

Armstrong®
World Industries

Experience, Above All™



2023 Annual Report



Dear Fellow Shareholders,

Our company delivered record-setting results in 2023, overcoming significant macroeconomic uncertainty and weak market conditions. Our results reflect Armstrong's resilient business model with its strong market position, diverse and balanced set of end-market verticals and attractive growth initiatives. These attributes allowed Armstrong to deliver both revenue and earnings growth with profit margin expansion, despite soft market conditions.

Highlights from 2023 include:

- Record-setting total company revenue of $1.3 billion, up 5 percent from 2022, with operating income growth of 16 percent and adjusted EBITDA growth of 12 percent
- Significant improvements in adjusted EBITDA as a percent of sales for both Mineral Fiber and Architectural Specialties segments
- Strategic acquisitions of BŌK Modern, a leading architectural metal design firm for interior and exterior applications, and Insolcorp's Templok® panels with proprietary phase change material (PCM) technology supporting the launch of our new energy saving ceiling solution
- Substantial value returned to shareholders with approximately $179 million of share repurchases and cash dividends
- A meaningful improvement in our already world-class safety performance with a 18% reduction in total recordable incidents across the company as compared to the prior year

These results would not have been possible without the extraordinary talent and dedication of our 3,100 employees who are passionate about our mission and our customers and remain dedicated to delivering on our growth strategy. From delivering productivity in our plants, to pursuing new product innovation, to building and maintaining our best-in-class service and quality levels to meet and exceed customer needs, our people continue to be the key to our success.

Our 2023 performance also demonstrates the value of the strategic choices we have made over the last 8 years. By becoming an Americas-focus company operating in the attractive ceiling and walls segment of the commercial construction industry, we have been able to invest for growth throughout economic cycles while also demonstrating resilient financial results. Our strategic growth investments include expanding our Architectural Specialties segment through acquisitions and internal investments, digital tools that further strengthen our business and access new demand from underserved parts of the market, and innovation to enhance product development and support the introduction of healthy and sustainable products.

Growing Capabilities in Architectural Specialties

In 2023, we continued our investments to expand our Architectural Specialties segment. This included completing a multiyear investment in our Johnstown, Ohio metal facility to increase its capacity and capabilities. These investments included expanding the plant's footprint and installing equipment that allow us to broaden our finishing capabilities. As a result, we have tripled the production capacity of this site, while significantly reducing customer lead times. These investments further enhance our ability to capture growth in metal products.

We also acquired BŌK Modern to complement and expand our metal capabilities. BŌK is a pioneer in the design and development of integrated architectural metal systems for both interior and exterior applications and has a particular focus on innovating to deliver customers' design intent with greater efficiency. In addition to adding aesthetic appeal, many of its patented designs reduce the amount of metal needed for support structures leading to significant project cost savings and increased installation efficiency.

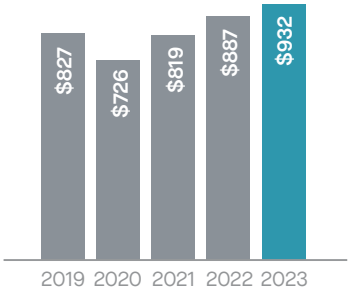
Advancing Digital Initiatives

We are in our fourth year of investing in digital initiatives to enhance our competitive advantages. These digital initiatives include both our digital selling platform, Kanopi™ by Armstrong and our automated design platform ProjectWorks®. With Kanopi, we seek to access that portion of the 39 billion square feet of installed Mineral Fiber

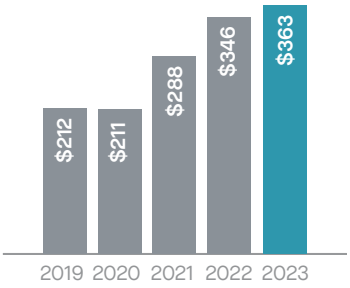
Financial Score Card

Dollars in millions except per share data

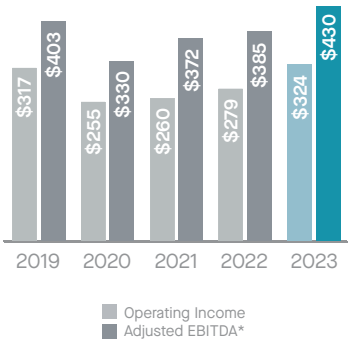
Mineral Fiber Net Sales



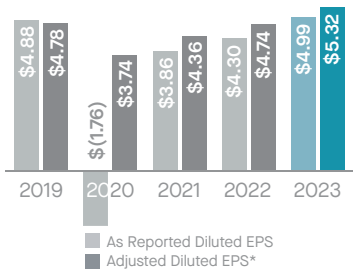
Architectural Specialties Net Sales



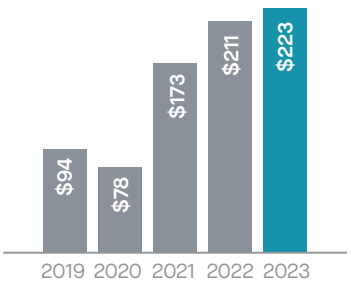
Total Company Operating Income & Adjusted EBITDA*



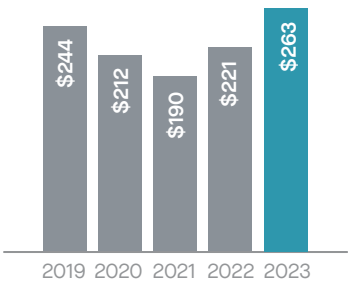
Total Company As Reported & Adjusted Diluted EPS from Continuing Operations*



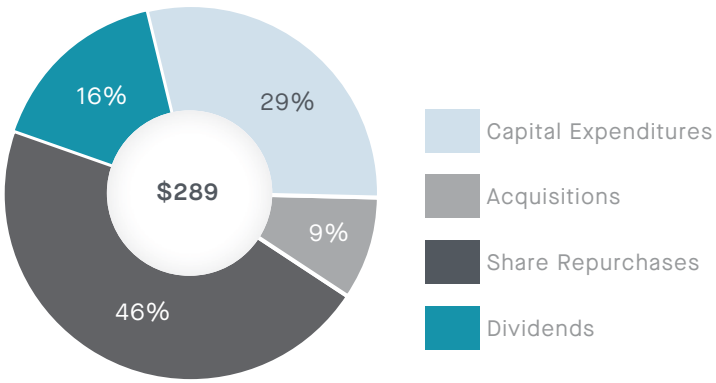
Total Company Cash Flow from Operating and Investing Activities



Total Company Adjusted Free Cash Flow*



2023 Capital Deployment



* Non-GAAP measure. Reconciliations to nearest GAAP measures provided at the end of this report.
EBITDA: Earnings before interest, taxes, depreciation and amortization. EPS: Earnings per share.

products in North America where the owner or occupant has limited access to the know-how of ceiling solutions, and as a result, has put off renovating their ceilings. The easy-to-use Kanopi™ by Armstrong platform creates more awareness of the many options for renovating spaces with our large portfolio of solutions including both Mineral Fiber products and Architectural Specialty products. The platform is bringing a wide variety of new customers to Armstrong and our distribution partners. Importantly, the ongoing year-over-year growth we're generating with new Kanopi customers, repeat customers and sales volume support the strategic rationale behind our investment.

The use of ProjectWorks® also continues to gain momentum. This digital design service is a unique capability within our industry and is accelerating the speed and efficiency of customer project collaboration. ProjectWorks addresses the growing challenges architects and designers face with compressed completion cycles and the need to complete increasing numbers of projects with the same number of architects on staff. In addition, ProjectWorks helps contractors, and ultimately the project owners, reduce costs by eliminating waste through optimization of the project design and bill of materials. We continue to expand the breadth of products incorporated into ProjectWorks and widen the use of this service by more and more architects, designers and contractors.

Innovating for a Healthy & Sustainable Future

The innovative approach we have taken with digital initiatives is just one example of how we're actively seeking and delivering solutions that differentiate Armstrong within our industry. The solutions we provide also help our customers as well as building owners and operators achieve their own goals for efficiency and sustainability.

With our recent innovations, we have broadened our view of our Healthy Spaces initiative to incorporate sustainability as well as indoor environmental quality (IEQ). The solutions we are developing in this area can now address the pressing need expressed by our customers to reduce their energy usage and overall environmental impacts while also enhancing the well-being of building occupants.

Using our recently acquired PCM technology, we have launched a new product portfolio that delivers energy savings along with thermal comfort, aesthetics and acoustical properties. Ultima® Templok® ceiling panels, the first product in this portfolio, has the ability to reduce energy costs for heating and cooling a building by up to an estimated 15 percent.[1] This unique product offers a completely new specifiable attribute to ceilings – energy savings. We view this as an initial step to building a multi-generational portfolio of energy savings ceiling products that address growing market demand for solutions that reduce carbon emissions within the built environment.

We continue to see strength in our other Healthy Spaces products like AirAssure® and Health Zone™. These products that were once focused just on healthcare spaces have gained traction in other markets, particularly offices, education and data centers. Sales volume growth of these products in 2023 continued to outpace our overall Mineral Fiber sales volume growth, as they did in 2022.

Delivering Value for Stakeholders

Because of our market position, the resilience of our business model and our strong cash generation, we have been able to make these important investments while continuing to provide direct returns to our shareholders. Over the past 5 years, we have been able to generate over $1 billion in adjusted free cash flow. And since 2016, we delivered more than $1 billion in shareholder returns through a combination of dividends and share repurchases.

