currently anticipated to close in mid-2018. EMEA and Pacific Rim's financial results have been reflected in the Company's Consolidated Financial Statements as discontinued operations for all periods presented. Refer to Note 3 for additional information.

(2) Summary of Significant Accounting Policies

(a) Use of Estimates

These consolidated financial statements are prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP) and include management estimates and judgments, where appropriate. Actual results could differ from those estimates. Significant items subject to such estimates and assumptions include the carrying amount of property, plant, and equipment and goodwill, valuation allowances for receivables and inventories, valuation of derivatives, and assets and obligations related to employee benefits.

The consolidated financial statements include the accounts of the Company and its subsidiaries. All significant intercompany transactions have been eliminated.

(b) Revenue Recognition

The Company recognizes revenue from the sale of products when title transfers, generally on the date of shipment and collection of the relevant receivable is probable. At the time of shipment, a provision is made for estimated applicable discounts and losses that reduce revenue. The Company's standard sales terms are "Free On Board" (FOB) shipping point. The Company has some sales terms that are FOB destination.

Sales taxes collected from customers and remitted to governmental authorities are accounted for on a net basis and, therefore, are excluded from revenues in the consolidated statements of income and comprehensive income.

(c) Derivative Instruments and Hedging Activities

The Company recognizes all derivative instruments as either assets or liabilities in the balance sheet at their respective fair values. For derivatives designated in hedging relationships, changes in the fair value are recognized in accumulated other comprehensive income, to the extent the derivative is effective at offsetting the changes in cash flows being hedged until the hedged item affects earnings. For derivatives not designated as hedges or that do not meet the criteria for hedge accounting, all changes in fair value are recorded immediately to profit or loss.

(d) Advertising Costs

The Company recognizes advertising expense as incurred. Advertising expense was $1,243, $1,170, $1,116 for the years ended December 31, 2017, 2016, and 2015, respectively.

(e) Research and Development Expenditures

The Company recognizes research and development expense as expenditures are incurred. Total research and development expense was $4,653, $4,305 and $3,998 for the years ended December 31, 2017, 2016, and 2015, respectively.

(f) Taxes

The Company is a general partnership in the United States, and accordingly, generally, U.S. federal and state income taxes are the responsibility of the two general partners. The Company recognizes the effect of uncertain income tax positions only if those positions are more likely than not of being sustained. Recognized income tax benefits are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs.

(g) Cash and Cash Equivalents

Short-term investments that have original maturities of three months or less when purchased are considered to be cash equivalents.

(h) Short Term Investments

Short-term investments that have maturity dates greater than three months consist primarily of one year certificates of deposits.

(i) Trade Accounts Receivable

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The Company maintains an allowance for doubtful accounts for estimated losses inherent in its accounts receivable portfolio. In establishing the required allowance, management considers historical losses, current receivables aging, and existing industry and national economic data. Account balances are charged off against the allowance after all means of collection have been exhausted and the potential for recovery is considered remote. The Company does not have any off-balance-sheet credit exposure related to its customers.

(j) Inventories

Inventories are valued at the lower of cost or market. Cost is determined on the first-in, first-out method.

(k) Long-Lived Assets

Property, plant, and equipment are stated at cost, with accumulated depreciation and amortization deducted to arrive at net book value. Depreciation charges are determined generally on the straight-line basis over the useful lives as follows: buildings, 30 years; machinery and equipment, 5 to 15 years; and leasehold improvements over the shorter of 10 years or the life of the lease. Impairment losses are recorded when indicators of impairment are present and the undiscounted cash flows estimated to be generated by those assets are less than the assets' carrying amount. If an impairment exists, the asset is reduced to fair value.

(l) Goodwill

Goodwill represents the excess of the aggregate purchase price over the fair value of the net assets acquired in a purchase business combination. Goodwill is tested for impairment at least annually. The impairment tests performed in 2017, 2016, and 2015 did not result in an impairment of the Company's goodwill.

(Dollar amounts in thousands)

(m) Foreign Currency Translation

Gains and losses on foreign currency translation are recognized in accumulated other comprehensive income in the accompanying consolidated balance sheets.

(3) Discontinued Operations

As discussed in Note 1, Armstrong World Industries, Inc. entered into a Purchase Agreement with Knauf to sell certain subsidiaries comprising its business in Europe, the Middle East, Africa (EMEA) and the Pacific Rim. The sale also includes the corresponding businesses and operations of the Company. Accordingly, the assets and liabilities and results of operations of our EMEA and Pacific Rim businesses have been reported as discontinued operations in the accompanying consolidated financial statements.