What we achieved in 2023 further validates the strategic choices we have made over the last several years as we exited less profitable markets and increased investment in our core North American market. The actions we have taken have strengthened our competitive position and increased our resiliency. With our resilient business model and the strong dedication and efforts of our employees we are delivering profitable growth, despite challenging market conditions, and we are poised to do more of the same in the years to come.





Top: CastWorks™ GRG Custom Ceiling Panels, Prelude® XL Max®

Bottom: MetalWorks™ Linear – Classics

Vic Grizzle

President and Chief Executive Officer

[1] Measured cooling energy savings in lab tests. Results may vary. See details on company website.

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, 2023

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	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value per share	AWI	New York Stock Exchange

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

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

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

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months, and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter time period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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 ($73.46 per share) on the New York Stock Exchange (trading symbol AWI) as of June 30, 2023 was approximately $3.3 billion. As of February 14, 2024, the number of shares outstanding of the registrant's Common Stock was 43,808,333.

Documents Incorporated by Reference

Certain sections of Armstrong World Industries, Inc.'s definitive Proxy Statement for use in connection with its 2024 annual meeting of shareholders, to be filed no later than April 29, 2024 (120 days after the last day of our 2023 fiscal year), are incorporated by reference into Part III of this Form 10-K Report where indicated.

Auditor Name: KPMG LLP Auditor Location: Philadelphia, PA Auditor Firm ID: 185

TABLE OF CONTENTS

		PAGE
	Cautionary Note Regarding Forward-Looking Statements	3
	PART I	
Item 1.	Business	5
Item 1A.	Risk Factors	10
Item 1B.	Unresolved Staff Comments	18
Item 1C.	Cybersecurity	18
Item 2.	Properties	19
Item 3.	Legal Proceedings	19
Item 4.	Mine Safety Disclosures	19
	PART II	
Item 5.	Market for the Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities	20
Item 6.	[Reserved]	20
Item 7.	Management's Discussion and Analysis of Financial Condition and Results of Operations	21
Item 7A.	Quantitative and Qualitative Disclosures About Market Risk	30
Item 8.	Financial Statements and Supplementary Data	31
Item 9.	Changes in and Disagreements with Accountants on Accounting and Financial Disclosure	75
Item 9A.	Controls and Procedures	75
Item 9B.	Other Information	75
Item 9C.	Disclosure Regarding Foreign Jurisdictions that Prevent Inspections	75
	PART III	
Item 10.	Directors, Executive Officers and Corporate Governance	76
Item 11.	Executive Compensation	76
Item 12.	Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	77
Item 13.	Certain Relationships and Related Transactions, and Director Independence	77
Item 14.	Principal Accountant Fees and Services	77
	PART IV	
Item 15.	Exhibits and Financial Statement Schedules	78
Item 16.	Form 10-K Summary	80
Signatures		81

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 herein may constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Those forward-looking statements are subject to various risks and uncertainties and include all statements that are not historical statements of fact and those regarding our intent, belief or expectations, including, but not limited to, our expectations concerning our markets, broader economic conditions and their effect on our operating results; our expectations regarding the payment of dividends; and our ability to increase revenues, earnings and earnings before interest, taxes, depreciation and amortization. Words such as "anticipate," "estimate," "expect," "project," "intend," "plan," "believe," "outlook," "target," "predict," "may," "will," "would," "could," "should," "seek," 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:

Risks Related to Our Operations

- changes in key customer relationships;
- availability and costs of manufacturing inputs or sourced products;
- financial contribution of Worthington Armstrong Venture ("WAVE"), our joint venture with Worthington Enterprises, Inc.;
- labor;
- cost savings and productivity initiatives;
- progress towards environmental, social and governance ("ESG") and sustainability objectives and related compliance;

Risks Related to Our Strategy

- benefits from strategic initiatives, including investments in digitalization and product innovation;
- identification, completion and successful integration of strategic transactions;

Risks Related to Financial Matters

- our liquidity needs and indebtedness;
- ability to make dividend payments and stock repurchases;
- unanticipated negative tax consequences;
- defined benefit plan obligations;

Risks Related to Legal and Regulatory Matters

- environmental liability exposure;
- claims and litigation;
- effectiveness of intellectual property rights protection;
- operations in Canada and Latin America;

Risks Related to General Economic and Other Factors

- economic conditions;
- construction activity;
- market competition;
- customer consolidation;

- information technology disruptions and cybersecurity breaches;
- dependence on third-party vendors and suppliers;
- geographic concentration;
- public health epidemics or pandemics; 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.

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.

AWI is a leader in the design, innovation and manufacture of ceiling and wall solutions in the Americas. We manufacture and source products made of numerous materials, including mineral fiber, fiberglass wool, metal, wood, felt, wood fiber, and glass-reinforced-gypsum. We also manufacture ceiling suspension system (grid) products through a joint venture with Worthington Enterprises, Inc. called Worthington Armstrong Venture ("WAVE").

Reportable Segments

Our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate.

Mineral Fiber – produces suspended mineral fiber and soft fiber ceiling systems. Our mineral fiber products offer various performance attributes such as acoustical control, rated fire protection, and energy efficiency, along with other health and sustainability features and aesthetic appeal. Ceiling products are primarily sold to resale distributors, ceiling systems contractors and wholesalers, and retailers (including large home centers). The Mineral Fiber segment also includes the results of WAVE, which manufactures and sells suspension system (grid) products and ceiling component products that are invoiced by both AWI 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. For some customers, WAVE sells its suspension system products to AWI for resale to customers. Mineral Fiber 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 Corporate segment, including all property and related depreciation 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, designs and sources ceilings, walls and facades primarily for use in commercial settings. Products are available in numerous materials, such as metal, wood and felt, in addition to various colors, shapes and designs. These products offer various performance attributes such as acoustical control, rated fire protection and aesthetic appeal. We sell standard, premium and customized products, a portion of which are sourced from third-party producers. Architectural Specialties products are sold primarily to resale distributors and direct customers, primarily ceiling systems contractors. The majority of this segment's revenues are project driven, which can lead to more variability in sales patterns. Operating results for the Architectural Specialties segment include a portion of allocated Corporate administrative expenses that represent a reasonable allocation of general services to support its operations.

Unallocated Corporate – includes certain assets, liabilities, income and expenses that have not been allocated to our other business segments and consists 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 secured credit facility and income tax balances.

Overview

Our business has been built on providing high-quality, innovative products through a highly focused service model as well as by maintaining strong brand awareness and trust. We are committed to delivering profitable topline growth and sustainable shareholder value by strengthening our core Mineral Fiber segment and expanding our Architectural Specialties segment into new, adjacent business categories and sectors. Through this strategy, we have delivered consistent growth in mineral fiber sales dollars per unit sold through product innovation, including our Healthy Spaces products, Total Acoustics® solutions and Sustain® family of products, and we have built a broad portfolio of architectural specialties products for ceilings, specialty walls and exterior applications in our markets. Our primary focus is on growth initiatives that further leverage innovation and digitalization (including the movement toward healthier and sustainable indoor environments in order to accelerate renovation), expansion of our Architectural Specialties segment through acquisitions, and strong cash flow generation.

Acquisitions

In October 2023, we acquired a portion of the business and certain assets of Insolcorp, LLC ("Insolcorp"), based in Albemarle, NC, used to develop, test and manufacture energy saving products deployed in building and roofing installations. The acquired operations, assets and liabilities of Insolcorp are included in our Mineral Fiber segment.

In July 2023, we acquired all of the issued and outstanding stock of BOK Modern, LLC ("BOK"), based in San Rafael, CA. BOK is a designer of metal facade architectural solutions.

In November 2022, we acquired the business of GC Products, Inc. ("GC Products"), based in Lincoln, CA. GC Products is a designer and manufacturer of glass-reinforced-gypsum, glass-reinforced-cement, molded ceiling and specialty wall products with one manufacturing facility.

The operations, assets and liabilities of BOK and GC Products are included in our Architectural Specialties segment.

Markets

We primarily operate in the United States, Canada and Latin America. We believe we are well positioned in the industry sectors and categories in which we operate, often holding a leadership position. Our products compete against mineral fiber and fiberglass ceiling products from other manufacturers, as well as drywall and a wide range of specialty ceiling products. We compete directly with other domestic and international suppliers of these products. The major markets in which we compete are:

Commercial Construction. Our revenue opportunities come from new construction as well as renovation of existing buildings. Most of our revenue comes from the following sectors of commercial construction – office, education, healthcare, transportation and retail. We closely monitor publicly available macroeconomic data and trends that provide insight into commercial construction market activity, including, but not limited to, gross domestic product ("GDP"), office vacancy rates, the Architecture Billings Index, new commercial construction starts, state and local government spending, corporate profits and retail sales. Our revenue from new construction can lag behind construction starts by as much as 24 months. 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, performance attributes (such as acoustics, energy efficiency, sustainability and health attributes), availability, affordability and ease of installation also affect our revenue.

In our Mineral Fiber segment, we estimate that a majority of our commercial construction market sales are used for existing building renovation purposes by end-users of our products. We differentiate renovation opportunities between major renovation projects, which tend to be larger in scope, versus repair projects that generally involve the replacement of old products with new products. In our Architectural Specialties segment, we estimate that a majority of our commercial market sales are used for new building construction by end-users of our products. The end-use of our products is based on management estimates as such information is not easily determinable.

Residential Construction. While a smaller portion of our business, we also sell products for use in single and multi-family housing. We estimate that existing home renovation work represents the majority of the residential construction 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.

Customers

We use our reputation, capabilities, service, innovation 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., with wholesalers who re-sell our products to dealers who service builders, and direct customers, which include sales to contractors, architects and designers who specify products.

In 2023, nearly 70% of our consolidated net sales were to distributors. Sales to large home centers accounted for nearly 10% of our consolidated net sales. Our remaining sales were primarily to direct customers and retailers.

Gross sales to Foundation Building Materials, Inc. and GMS, Inc. totaled $631.9 million and individually exceeded 10% of our consolidated gross sales in 2023. Sales to these distributors are included in both our Mineral Fiber and Architectural Specialties segment net sales.

Working Capital

We produce goods for inventory and sell on credit to our customers. Generally, we believe our distributors and home center customers 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

The markets in which our products are sold are highly competitive. 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 (owned by Gebr. Knauf KG), 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. Our principal raw materials are fiberglass, perlite, recycled paper and starch. Other raw materials we purchase include clays, felt, pigment, wood and wood fiber. We manufacture most of our mineral wool needs at one of our facilities. Finally, we use aluminum and steel in the production of metal ceilings by us and by WAVE, our joint venture that manufactures grid products.

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 assurance 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 we sell are sourced from third parties. Our primary sourced products include specialty ceiling products. A portion of our sourced products are from suppliers located outside of the U.S., primarily from Europe and the Pacific Rim. Sales of sourced products represented approximately 10% of our total consolidated revenue in 2023.

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

Seasonality

Historically, 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 activity.

Patent and Intellectual Property Rights

Patent protection is important to our business. We hold a broad collection of intellectual property rights relating to certain aspects of our products and processes developed or perfected within AWI or obtained through acquisitions and licenses. This includes patents, trademarks, designs, copyrights, trade secrets and other forms of intellectual property rights in the U.S. and various foreign countries.

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, trademarks, designs, copyrights, trade secrets and licenses constitute a valuable asset of material importance to our business, we do not believe we are materially dependent upon any single one of these intellectual property rights.

Certain of our trademarks, including without limitation, , Armstrong®, 24/7 Defend™, ACOUSTIBuilt®, AirAssure®, Airtite®, Arktura®, BŌK Modern®, Calla®, Cirrus®, Cortega®, DESIGNFlex®, Dune™, Feltworks®, Humiguard®, Infusions®, InvisAcoustics™, Kanopi™, Lyra®, MetalWorks™, Móz™, Optima®, Plasterform™, ProjectWorks®, Soundscapes®, Sustain®, Tectum®, Templok®, Total Acoustics®, Turf®, 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 our former flooring business into a separate publicly-traded company, Armstrong Flooring, Inc. ("AFI"), in 2016, 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. Further, in 2022, as part of the AFI bankruptcy and with AWI consent, all rights, obligations and protections that existed as part of the arrangement with AFI were transferred to AHF Products in North America, Zhejiang GIMIG Tech Co., Ltd. in China, and to Braeside Mills Investments Pty Ltd in Australia/New Zealand. None of these transactions had or are expected to have any material impact on the integrity of the Armstrong trademark.

In connection with the sale of certain subsidiaries comprising our businesses and operations in Europe, the Middle East and Africa (including Russia) ("EMEA") and the Pacific Rim, including the corresponding businesses and operations conducted by WAVE (collectively, the "Sale"), to Knauf International GmbH ("Knauf") in 2019, we entered into a royalty-free intellectual property License Agreement with Knauf for its benefit (and, under sublicense, to the buyers of certain businesses divested by Knauf) under which they license certain patents, trademarks and know-how from us for use in certain licensed territories.

We review the carrying value of indefinite-lived trademarks at least 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.

Sustainability and Environmental Matters

As a leading building products manufacturer, we are committed to operating sustainably across all areas of our business. This commitment is reflected in our ongoing initiatives to design and develop sustainable ceiling and wall solutions for every indoor space. Our sustainability focus reflects our mission to make a positive difference in the lives of people where they live, work, learn, heal and play. Our approach to sustainability is designed to support our strategic priorities, align with stakeholder interests, and be visible and measurable.

Our sustainability program is organized around three program pillars: People, Planet and Product.

Our People pillar broadly focuses on creating a safe working environment for our employees, increasing our engagement in the communities where we operate, evaluating our benefits and compensation structure for all levels of the organization, promoting and maintaining a diverse, inclusive, talented and thriving workforce, and encouraging and protecting human rights.

Our Planet pillar broadly focuses on reducing our greenhouse gas footprint, reducing or reclaiming water in our operations, and reducing waste in our operations. These efforts include achieving emissions reductions through operational efficiency and product design improvements and exploring renewable electricity options where we operate. Additionally, we are committed to complying with all environmental laws and regulations that are applicable to our operations.

Our Product pillar broadly focuses on ensuring our products are free of chemicals of concern, reducing our products' water and greenhouse gas footprint, improving the circularity of our products so they can be recycled, reused or repurposed, and continuing to invest in solutions that meet customer demand for building products that align with their sustainability goals. These efforts also include our mineral fiber ceilings recycling program, which aims to divert reclaimed ceiling tiles from landfills. 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, including through our Sustain® portfolio, is aligned with our growth strategy.

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 sustainable buildings. 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 products with an increased focus on sustainability.

In 2023, we published our third Sustainability Report, which refines and measures our progress towards achieving our 2030 sustainability goals. We expect to update our progress regularly. The report is available in the "Sustainability" section of our website, which is listed below. Information in the 2023 Sustainability Report or the Company's website is not incorporated herein by reference.

Human Capital

Workforce Demographics. As of December 31, 2023 and 2022, we had approximately 3,100 and 3,000 full time and part time employees, respectively. During 2023, our total voluntary and involuntary turnover rates were approximately 8% and 4%, respectively, for non-production employees and 11% and 6%, respectively, for production employees.

As of December 31, 2023, approximately 56% of our approximately 1,500 production employees in the U.S. were represented by labor unions. Collective bargaining agreements covering approximately 470 employees at two U.S. plants will expire during 2024. We believe that our relations with our employees are constructive and positive.

Employee Health and Safety. Safety is a core value at AWI and our culture is committed to making safety a personal core value for every employee. Our overall goal is to eliminate workplace injuries. We promote and foster an environment of empowerment and sharing throughout the company at all levels and in all locations. We engage our employees on safety with a focus on risk identification and elimination and through tracking various leading indicators. We track Occupational Safety and Health Administration ("OSHA") recordable injuries and lost time rates by location monthly. We establish safety targets annually, which are tracked and reported to leadership monthly and reviewed with our Board of Directors.

Compensation, Benefits and Wellness. Employee compensation is based on defined job descriptions and position grades that are evaluated against external market data that we believe is competitive and fair. We offer competitive health and wellness benefits to eligible employees and periodically conduct analyses of plan utilization to further tailor our employee benefits to meet their ongoing needs. In recent years we added parental leave and adoption benefits for all employees and launched a wellness program to promote physical, mental, and financial well-being. In addition, we offer on-site wellness screenings at our manufacturing facilities in partnership with our medical provider. Finally, we offer mental well-being support and nutrition and financial wellness education to all employees.

Diversity and Inclusion. We continue to value diversity and inclusion within our organization, as we believe it is important to our success. This commitment is reflected in the aspirational goals of the People Pillar of our Sustainability program, which is led by our Vice President of Talent Sustainability and Talent Acquisition. As part of our commitment to diversity and inclusion, in our merit-based selection process we strive to hire qualified candidates from a diverse talent pool reflective of the communities in which we have operations. In addition, we are committed to engaging in events and outreach that support enhanced diversity and inclusion, including providing training to employees on diversity and inclusion topics that matter to them. To support this strategy, we also take an active approach to attracting, retaining, and engaging diverse talent through internships, employee resource groups, professional development and apprenticeship programs, and employee feedback. As of December 31, 2023, our executive leadership team, defined as the chief executive officer and direct reports to the chief executive officer, included 33% gender diversity and 33% racial/ethnic diversity. As of December 31, 2022, our executive leadership team included 43% gender diversity and 14% racial/ethnic diversity.

Product Innovation

Product innovation activities are important and necessary in helping us improve our products' competitiveness. Principal product innovation functions include the development and improvement of products and manufacturing processes. We engage in research and development activities with a focus on market-driven product innovation to maintain our competitive position and enable growth, as well as innovation in our manufacturing processes to increase productivity.

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 two domestically owned locations allegedly resulting from past industrial activity. We are one of several potentially responsible parties in these matters 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.

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.

From time to time, we are involved in various other lawsuits, claims, investigations and other legal matters 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. In connection with those matters, we 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 any proceedings relating to these matters, 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 for environmental matters that we consider probable and for which a reasonable estimate of the probable liability could be made were $0.5 million as of December 31, 2023 and 2022. 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 https://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. Documents filed with the SEC are available on our website as soon as reasonably practicable after the reports are electronically filed with the SEC. We also file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers, including us, that file electronically with the SEC at https://sec.gov. Reference in this Form 10-K to our website and the SEC's website is an inactive text reference only.

ITEM 1A. RISK FACTORS

Risks Related to Our Operations

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

The loss, reduction, or fluctuation of sales to key customers, including independent distributors or national home center customers, or any adverse change in our business relationship with them, whether as a result of changing customer demands and expectations, reduced demand, supply chain constraints, competition, industry consolidation or otherwise, could have a material adverse effect on our financial condition, liquidity or results of operations.