The Company and Knauf will also enter into an agreement related to the mutual supply of certain products and a license agreement relating to the use of certain intellectual property.

The following table presents the carrying amounts of major classes of assets and liabilities of the discontinued operations held for sale in the consolidated balance sheets as of December 31, 2017 and 2016:

Assets	**2017**	**2016**
Accounts receivable, net	$ 5,190	$ 7,269
Inventory, net	9,629	8,647
Other current assets	2,030	947
Property, plant and equipment (1)	16,504	15,312
Other non-current assets	3,086	2,061
Total Assets of discontinued operations held for sale (2)	36,439	34,236
Liabilities		
Accounts payable	4,587	4,088
Accrued expenses	2,985	2,695
Other liabilities	523	1,390
Total liabilities of discontinued operations held for sale (2)	8,095	8,173
Total net assets	28,344	26,063

(1) Presented as "Non -current assets of discontinued operations held for sale" on the consolidated balance sheet as of December 31, 2016.

(2) Presented as "Current Assets / liabilities of discontinued operations held for sale" on the consolidated balance sheet as of December 31, 2017.

(Dollar amounts in thousands)

The following table represents the results of our discontinued operations:

	2017	2016	2015
Net sales	$ 63,222	$ 63,024	$ 64,744
Cost of sales	51,400	46,764	49,496
Selling, general, and administrative expenses	8,004	6,279	5,529
Interest income, expense, other, net	(309)	(733)	(505)
Income from discontinued operations before tax expense	4,127	10,714	10,224
Income tax benefit (expense)	32	(3,738)	(2,261)
Net income from discontinued operations, net of tax expense	4,159	6,976	7,963

The following is a summary of total depreciation and amortization and capital expenditures of our discontinued operations, which are presented as components of operating and investing activities in our consolidated statement of cash flows:

	2017	2016	2015
Depreciation and Amortization	$ 1,958	$ 1,896	$ 1,867
Purchase of property, plant and equipment	1,753	1,285	2,360

(4) Accounts Receivable

The Company sells its products to select, preapproved customers whose businesses are directly affected by changes in economic and market conditions. The Company considers these factors and the financial condition of each customer when establishing its allowance for losses from doubtful accounts. The allowance for doubtful accounts was $136 and $147, at December 31, 2017 and 2016, respectively.

(5) Inventory

	2017	2016
Finished goods	$ 11,841	11,014
Goods in process	94	564
Raw materials	18,114	14,179
Supplies	2,537	2,439
Total inventory, net of reserves	$ 32,586	28,196

(6) Derivative Instruments and Hedging Activities

The Company uses variable-rate London Interbank Offered Rate (LIBOR) debt to finance its operations. The debt obligations expose the Company to variability in interest payments due to changes in interest rates. Management believes that it is prudent to limit the variability of a portion of its interest payments. To meet this objective, management enters into LIBOR based interest rate swap agreements to manage fluctuations in cash flows resulting from changes in the benchmark interest rate of LIBOR. The swap changes the variable-rate cash flow exposure on the debt obligations to fixed cash flows. Under the terms of the interest rate swaps, the Company receives LIBOR-based variable interest rate payments and makes fixed interest rate payments, thereby creating the equivalent of fixed-rate debt for the notional amount of its debt hedged.

On July 16, 2013, the Company entered into a LIBOR-based interest rate swap agreement to manage fluctuations in cash flows resulting from changes in the benchmark interest rate of LIBOR. The swap has a notional amount of $50,000 maturing in July 2020, under the terms of which the Company pays a fixed rate of 2.136% and receives one-month LIBOR. This swap is designated as a cash flow hedge.

On April 28, 2017 the Company entered into another swap with a notional amount of $50,000 maturing in February 2022, under the terms of which the Company pays a fixed rate of 1.9365% and receives one-month LIBOR. This swap is designated as a cash flow hedge.

(Dollar amounts in thousands)

As of December 31, 2017 and 2016, the total notional amount of the Company's outstanding interest-rate swap agreements that were entered into to hedge outstanding or forecasted debt obligations were $100,000 and $50,000, respectively.

The fair value of derivatives designated as hedging instruments held as of December 31, 2017 and 2016 are as follows:

	2017		2016	
	B/S Location	**Fair value**	**B/S Location**	**Fair value**
Interest rate swap	Other assets	$ 165	Other assets	$ —
	Long-term liabilities	—	Long-term liabilities	(977)
Total derivatives		$ 165		$ (977)

The amount of gain (loss) recognized in accumulated other comprehensive income was $177 and $(977), respectively as of December 31, 2017 and 2016.