If the availability of our manufacturing inputs or sourced products decreases, or the cost of those inputs or sourced products increases and we are unable to pass along increased costs resulting from supply chain or inflationary pressures, 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 and our results of operations. For example, we use substantial quantities of natural gas and some petroleum-based raw materials in our manufacturing operations. We source some materials from a limited number of suppliers, which, among other things, increases the risk of unavailability. Limited availability could require us to reformulate products or limit our production. Supply chain disruptions could decrease access to manufacturing inputs or sourced products or significantly increase the cost to purchase these items. The cost of some inputs has been volatile in recent years and availability has been limited at times. Future input cost volatility could occur because of our suppliers' exposure to geopolitical events. A decrease in availability or increases in costs of manufacturing inputs or sourced products, and any 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 an 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. WAVE's markets are highly competitive and 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 its financial condition, liquidity or results of operations. Similarly, the availability and cost of raw materials, packaging materials, energy and sourced products, and the ability to pass along increased costs, are critical to WAVE's operations and its results of operations.

We believe the relationship with our partner, Worthington Enterprises, Inc., is an important element in the success of this joint venture. In December 2023, Worthington Enterprises, Inc. (formally known as Worthington Industries, Inc.) completed its previously announced separation of Worthington Steel, Inc. into a separate independent, publicly-traded company (the "Worthington Separation"). Worthington Enterprises, Inc.'s investment in WAVE was not included in the assets and business transferred to Worthington Steel, Inc. If the Worthington Separation or any other change in ownership, change of control, change in management or management philosophy, change in business strategy or another change with respect to our partner adversely impacts our relationship, WAVE's performance could be adversely impacted. In addition, our partner may develop 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 with our interests or goals.

Increased labor costs, labor disputes, work stoppages or union organizing activity, as well as increased labor shortages, or an inability to attract and retain talented employees could delay or impede production and could have an adverse effect on our financial condition, liquidity or results of operations.

We rely on our employees to manufacture and sell our products. Labor disputes, which may result in work stoppages or union organizing activities, can directly impact production levels. 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. Collective bargaining agreements covering approximately 470 employees at two U.S. plants will expire during 2024. 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 success is also dependent upon attracting and retaining a qualified and diverse workforce. In many cases, we rely upon our employees' high degree of technical knowledge and industry experience. There can be no assurance that we will continue to attract and retain talented employees, particularly during times of increased labor costs or labor shortages. The impact from our inability to attract and retain a sufficient number of employees could have a material adverse effect on our financial condition, liquidity or results of operations.

We continuously pursue productivity initiatives and periodically engage in cost-saving initiatives. Execution of these initiatives may result in interruptions in production and/or may result in lower-than-expected savings in our operating cost structure or may not improve our operating results.

We seek ways to make our operations more efficient and effective. We may reduce, move, modify or expand our plants and operations, as well as our sourcing and supply chain arrangements, and invest in technology, 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 resulting from equipment failures or other interruptions in production, or if other unforeseen events occur, our financial condition, liquidity or results of operations could be materially and adversely affected.

We are subject to certain regulatory, financial and other risks related to climate change, climate transition, and other sustainability matters, broadly known as ESG. Should our efforts to address these risks fail to align with new regulations or stakeholder expectations, fail to achieve the anticipated benefits, or result in unanticipated costs, our corporate reputation, financial condition, liquidity or results of operations could be adversely impacted.

In recent years, governmental and societal attention on ESG topics has increased. These ESG topics include greenhouse gas emissions and climate-related risks, renewable energy, water stewardship, waste management, diversity, equity and inclusion, responsible

sourcing and supply chain transparency, human rights, and social responsibility. Evolving government and societal expectations around these issues and our efforts to manage and report on them, as well as accomplish our ESG goals present numerous operational, regulatory, reputational, financial, legal, and other risks, any of which could have a material adverse impact.

In July 2023, we published our third Sustainability Report, which includes certain 2030 ESG and sustainability goals and describes our progress towards meeting those goals. We may not achieve the anticipated benefits we expect from these or other ESG and sustainability goals, which may damage our reputation, or these efforts may not align with new regulations or expectations of stakeholders. Efforts to achieve these goals may result in higher or unforeseen costs. In addition, we may encounter challenges measuring our progress towards the achievement of our ESG goals.

Further, concerns related to climate change have resulted in domestic and foreign legislative or regulatory actions as well as changing customer preferences and policies, such as environmentally responsible building codes and standards. New legislation and regulations in the U.S. and in the foreign countries in which we operate could impose restrictions, caps, taxes, or other controls on emissions of greenhouse gases, which could adversely affect our operations and financial results. While we have a comprehensive sustainability strategy, including, greenhouse gas reduction targets, transparent disclosures related to our ESG impacts and product innovation to respond to these evolving codes, standards and customer preferences, there is no certainty we will be successful in our approach. Overall, climate change, its effects and impacts of government regulation, consumer, investor and business preferences are inherently difficult to predict and could adversely impact our business by increasing our energy costs and/or result in substantial, additional capital expenditures and operating costs in the form of taxes, emissions allowances, or required equipment upgrades or require that we modify our products or processes in a manner that increases our costs and/or reduces our profitability. Any of the foregoing factors could impair our operating efficiency and productivity and result in higher operating costs.

Risks Related to Our Strategy

We may not experience the anticipated benefits from our strategic initiatives, including investments in digitalization, Healthy Spaces and innovation.

We continue to evaluate and may pursue strategic initiatives involving the development or utilization of new or innovative products, solutions and tools, including those related to Healthy Spaces, as well as the expansion of our ecommerce platform, Kanopi by Armstrong, and our automated design service, ProjectWorks. These initiatives are designed to grow revenue, improve profitability and increase shareholder value. Our results of operations and financial position could be materially and adversely affected if we are unable to successfully identify, execute and integrate these initiatives or if we are unable to complete these initiatives in a timely and efficient manner to realize competitive advantages and opportunities.

We may pursue strategic transactions, including mergers, acquisitions, joint ventures, strategic alliances or other investments, which could create risks and present unforeseen integration obstacles or costs, any of which could have an adverse effect on our financial condition, liquidity or results of operations.

We regularly evaluate potential mergers, acquisitions, joint ventures, strategic alliances or other investments that we believe could complement, enhance or expand our current businesses or product lines or that might otherwise offer us growth opportunities, particularly in our Architectural Specialties segment for which we have completed five acquisitions since July 2020. 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, increasing or decreasing the scope, geographic diversity and complexity of our operations, and potentially expanding into new ceiling and wall adjacencies and/or offering products with new attributes. 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 identify, consummate and integrate our strategic transactions in a timely and cost-effective manner, our financial condition, liquidity or results of operations could be materially and adversely affected.

Risks Related to Financial Matters

We require a significant amount of liquidity to fund our operations and our indebtedness may adversely affect our ability to operate and invest in our business, execute on our strategic initiatives, and return cash to shareholders.

Our level of indebtedness and degree of leverage could:

- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate;

- make us more vulnerable to adverse changes in general economic, industry and competitive conditions and adverse changes in government regulation;
- 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 pursuing;
- 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 or repurchase our capital stock; and
- make it more difficult for us to satisfy our obligations with respect to our indebtedness.

Additionally, the agreements that govern our indebtedness include 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. 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 be able to elect to declare all outstanding borrowings under our facility, 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 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 may seek to incur additional indebtedness, which could exacerbate the risks detailed above. In addition, to the extent that our indebtedness bears interest at floating rates, our sensitivity to interest rate fluctuations will increase. Further, we cannot guarantee financial institutions' capacity in the future to provide credit, or alternatively access to capital markets, which may limit our ability to obtain new debt financing or refinance existing debt obligations.

The above factors could have a material adverse effect on our financial condition, liquidity or results of operations.

We cannot provide any guarantees of future cash dividend payments or future repurchases of our common stock pursuant to a share repurchase program.

Since December 2018, our Board of Directors has declared a quarterly dividend on our common stock. The payment of any future cash dividends to our shareholders is not guaranteed and will depend on decisions that will be made by our Board of Directors based upon our financial condition, results of operations, cash flows, business requirements and a determination that the declaration of cash dividends is in the best interest of our shareholders and is in compliance with all laws and agreements applicable to the payment of dividends.

In July 2016, our Board of Directors approved a share repurchase program authorizing us to repurchase up to $150.0 million of our outstanding shares of common stock (the "Program"). Since inception of the Program we have been authorized to repurchase up to an aggregate of $1,700.0 million of our outstanding shares of common stock through December 31, 2026. Repurchases under the Program may be made through open market, block and privately negotiated transactions, including Rule 10b5-1 plans, at times and in amounts as management deems appropriate, subject to market and business conditions, regulatory requirements and other factors. The Program does not obligate us to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice. Furthermore, there can be no assurance that we will be able to repurchase our common stock and we may discontinue plans to repurchase common stock at any time.

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

We are subject to the tax laws of the various jurisdictions in which we operate. The tax laws are complex, and the manner in which they apply to our operations, results and tax planning strategies is sometimes open to interpretation. Our income tax expense (benefit) and reported net earnings may fluctuate significantly and may be materially different than forecasted or experienced in the past. Our financial condition, liquidity or results of operations could be materially and adversely affected by changes in effective tax rates, changes in our overall profitability, changes in tax legislation, the results of examinations of previously filed tax returns, and ongoing assessments of our tax exposures.

Our financial condition, liquidity or results of operations could also be adversely affected by changes in the valuation of deferred tax assets and liabilities. We have substantial deferred tax assets related to capital loss carryforwards and state net operating losses

("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 by certain future events, such as changes in tax legislation and insufficient future taxable income prior to expiration of the capital loss carryforwards and NOLs.

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 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 multiple assumptions and 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.

In the aggregate, our U.S. pension plans were overfunded by $56.9 million as of December 31, 2023. Our unfunded postretirement plan liabilities were $47.6 million as of December 31, 2023. 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 refinance or obtain additional indebtedness.

Risks Related to Legal and Regulatory Matters

We may be subject to liability under, and may make substantial future expenditures to comply with, environmental laws and regulations, which could have an adverse effect on our financial condition, liquidity or results of operations.

We are actively involved in environmental investigation and remediation activities relating to two domestically 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"), polyvinyl chloride ("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 at commercially acceptable premium levels or at all, or such coverage may not be 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 may also impose potential liability on us for our past operations and past operations at sites on which we operate. Our costs to comply with these laws and regulations may increase as these requirements become more stringent in the future.

Potential regulatory actions, product and service claims, environmental claims and other litigation could be costly and have an adverse effect on our financial condition, liquidity or results of operations. 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 and services comply with applicable government regulatory standards and internal requirements, and that our products and services perform effectively and safely, customers from time to time could claim that our products and services do not meet warranty or contractual requirements, and users could claim to be harmed by use or misuse of our products and services. 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 effect on our financial condition, liquidity or results of operations.

Our intellectual property rights may be infringed, misappropriated, invalidated or otherwise circumvented, which could adversely impact our financial condition, liquidity or results of operations.

We rely on our proprietary intellectual property, including numerous patents, trademarks, designs, copyrights and trade secrets, 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, designs, copyrights, trade secrets and other intellectual property and rely on the laws of the U.S. and other countries. Despite our efforts, the steps we have taken to protect our intellectual property may be inadequate. Existing trade secret, patent, design, trademark and copyright laws offer only limited protection. Our patents could be invalidated or circumvented. In addition, others may develop substantially equivalent or superseding proprietary technology, or competitors may offer similar competing products that do not infringe on our intellectual property rights, thereby substantially reducing the value of our intellectual property rights. Litigation may be necessary to defend and enforce our intellectual property rights. Engaging in litigation may incur substantial costs and divert resources, which could harm our business regardless of the outcome. Despite our efforts to protect and maintain our intellectual property rights, both in the U.S. and abroad, we may be unsuccessful in some matters. 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. All of the above could have a material adverse effect on our financial condition, liquidity or results of operations.

We are subject to risks associated with our operations in Canada and Latin America. 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.

A portion of our net sales are generated in Canada and Latin America. While these sales are minor in comparison to our total consolidated net sales, they are subject to currency exchange fluctuations, trade regulations, import duties, logistics costs, delays and other related risks. Our Canadian and Latin American operations are also subject to various tax rates, credit risks in emerging markets, political risks, uncertain legal systems, and loss of sales to local competitors following currency devaluations in countries where we import products for sale. In addition, a part of our growth strategy depends on our ability to expand our operations in Canada and Latin America, including emerging markets that have greater political and economic volatility and greater vulnerability to infrastructure and labor disruptions than established markets.

In addition, in countries outside of the U.S., 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 with 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 operations may face, which may adversely affect our business outside the U.S. and our financial condition, liquidity or results of operations.

Risks Related to General Economic and Other Factors

Unstable market and economic conditions could have an 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 government stimulus. Volatility in financial markets and softness or 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;

- 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 plan may decline, which could result in significant cash contributions to the plan in order 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 in North America. Downturns or delays in construction activity could have an adverse effect on our financial condition, liquidity or results of operations.

Our business has greater sales opportunities when construction activity, including both new building construction and renovation of existing buildings, is strong and, conversely, has fewer opportunities when such activity declines. The cyclical nature of 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, financing availability, prevailing interest rates, government spending patterns, business, investor and consumer confidence, inflation, availability of labor, adequately functioning supply chains and other factors beyond our control. Our revenue opportunities come from new construction as well as renovation of existing buildings. Most of our revenue comes from the following sectors of commercial construction – office, education, healthcare, transportation and retail. Commercial construction activity for these sectors can be influenced by the changing needs for spaces, including potential declines in demand for office space as a result of sustained remote or hybrid work models. Prolonged downturns or delays in construction activity could have a material adverse effect on our financial condition, liquidity or results of operations.

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

Our customers consider product performance attributes, product styling, customer service and price when deciding whether to purchase our products. Failure to meet shifting consumer preferences in our highly competitive markets, whether for product performance attributes, such as acoustics, energy efficiency, sustainability, health attributes, 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. If our competitors offer discounts on certain products or provide new or alternative offerings that the marketplace perceives as more cost-effective, it could adversely affect our price realization. Any of the above factors could have a material adverse impact on our financial condition, liquidity or results of operations.

Customer consolidation, and competitive, economic and other pressures facing our customers, and our potential failure to attract new customers in our markets, may negatively impact our net sales, operating margins and profitability.

A number of our customers, including distributors and contractors, have consolidated in recent years and consolidation could continue, further concentrating an increasing portion of our net sales within a smaller group of key customers. Further consolidation could impact margin growth and profitability as larger customers may realize certain operational and other benefits of scale. The economic and competitive landscape for our customers is constantly changing, and our customers' responses to those changes could impact our business. The demand for our products can also be impacted by the buying patterns of certain customers and how they manage their inventory levels. These factors could have a material adverse impact on our financial condition, liquidity or results of operations.

Our operating and information systems may experience a failure, a compromise of security, or a violation of data privacy laws or regulations, which 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 disruption and an increasing threat of continually evolving cybersecurity risks. These information systems may be disrupted or fail as a result of events that are wholly or partially beyond our control, including events such as power loss, software or hardware defects, hacking, computer viruses, malware, ransomware or other cyber-attacks. All of these risks are also applicable where we rely on outside vendors to provide services, which may operate in a cloud environment. We are dependent on third-party vendors to operate secure and

reliable systems which may include data transfers over the internet. Any events which deny us use of vital operating or information systems may seriously disrupt our normal business operations.

We also compete through our use of information technology. We strive 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 system or other failures in the reliability of our systems may have a material adverse effect on our operating results.

We could also experience a disruption of service or a compromise of our information security due to technical system flaws, clerical, data input or record-keeping errors, migration to new systems, or tampering or manipulation of our systems by employees or unauthorized third parties. Information security risks also exist with respect to the use of portable electronic devices, such as laptops and smartphones, which are particularly vulnerable to loss and theft. 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.

Additionally, our key partners, distributors or suppliers could experience a compromise of their information security due to technical system flaws, clerical, data input or record-keeping errors, or tampering or manipulation of their respective systems by employees or third parties, which may have an impact on our commercial sales, vendor, partner or other relationships.

Our business is dependent upon third-party vendors and suppliers whose failure to perform adequately could have an adverse effect on our financial condition, liquidity or results of operations.

We source a significant portion of raw materials and sourced products from third parties, including international suppliers. Our ability to select and retain reliable vendors and suppliers who provide timely deliveries of quality raw materials and sourced products will impact our success in meeting customer demand for timely delivery of quality products.

The ability of third-party suppliers to timely deliver raw materials and sourced products may be affected by events beyond their control, such as inability of shippers to timely deliver merchandise due to work stoppages or slowdowns, demand volatility or port congestion, unavailability of shipping containers or other equipment, or significant weather and health conditions affecting manufacturers and/or shippers. Any adverse change in our relationships with our third-party suppliers, the financial condition of third-party suppliers, the ability of third-party suppliers to manufacture and deliver outsourced raw materials or sourced products on a timely basis could have a material adverse effect on our financial condition, liquidity or results of operations.

In addition, the financial condition of our vendors and suppliers may be adversely affected by general economic conditions, such as credit difficulties and the uncertain macroeconomic environment. Our international suppliers may be impacted by tariffs or other trade matters. Any inability of our vendors and suppliers to timely deliver quality raw materials and sourced products or any unanticipated change in supply, quality or pricing of products could have a material adverse effect on our financial condition, liquidity or results of operations.

The geographic concentration of our business could subject us to risks, including those associated with climate change, which may be greater than our competitors and could have an adverse effect on our financial condition, liquidity or results of operations.

We primarily operate in the U.S., Canada and Latin America. Our concentrated operations in the Americas could subject us to a greater degree of risk relative to our global, diversified competitors. We are particularly vulnerable to adverse events (including acts of terrorism, natural disasters, weather conditions, labor market disruptions and government actions) and economic conditions in the U.S., Canada and Latin America. While our operations are primarily in the U.S., Canada and Latin America, we are exposed to downstream risks from global events. Adverse events or conditions in these geographic areas could have a material adverse effect on our financial condition, liquidity or results of operations.

Climate change and related extreme weather events in these geographic areas could impact:

- our manufacturing capability if one of our facilities is affected by such an event;
- demand from our customers through changes in construction activity in the markets in which we operate;
- availability or increased costs of manufacturing inputs or sourced products from our vendors and suppliers; and
- our broader supply chain through inability to ship and receive goods.

We may not be able to forecast the likelihood or severity of any of these impacts. Any of these could have a material adverse effect on our financial condition, liquidity or results of operations.

Public health epidemics or pandemics could have an adverse effect on our financial condition, liquidity or results of operations.

Public health epidemics or pandemics may impact our employees, operations, customers, suppliers and financial results. The extent of the impact will depend on numerous evolving factors that we may not be able to accurately predict, including: the duration and scope of an epidemic or pandemic; government actions taken in response to an epidemic or pandemic, including required shutdowns; the availability, acceptance, distribution and effectiveness of vaccines; the impact on construction activity; supply chain disruptions; rising inflation; labor shortages; sustained remote or hybrid work models; our ability to manufacture and sell our products; and the ability of our customers to pay for our products. Any of these events could have a material adverse effect on our financial condition, liquidity or results of operations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 1C. CYBERSECURITY

Our use of information systems for collecting, using, transmitting and storing data is a vital aspect of our business operations. Information systems are inherently vulnerable to a range of cybersecurity threats that could potentially have a material impact on our strategy, financial condition, liquidity or results of operations.