(7) Property, Plant, and Equipment

	2017	2016
Land	$ 673	673
Buildings	13,143	12,836
Machinery and equipment	57,391	53,037
Computer software	1,328	1,316
Construction in process	2,595	5,713
	75,130	73,575
Accumulated depreciation and amortization	(50,819)	(48,745)
Total property, plant, and equipment, net	$ 24,311	24,830

Depreciation and amortization expense was $3,202, $2,785 and $2,306 for the years ended December 31, 2017, 2016 and 2015, respectively.

(8) Fair Value of Financial Instruments

The Company does not hold or issue financial instruments for trading purposes.

The carrying amounts of cash and cash equivalents, short-term investments, accounts receivable, and accounts payable approximate their fair value due to the short-term maturity of these instruments. The carrying value and estimated fair value of debt was $243,508 and $243,529 respectively, at December 31, 2017. The carrying value and estimated fair value of debt was $239,522 and $239,400, respectively, at December 31, 2016.

The fair value of the Company's debt is based on the amount of future cash flows discounted using rates the Company would currently be able to realize for similar instruments of comparable maturity.

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. U.S. GAAP establishes a three-level fair value hierarchy that prioritizes the inputs used to measure fair value. The three levels of inputs used to measure fair value are as follows:

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.

(Dollar amounts in thousands)

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 Company's derivatives are valued using Level 2 inputs. The fair values are disclosed in Note 6. The Company does not have any significant financial or nonfinancial assets or liabilities that are valued using Level 3 inputs.

(9) Debt

The Company had a $200,000 revolving credit facility (Facility) with PNC Bank and other lenders that was due to expire on February 21, 2019. On March 22, 2017, the Company refinanced the Facility with PNC Bank and other lenders increasing the size of the revolver from $200,000 to $250,000 and extending the terms to March 22, 2022. At the same time, the Company paid off their $50,000 private floating rate debt with New York Life Insurance Company. As of December 31, 2017 and 2016 there was $194,500 and $140,000, respectively, outstanding under the Facility. The Company can borrow at rates with a range over LIBOR of 1.125% to 1.75%, depending on the Company's leverage ratio, as defined by the terms of the Facility. As of December 31, 2017 and 2016, the rate was 2.82% and 1.86%, respectively.

On December 23, 2011, the Company issued $50,000 of 10-year private placement notes (Prudential Notes) with Prudential Insurance Company that mature in December 2021. At December 31, 2017 and 2016, there was $50,000 outstanding. The Prudential Notes bear interest at 4.9% that is paid on a quarterly basis.

The debt agreements contain certain restrictive financial covenants, including, among others, interest coverage and leverage ratios. The Company was in compliance with its covenants during the years ended and as of December 31, 2017 and 2016.

(10) Pension Benefit Programs

The Company contributes to the Worthington Industries Deferred Profit Sharing Plan for eligible U.S. employees. Costs for this plan were $1,399, $1,413, and $1,258 for 2017, 2016, and 2015, respectively.

The Company also has a U.S. defined-benefit pension plan for eligible hourly employees that worked in its former manufacturing plant located in Malvern, Pennsylvania. This plan was curtailed in January 2004 due to the consolidation of the Company's East Coast operations, which eliminated the expected future years of service for participants in the plan. The following tables set forth the defined-benefit pension plan's benefit obligations, fair value of plan assets, and funded status at December 31, 2017 and 2016:

	2017	2016
Projected benefit obligation at beginning of year	$ 11,005	11,185
Interest cost	417	457
Actuarial (gain) loss	353	322
Benefits paid	(630)	(959)
Projected benefit obligation at end of year	$ 11,145	11,005

	2017	2016
Benefit obligation at December 31	$ 11,145	11,005
Fair value of plan assets as of December 31	9,065	8,222
Funded status at end of year	$ 2,080	(2,783)
Amounts recognized in the balance sheets consist of:		
Other long-term liabilities	$ (2,080)	(2,783)
Accumulated other comprehensive loss	6,141	6,602
Net amount recognized	$ 4,061	3,819

Amounts recognized in accumulated other comprehensive loss represent unrecognized net actuarial losses.

(Dollar amounts in thousands)

The components of net periodic benefit cost (benefit) are as follows:

	2017	2016	2015
Interest cost	$ 417	457	451
Expected return on plan assets	(593)	(600)	(643)
Recognized net actuarial loss	334	332	343
Net periodic benefit cost	$ 158	189	151

The accumulated benefit obligation for the U.S. defined-benefit pension plan was $11,145 and $11,005 at December 31, 2017 and 2016, respectively. The unrecognized net loss for the defined-benefit pension plan that will be amortized from accumulated other comprehensive income into net periodic benefit cost over the next fiscal year is $250.

The valuations and assumptions reflect the Society of Actuaries updated RP-2014 mortality tables with MP-2017 generational projection scales as of December 31, 2017.

Weighted average assumptions used to determine benefit obligations for the years ended and as of December 31, 2017 and 2016 are as follows:

	2017	2016
Weighted average assumptions for the year ended December 31:		
Discount rate	3.95%	4.13%
Expected long-term rate of return on plan assets	7.25	7.25
Weighted average assumptions as of December 31:		
Discount rate	3.52%	3.95%
Expected long-term rate of return on plan assets	7.25	7.25

Pension plan assets are required to be disclosed at fair value in the consolidated financial statements. Fair value is defined in Note 8 – Fair Value of Financial Instruments.

The U.S. defined-benefit pension plan assets' fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement. Valuation techniques used need to maximize the use of observable inputs and minimize the use of unobservable inputs.

The following tables set forth by level within the fair value hierarchy a summary of the plan's assets measured at fair value on a recurring basis as of December 31, 2017 and 2016, respectively:

		2017	
		Fair value based on	
	Fair value	Quoted active markets (Level 1)	Observable inputs (Level 2)
Investment:			
Cash and money market funds	$ 332	332	—
Debt Securities	2,799	—	2,799
Common stocks	5,934	5,934	—
	$ 9,065	6,266	2,799

(Dollar amounts in thousands)

		2016	
		Fair value based on	
	Fair value	Quoted active markets (Level 1)	Observable inputs (Level 2)
Investment:			
Cash and money market funds	$ 1,844	1,844	—
Debt Securities	1,342	—	1,342
Common stocks	5,036	5,036	—
	$ 8,222	6,880	1,342

Following is a description of the valuation methodologies used for assets measured at fair value. There have been no changes in the methodologies used at December 31, 2017 and 2016.

Cash: Consists of cash and cash equivalents. The carrying amounts of cash and cash equivalents approximate fair value due to the short-term maturity of these instruments.

Money market funds: The money market investment consists of an institutional investor money market fund, valued at the fund's net asset value (NAV), which is normally calculated at the close of business daily. The fund's assets are valued as of this time for the purpose of computing the fund's NAV.

Debt securities: Consist of investments in individual corporate bonds, municipal bonds, or government bonds. These bonds are each individually valued using a yield curve model, based on observable inputs, which may also incorporate available trade and bid/ask spread data where available.

Common stocks: Consist of investments in common stocks that are valued at the closing price reported on the active market on which the individual security is traded.

In developing the 7.25% expected long-term rate of return assumption, the Company considered its historical returns and reviewed asset class return expectations and long-term inflation assumptions.

The primary investment objective of the defined-benefit pension plan is to achieve long-term growth of capital in excess of 7.25% annually, exclusive of contributions or withdrawals. This objective is to be achieved through a balanced portfolio comprising equities, fixed income, and cash investments.

Each asset class utilized by the defined-benefit pension plan has a targeted percentage. The following table shows the asset allocation target and the December 31, 2017 and 2016 position:

		Position at December 31	
	Target weight	2017	2016
Equity securities	65%	74%	62%
Fixed income securities	35	22	16
Cash and equivalents	—	4	22

The Company made contributions of $400, $500, and $510 to the U.S. defined-benefit pension plan in 2017, 2016, and 2015 respectively. The Company expects to contribute $400 to the plan in 2018.

(Dollar amounts in thousands)

The benefits expected to be paid in each of the next five years and in the aggregate for the five years thereafter are shown in the following table:

Expected future payments for the year(s) ending December 31:		
2018	$	660
2019		662
2020		667
2021		655
2022		670
2023-2027		3,250

The expected benefits are based on the same assumptions used to measure the Company's benefit obligation at December 31, 2017.

(11) Income Taxes

The Company is a general partnership in the United States, and accordingly, U.S. federal and state income taxes are generally the responsibility of the two general partners. Therefore, no federal income tax provision has been recorded on U.S. income.

(12) Leases

The Company rents certain real estate and equipment. Several leases include options for renewal or purchase and contain clauses for payment of real estate taxes and insurance. In most cases, management expects that in the normal course of business, leases will be renewed or replaced by other leases. Minimum rent payments under operating leases are recognized on a straight-line basis over the term of the lease including any periods of free rent. Rent expense during 2017, 2016, and 2015 amounted to $2,258, $2,309 and $2,134, respectively.