Cybersecurity Risk Management and Strategy. The Company actively maintains an enterprise risk management program. Management's role is to identify, mitigate, guide and review the efforts of our business units, consider whether the residual risks are acceptable, and approve plans to deal with potentially material risks. Cybersecurity is a key risk management category within our enterprise risk management program.

The Vice President and Chief Information Officer ("CIO"), who also serves as a member of the Company's enterprise risk counsel, works closely with key business leaders and functions to develop and enhance the Company's cybersecurity strategy. Our cybersecurity program is designed to safeguard against an evolving threat landscape through effective prevention, detection, response and recovery processes. Our cybersecurity risk management processes include frequent assessment of our top cyber risks and mitigations.

Our approach encompasses several key areas consisting of threat and vulnerability management that help to identify, prioritize and reduce cybersecurity gaps or weaknesses. Identity and access management serves as an integral part of our strategy and involves access controls and authentication methods. Data protection and privacy practices, including data loss prevention, safeguards sensitive information. We also deploy cybersecurity systems, such as firewalls, intrusion detection systems and continuous monitoring, to provide defenses against unauthorized access. Incident response exercises are regularly performed to ensure readiness for potential cybersecurity incidents. Employee training and awareness programs are conducted to minimize risks associated with human error and foster a culture of security consciousness. Finally, vendor risk management practices are employed and focus on monitoring the posture of our third-party vendors to mitigate risks from external sources. In addition, we perform user access reviews for third-party applications, and for certain applications, obtain and review System and Organization Controls reports to assess our critical vendors' cybersecurity preparedness both at inception and on an ongoing basis.

Our cybersecurity program's effectiveness is periodically evaluated against established quantifiable goals and other external benchmarks, including the National Institute of Standards and Technology security framework. This evaluation is carried out through periodic internal and external risk assessments and compliance audits. We regularly engage third parties in order to help conduct these evaluations, assessments and audits, advise us on the effectiveness of our cybersecurity processes and assist the Company in remediating any identified vulnerabilities.

To date, the risks from cybersecurity threats, including as a result of any previous immaterial cybersecurity incidents, have not materially affected, or are reasonably likely to materially affect, our strategy, financial condition, liquidity or results of operations.

Governance. Our Board of Directors has responsibility for oversight of management's cybersecurity risk program and receives regular updates from our CIO. These updates, provided on a semi-annual basis, cover a range of topics, including the performance of our

cybersecurity program against established goals and external standards, insights into the evolving cybersecurity landscape, current events and recent cybersecurity threats, and progress in enhancing the Company's cybersecurity posture.

Our CIO holds an advanced degree in Information Technology with over 20 years of experience, including senior leadership roles in technology at various companies. In addition, our CIO leads the Information Security Steering Committee, a group comprised of key information technology employees and business leaders, including our Senior Vice President, Chief Financial Officer and Senior Vice President, General Counsel and Chief Compliance Officer. This committee meets regularly to review and discuss the Company's cybersecurity strategies and developments, ensuring a comprehensive approach to managing cybersecurity risk.

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, 2023, we operated 16 manufacturing plants, including 14 plants located within the U.S. and two plants in Canada. This excludes our St. Helens, Oregon mineral fiber manufacturing plant, which was closed in the second quarter of 2018 and was classified as an asset held for sale as of December 31, 2023.

WAVE operates seven additional plants in the U.S. to produce suspension system (grid) products, which we use and sell in our ceiling systems.

Nine of our plants are leased and the remaining seven are owned.

Operating Segment	Number of Plants	Location of Principal Facilities
Mineral Fiber	5	U.S. (Florida, Georgia, Ohio, Pennsylvania and West Virginia)
Architectural Specialties	11	U.S. (California (3), Illinois (2), Missouri and Ohio (3)), Canada (Quebec and Ontario)

Sales and administrative offices are leased and/or owned, 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" subheading under "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. We are party to various other lawsuits, claims, investigations and other legal matters that arise in the ordinary course of business, including matters involving our products, intellectual property, relationships with suppliers, relationships with distributors, other customers or end users, relationships with competitors, employees and other matters. We do not believe that any such current claims, individually or in the aggregate, will have a material adverse effect on our financial condition, liquidity or results of operations. However, regardless of outcome, litigation and related matters can have an adverse impact on us due to defense and settlement costs, diversion of management resources, negative publicity, reputational harm and other factors.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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 14, 2024, there were 174 holders of record of AWI's common stock.

Dividends are payable 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. We declared dividends on a quarterly basis, totaling $1.042 per share in 2023. On February 14, 2024, our Board of Directors declared a dividend of $0.28 per common share outstanding. The dividend will be paid on March 14, 2024, to shareholders of record as of the close of business on February 29, 2024. 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, 2023	169,782	$ 71.74	167,321	$ 739,794,146
November 1 – 30, 2023	167,252	$ 77.76	167,175	$ 726,794,463
December 1 – 31, 2023	108,233	$ 94.45	105,948	$ 716,794,487
Total	445,267		440,444	

(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 our long-term incentive plans. For more information regarding securities authorized for issuance under our equity compensation plans, see Note 22 to the Consolidated Financial Statements included in this Form 10-K.

On July 29, 2016, our Board of Directors approved a share repurchase program authorizing us to repurchase up to $150.0 million of our outstanding shares of common stock (the "Program"). Since inception of the Program we have been authorized to repurchase up to an aggregate of $1,700.0 million of our outstanding shares of common stock through December 31, 2026. We had $716.8 million remaining under the Board's repurchase authorization as of December 31, 2023.

Repurchases of our common stock under the Program may be made through open market, block and privately negotiated transactions, including Rule 10b5-1 plans, at such times and in such amounts as management deems appropriate, subject to market and business conditions, regulatory requirements and other factors. The Program does not obligate AWI to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice.

During 2023, we repurchased 1.8 million shares under the Program for a total cost of $132.0 million, excluding commissions and taxes, or an average price of $73.91 per share. Since inception, through December 31, 2023, we have repurchased 14.2 million shares under the Program for a total cost of $983.2 million, excluding commissions and taxes, or an average price of $69.32 per share.

ITEM 6. [RESERVED]

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

AWI is a leader in the design, innovation and manufacture of ceiling and wall solutions in the Americas. Our products primarily include mineral fiber, fiberglass wool, metal, wood, felt, wood fiber and glass-reinforced-gypsum. We also manufacture ceiling suspension system (grid) products through a joint venture with Worthington Enterprises, Inc. called Worthington Armstrong Venture ("WAVE").

Acquisitions

In October 2023, we acquired a portion of the business and certain assets of Insolcorp, LLC ("Insolcorp"), based in Albemarle, NC, used to develop, test and manufacture energy saving products deployed in building and roofing installations. The acquired operations, assets and liabilities of Insolcorp are included in our Mineral Fiber segment.

In July 2023, we acquired all of the issued and outstanding stock of BOK Modern, LLC ("BOK"), based in San Rafael, CA. BOK is a designer of metal facade architectural solutions.

In November 2022, we acquired the business of GC Products, Inc. ("GC Products"), based in Lincoln, CA. GC Products is a designer and manufacturer of glass-reinforced-gypsum, glass-reinforced-cement, molded ceiling and specialty wall products with one manufacturing facility.

The operations, assets and liabilities of BOK and GC Products are included in our Architectural Specialties segment.

Manufacturing Plants

As of December 31, 2023, we operated 16 manufacturing plants, including 14 plants located within the U.S. and two plants in Canada. This excludes our St. Helens, Oregon mineral fiber manufacturing plant, which was closed in the second quarter of 2018 and was classified as an asset held for sale as of December 31, 2023.

WAVE operates seven additional plants in the U.S. to produce suspension system (grid) products, which we use and sell in our ceiling systems.

Reportable Segments

Our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate.

Mineral Fiber – produces suspended mineral fiber and soft fiber ceiling systems. Our mineral fiber products offer various performance attributes such as acoustical control, rated fire protection, and energy efficiency, along with other health and sustainability features and aesthetic appeal. Ceiling products are primarily sold to resale distributors, ceiling systems contractors and wholesalers, and retailers (including large home centers). The Mineral Fiber segment also includes the results of WAVE, which manufactures and sells suspension system (grid) products and ceiling component products that are invoiced by both AWI 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. For some customers, WAVE sells its suspension system products to AWI for resale to customers. Mineral Fiber 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 Corporate segment, including all property and related depreciation 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, designs and sources ceilings, walls and facades primarily for use in commercial settings. Products are available in numerous materials, such as metal, wood and felt, in addition to various colors, shapes and designs. These products offer various performance attributes such as acoustical control, rated fire protection and aesthetic appeal. We sell standard, premium and customized products, a portion of which are sourced from third-party producers. Architectural Specialties products are sold primarily to resale distributors and direct customers, primarily ceiling systems contractors. The majority of this segment's

revenues are project driven, which can lead to more variability in sales patterns. Operating results for the Architectural Specialties segment include a portion of allocated Corporate administrative expenses that represent a reasonable allocation of general services to support its operations.

Unallocated Corporate – includes certain assets, liabilities, income and expenses that have not been allocated to our other business segments and consists 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 secured credit facility and income tax balances.