Future minimum payments by year and in the aggregate for operating leases having noncancelable lease terms in excess of one year are as follows:

Year:		
2018	$	2,429
2019		1,848
2020		1,698
2021		1,659
2022		1,087
Thereafter		—
Total	$	8,721

(13) Accumulated Other Comprehensive Income (Loss)

(Dollar amounts in thousands)

The following table summarizes the activity, by component, related to the change in AOCI for December 31, 2017 and the balances for accumulated other comprehensive income (loss):

	Foreign currency translation	Cash flow hedge	Pension plan	Accumulated other comprehensive (loss)
Balance, December 31, 2015	$ (7,830)	(1,499)	(6,369)	(15,698)
Other comprehensive (loss) income before reclassifications	(3,623)	522	(466)	(3,567)
Amounts reclassified from accumulated other comprehensive income	—	—	232	232
Net current period other comprehensive (loss) income	(3,623)	522	(234)	(3,335)
Balance, December 31, 2016	(11,453)	(977)	(6,603)	(19,033)
Other comprehensive (loss) before reclassifications	4,784	1,154	231	6,169
Amounts reclassified from accumulated other comprehensive income	—	—	230	230
Net current period other comprehensive (loss)	4,784	1,154	461	6,399
Balance, December 31, 2017	$ (6,669)	177	(6,142)	(12,634)

The amount reclassified from AOCI was recorded in cost of goods sold in the consolidated statements of income and comprehensive income.

(14) Related Parties

Armstrong World Industries, Inc. provides certain selling, promotional, and administrative processing services to the Company for which it receives reimbursement. Armstrong purchases grid products from the Company, which are then resold along with Armstrong inventory to the customer.

	2017	2016	2015
Services provided by Armstrong	$ 14,878	9,098	8,828
Sales to Armstrong	18,224	18,004	18,194

Armstrong owed the Company $2,594 and $4,212 for purchases of product as of December 31, 2017 and 2016, respectively. The Company owed $1,145 and $751 to Worthington and affiliates of Worthington as of December 31, 2017 and 2016, respectively, which are included in accounts payable to affiliates.

Worthington, and affiliates of Worthington, provide certain administrative processing services, steel processing services, and insurance-related coverages to the Company for which it receives reimbursement.

	2017	2016	2015
Administrative services by Worthington	$ 1,382	501	509
Insurance-related coverage net of premiums by Worthington	840	824	656
Steel processing services by Worthington and affiliates of Worthington	1,656	3,394	292

(15) Acquisition

On March 6, 2015, the Company acquired the assets utilized by Fry Reglet Corporation (Fry) in the manufacturing of two product lines (the Business). Assets of the Business and the results of the Business's operations have been included in the consolidated financial statements since the acquisition date. Prior to the acquisition, Fry was the sole supplier of those products to the Company. The Company concluded that the assets met the definition of a business under Accounting Standard Codification section 805, *Business Combinations* , and therefore the transaction has been accounted for as a business combination. As a result of the acquisition, the Company has vertically integrated the customer service, design and drawing, and manufacturing processes of the Business.

The total purchase price of $8,400 was paid in cash. The estimated fair value of the identifiable assets acquired at the acquisition date were Property, Plant and Equipment of $363, and the remainder recorded as Goodwill in the amount of $8,037.

In connection with the acquisition, the Company paid Fry a $500 consulting fee for transition services. The Company incurred acquisition related costs of $240. These consulting fees and acquisition related costs are included within Selling, General, and Administrative expenses.

(16) Legal Proceedings

The Company is involved in various claims and legal actions arising in the ordinary course of business. In the opinion of management, the ultimate disposition of these matters will not have a material adverse effect on the Company's consolidated financial position, results of operations, or liquidity.

(17) Business and Credit Concentrations

Approximately 22%, 20%, and 20% of net sales were to the Company's largest third-party customer for 2017, 2016, and 2015, respectively. The Company's 10 largest third-party customers accounted for approximately 77%, 74%, and 64% of the Company's net sales for 2017, 2016, and 2015 respectively, and approximately 73% and 66% of the Company's accounts receivable balances at December 31, 2017 and 2016, respectively. See Note 14 for sales to and amounts owed to the Company from Armstrong World Industries, Inc.

(18) Subsequent Events

Management has evaluated subsequent events through the date the annual consolidated financial statements were available to be issued, February 19, 2018.