Factors Affecting Revenues

For information on our segments' 2023 net sales by geography, see Note 3 to the Consolidated Financial Statements included in this Form 10-K. For information on our segments' 2023 net sales disaggregated by major customer groups, see Note 4 to the Consolidated Financial Statements included in this Form 10-K.

Markets. We compete in the building product markets of the Americas. We closely monitor publicly available macroeconomic data and trends that provide insight into commercial construction market activity, including, but not limited to, GDP, office vacancy rates, the Architecture Billings Index, new commercial construction starts, state and local government spending, corporate profits, and retail sales. The Company continues to monitor the impacts of geopolitical events, none of which had a material direct impact on our financial condition, liquidity or results of operations during 2023.

Several factors and trends within our markets affected our business performance during 2023 compared to 2022, notably, increased interest rates, a lower rate of inflation on certain input costs and the lessening impact of supply chain and labor availability constraints, all of which resulted in uneven demand. During 2023, increased sales volumes contributed $19 million to revenue compared to 2022, due primarily to the acquisitions of BOK and GC Products, which collectively contributed $14 million of net sales in 2023. The acquisition of GC Products contributed an immaterial amount to 2022 net sales. Also contributing to the increase in sales volumes was the benefit of our growth initiatives and growth in our Architectural Specialties segment, partially offset by softer market demand during 2023 in comparison to the prior year.

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. Typically, realized price increases are less than announced price increases because of project pricing, competitive adjustments and changing market conditions. We also 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. Within our Mineral Fiber segment, 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 like-for-like pricing impacting our revenues. Favorable AUV contributed approximately $43 million to our total consolidated net sales for the year ended December 31, 2023 compared to the same period in 2022. Our Architectural Specialties segment revenues are primarily earned based on individual contracts that include a mix of products, both manufactured by us and sourced from third parties, which varies by project. As such, we do not track AUV performance for this segment, but rather attribute most changes in net sales to volume.

During the first and third quarters of 2023, we implemented price increases on Mineral Fiber ceiling products. During the first and fourth quarters of 2023, WAVE implemented price increases on grid products. In the fourth quarter of 2023, we announced price increases on Mineral Fiber ceiling products that became effective in the first quarter of 2024. In the first quarter of 2024, WAVE announced price increases on grid products that will become effective in the first quarter of 2024. We may implement future pricing actions based on numerous factors, namely the rate and pace of inflation and its impact on our business.

Seasonality. Historically, 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 projects.

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 raw material expenditures are primarily for fiberglass, perlite, recycled paper, and starch. Other raw materials include clays, felt, pigment, wood, and wood fiber. We manufacture most of our mineral wool at one of our manufacturing facilities. We use aluminum and steel in the production of metal ceilings by us and by WAVE. Finally, natural gas and packaging materials are also significant input costs. Fluctuations in the prices of these inputs impact our financial results. In 2023, higher costs for raw materials were partially offset by lower costs for energy, negatively impacting operating income by $4 million compared to 2022.

Acquisition-Related Expenses and Losses

In connection with our acquisitions of TURF Design, Inc. ("Turf") in July 2020, Moz Design, Inc. ("Moz") in October 2020, Arktura LLC ("Arktura") in December 2020 and BOK in July 2023, we recorded certain acquisition-related expenses and losses (gains) to operating income for the years ended December 31, 2023, 2022, and 2021, summarized as follows (dollar amounts in millions):

	2023	2022	2021	Affected Line Item in the Consolidated Statements of Earnings and Comprehensive Income
Deferred revenue	$ -	$ -	$ 0.7	Net sales
Loss (gain) related to change in fair value of contingent consideration	0.1	11.0	(4.1)	Loss (gain) related to change in fair value of contingent consideration
Deferred cash and restricted stock expenses	10.7	7.9	12.8	SG&A expenses
Inventory	-	-	0.3	Cost of goods sold
Net negative impact to operating income	$ 10.8	$ 18.9	$ 9.7	

The deferred revenue and inventory amounts above reflect the post-acquisition expenses associated with recording acquired liabilities and assets at fair value as part of purchase accounting. The change in fair value of contingent consideration is related to our Moz, Turf and BOK acquisitions and was remeasured quarterly during each acquisition's respective earn-out periods. See Note 19 to the Consolidated Financial Statements for further information. Expenses related to the deferred cash and restricted stock awards for Arktura's former owners and employees were recorded over their respective service periods, as such payments were subject to the awardees' continued employment with AWI. Depreciation of fixed assets acquired, and amortization of intangible assets acquired have been excluded from the table above. See Note 5 to the Consolidated Financial Statements for further information.

RESULTS OF OPERATIONS

This section of this Form 10-K generally discusses 2023 and 2022 items and year-to-year comparisons between 2023 and 2022. Discussions of year-to-year comparisons between 2022 and 2021 that are not included in this Form 10-K can be found in Management's Discussion and Analysis of Financial Condition and Results of Operations in Item 7 of our Annual Report on Form 10-K for the year ended December 31, 2022. Please refer to Notes 3 and 6 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.

CONSOLIDATED RESULTS FROM CONTINUING OPERATIONS

(dollar amounts in millions)

	2023	2022	Change is Favorable
Total consolidated net sales	$ 1,295.2	$ 1,233.1	5.0%
Operating income	$ 323.7	$ 278.7	16.1%

Consolidated net sales for 2023 increased 5.0% due to favorable AUV of $43 million and higher sales volumes of $19 million. Mineral Fiber net sales increased $45 million, while Architectural Specialties net sales increased $17 million. The increase in Mineral Fiber net sales was primarily driven by improved AUV, as a result of increased like-for-like pricing, partially offset by unfavorable mix. Architectural Specialties net sales improved primarily due to contributions from the acquisitions of BOK and GC Products, as well as growth in metal and felt product sales, partially offset by lower wood product sales.

Cost of goods sold during 2023 was 61.6% of net sales, compared to 63.6% for 2022. The year-over year decrease in cost of goods sold as a percentage of net sales was driven primarily by favorable AUV margin, improved Architectural Specialties project margins and improved Mineral Fiber manufacturing productivity.

SG&A expenses in 2023 were $262.5 million, or 20.3% of net sales, compared to $237.0 million, or 19.2% of net sales, in 2022. The year-over-year increase in SG&A expenses was driven primarily by a $15 million increase in selling expenses, primarily related to investments in selling capabilities within our Architectural Specialties segment, investments in support of our digital initiatives and higher marketing expenses and an $8 million increase in incentive compensation.

In 2023, we recorded $0.1 million of remeasurement losses for changes in the fair value of contingent consideration related to the acquisition of BOK. In 2022, we recorded $11.0 million of remeasurement losses for changes in the fair value of contingent consideration related to the acquisition of Turf. See Note 19 to the Consolidated Financial Statements for further information.

Equity earnings from our WAVE joint venture were $89.3 million in 2023, compared to $77.6 million in 2022. The increase in WAVE earnings was primarily driven by the benefits of lower steel costs and higher volumes, partially offset by unfavorable AUV. See Note 11 to the Consolidated Financial Statements for further information.

Interest expense was $35.3 million in 2023 compared to $27.1 million in 2022. The increase in interest expense was primarily due to higher interest rates on floating rate debt, partially offset by lower average debt balances and the benefits from our existing interest rate swaps.

Other non-operating income, net was $9.9 million during 2023 compared to $6.0 million during 2022. Other non-operating income, net, is primarily comprised of the non-service cost components of pension and postretirement net periodic benefit costs and interest income.

Income tax expense was $74.5 million in 2023 compared to $57.7 million in 2022. The effective tax rate was 25.0% in 2023 compared to 22.4% in 2022. The effective tax rate for 2023 was higher compared to 2022 primarily due to the benefits recognized in the prior year from federal and state statute closures and the prior year reduction in our valuation allowance for capital loss carryforwards.

Total Other Comprehensive Loss ("OCL") was $4.6 million in 2023 compared to Other Comprehensive Income ("OCI") of $9.5 million in 2022. The change in OCL was primarily driven by interest rate swap derivative losses in 2023 compared to gains in 2022, partially offset by changes in pension and postretirement adjustments and foreign currency translation adjustments. 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 accumulated OCI. Pension and postretirement adjustments represent the actuarial gains and losses related to our defined benefit pension and postretirement plans. 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 during 2023 and 2022 were driven primarily by changes in the Canadian dollar.

REPORTABLE SEGMENT RESULTS

Mineral Fiber

(dollar amounts in millions)

	2023	2022	Change is Favorable
Total segment net sales	$ 932.4	$ 887.4	5.1%
Operating income	$ 285.7	$ 260.9	9.5%

Mineral Fiber net sales increased $45 million due to $44 million of favorable AUV and $1 million of higher sales volumes. The increase in AUV was driven by favorable price, partially offset by unfavorable mix. The increase in sales volumes primarily resulted from the benefit from our growth initiatives and increases in inventory levels at certain home center customers in 2023, partially offset by softer market demand.

Operating income increased primarily due to a $33 million benefit from favorable AUV and a $12 million increase in WAVE equity earnings. These benefits were partially offset by a $10 million increase in selling expenses, primarily due to investments in support of our digital initiatives and higher marketing expenses, an $8 million increase in incentive compensation and a $4 million increase from higher manufacturing and input costs.

Architectural Specialties

(dollar amounts in millions)

	2023	2022	Change is Favorable
Total segment net sales	$ 362.8	$ 345.7	4.9%
Operating income	$ 40.9	$ 21.7	88.5%

Architectural Specialties net sales increased $17 million, driven primarily by contributions from the acquisitions of BOK and GC Products as well as growth in metal and felt product sales. These increases were partially offset by lower wood product sales.

Operating income increased primarily due to a $23 million margin benefit from increased sales and improved custom project margins, in addition to an $8 million reduction in acquisition-related expenses, primarily due to the absence of the change in fair value of contingent consideration related to the acquisition of Turf that was recorded in 2022. These benefits were partially offset by a $5 million increase in selling expenses, primarily related to investments in selling capabilities and higher sales incentive expense, and a $6 million increase in manufacturing costs.

Unallocated Corporate

Unallocated Corporate operating loss was $3 million in 2023 compared to $4 million in 2022.

FINANCIAL CONDITION AND LIQUIDITY

Cash Flow

Operating activities for 2023 provided $233.5 million of cash, compared to $182.4 million in 2022. The increase was primarily due to favorable working capital changes in inventories, accounts receivable, accounts payable and accrued expenses. The favorable change in inventories was primarily the result of custom project timing within Architectural Specialties. The favorable changes in accounts receivable, accounts payable and accrued expenses were due to timing related benefits and the impact of changes in incentive compensation accruals.

Net cash used for investing activities was $10.4 million for 2023, compared to net cash provided by investing activities of $28.2 million in 2022. The unfavorable change was primarily due to an increase in cash paid for acquisitions, increased purchases of property, plant, and equipment, and lower distributions from WAVE.

Net cash used for financing activities was $258.6 million in 2023, compared to $201.9 million in 2022. The unfavorable change was primarily due to higher net repayments of borrowings under our credit facility, partially offset by a decrease in 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 historically lower during the first and fourth quarters of our fiscal year.

We have a $950.0 million variable rate senior credit facility, which is comprised of a $500.0 million revolving credit facility (with a $150.0 million sublimit for letters of credit) and a $450.0 million Term Loan A. As of December 31, 2023, the revolving credit facility and Term Loan A were priced at 1.375% over the Secured Overnight Financing Rate ("SOFR"), plus a 10-basis point adjustment. The revolving credit facility and Term Loan A mature in December 2027. We also have a $25.0 million bi-lateral letter of credit facility.

As of December 31, 2023, total borrowings outstanding under our senior credit facility were $450.0 million under Term Loan A and $140.0 million under the revolving credit facility.

The senior credit facility includes two financial covenants that require the ratio of consolidated earnings before interest, taxes, depreciation and amortization ("EBITDA") to consolidated cash interest expense minus consolidated cash interest income to be greater than or equal to 3.0 to 1.0, and requires the ratio of consolidated funded indebtedness, minus AWI and domestic subsidiary unrestricted cash and cash equivalents up to $100 million, to EBITDA to be less than or equal to 3.75 to 1.0 (subject to certain exceptions for certain acquisitions). As of December 31, 2023, we were in compliance with all covenants of the senior credit facility.

We use interest rate swaps to minimize the fluctuations in earnings caused by interest rate volatility associated with our senior credit facility. In March 2023, we amended our interest rate swaps outstanding in accordance with the Financial Accounting Standards Board's Accounting Standards Update ("ASU") ASU 2020-04, "Facilitation of the Effects of Reference Rate Reform on Financial Reporting," changing our hedged interest rate from the discontinued London Interbank Offered Rate, or LIBOR, to the SOFR.

The Term Loan A is currently priced on a variable interest rate basis. The following tables summarize our interest rate swaps, including forward interest rate swaps (dollar amounts in millions):

Coverage Period	Notional Amount	Risk Coverage	Trade Date
March 2021 to March 2024	$ 50.0	USD-SOFR	March 10, 2020
March 2021 to March 2024	$ 50.0	USD-SOFR	March 11, 2020
November 2023 to June 2024	$ 50.0	USD-SOFR	September 18, 2023
March 2021 to March 2025	$ 100.0	USD-SOFR	November 28, 2018
November 2023 to December 2025	$ 50.0	USD-SOFR	October 23, 2023
November 2023 to December 2026	$ 50.0	USD-SOFR	October 10, 2023
November 2023 to November 2027	$ 50.0	USD-SOFR	September 29, 2023

Under the terms of our interest rate swaps above, on a monthly basis, we pay a fixed rate and receive a floating rate based on SOFR. These swaps are designated as cash flow hedges against changes in SOFR for a portion of our variable rate debt.

We utilize lines of credit and other commercial commitments to ensure that adequate funds are available to meet operating requirements. Letters of credit are currently arranged through our revolving credit facility and our bi-lateral facility. Letters of credit may be issued to third party suppliers, insurance companies 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 facilities (dollar amounts in millions):

	December 31, 2023		
Financing Arrangements	**Limit**	**Used**	**Available**
Bi-lateral facility	$ 25.0	$ 7.7	$ 17.3
Revolving credit facility	150.0	-	150.0
Total	$ 175.0	$ 7.7	$ 167.3

The table below reflects scheduled future payments of long-term debt, excluding $3.2 million of unamortized debt financing costs, and the related interest payments, which are projected based on market-based interest rate swap curves (dollar amounts in millions):

	2024	**2025**	**2026**	**2027**	**2028**	**Thereafter**	**Total**
Long-term debt	$ 22.5	$ 22.5	$ 22.5	$ 522.5	$ -	$ -	$ 590.0
Scheduled interest payments	33.3	29.1	26.8	24.2	-	-	113.4

As of December 31, 2023, we had $70.8 million of cash and cash equivalents, $53.4 million in the U.S. and $17.4 million in various foreign jurisdictions, primarily Canada. As of December 31, 2023, we also had $360.0 million available under our revolving credit facility. We believe cash on hand and cash generated from operations, together with borrowing capacity under our credit facility, will be adequate to address our near-term liquidity needs based on current expectations of our business operations, capital expenditures and scheduled payment of debt obligations. In 2024, we expect to spend approximately $80 million to $90 million on capital expenditures and approximately $50 million on dividends.

In July 2016, our Board of Directors approved a share repurchase program authorizing us to repurchase up to $150.0 million of our outstanding shares of common stock (the "Program"). Since inception of the Program we have been authorized to repurchase up to an aggregate of $1,700.0 million of our outstanding shares of common stock through December 31, 2026. We had $716.8 million remaining under the Board's repurchase authorization as of December 31, 2023.

Repurchases of our common stock under the Program may be made through open market, block and privately negotiated transactions, including Rule 10b5-1 plans, at such times and in such amounts as management deems appropriate, subject to market and business conditions, regulatory requirements and other factors. The Program does not obligate AWI to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice.

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, 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 and have discussed these with our Audit Committee.

U.S. Pension Credit and Postretirement Benefit Costs – We maintain significant pension and postretirement plans 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, 2023 and 2022, we assumed discount rates of 5.01% and 5.21%, respectively, for our U.S. defined benefit pension plans. As of December 31, 2023 and 2022, we assumed discount rates of 4.96% and 5.12%, respectively, for our 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 impact 2024 non-operating income by $0.3 million.

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 determined 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, 2023, the historical annualized return was approximately 3.48% compared to an average expected return of 5.83%. The actual gain on plan assets incurred for 2023 was 8.73%, net of fees. 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 2023 U.S. pension cost was 6.50%. We have assumed a return on plan assets for 2024 of 6.00%. The 2024 expected return on assets was calculated in a manner consistent with 2023. Absent any other changes, a one-quarter percentage point increase or decrease in this assumption would impact 2024 non-operating income by $1.0 million.

Contributions to the unfunded pension plan were $2.8 million in 2023 and were made on a monthly basis to fund benefit payments. We estimate the 2024 contributions will be approximately $2.7 million. See Note 18 to the Consolidated Financial Statements for more information.

The estimated inflation in health care costs represents a 5 to 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
2022	7.1%	6.6%	7.4%	22.7%
2023	7.8%	7.3%	19.9 %	23.6%
2024	10.5%	7.8%		

The difference between the actual and expected health care costs is amortized into earnings as described below. As of December 31, 2023, health care cost increases are estimated to decrease ratably until 2033, after which they are estimated to be constant at 4.50%. See Note 18 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.

Total net actuarial losses related to our U.S. pension benefit plans increased by $0.5 million in 2023 primarily due to changes in actuarial assumptions, including a 20-basis point decrease in the discount rate and demographic changes. The $0.5 million actuarial loss impacting our U.S. pension plans is reflected as a component of other comprehensive income in our Consolidated Statements of Earnings and Comprehensive Income along with actuarial gains and losses from our foreign pension plan and our postretirement benefit plans.

Income Taxes – Our effective tax rate is primarily determined based on our pre-tax income, statutory income tax rates in the jurisdictions in which we operate, and 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 state net operating losses ("NOL") and capital loss carryforwards.

As of December 31, 2023, we have recorded valuation allowances totaling $49.1 million for various federal and state 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 16 to the Consolidated Financial Statements, our Consolidated Balance Sheet as of December 31, 2023 includes deferred income tax liabilities of $166.9 million, which is net of $117.2 million of deferred tax assets. We have established $49.1 million of valuation allowances consisting of $31.2 million for state deferred tax assets, primarily operating loss carryforwards, and $17.9 million for federal and state deferred tax assets related to capital loss carryforwards. 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, limitations on usage of NOL carryforwards, the impact of ongoing or potential tax audits, and other future tax consequences.

As of December 31, 2023 and 2022, we had $646.7 million and $675.5 million, respectively, of gross state NOL carryforwards expiring between 2024 and 2043. We estimate we will need to generate future U.S. taxable income of approximately $240.9 million for state income tax purposes during the respective realization periods (ranging from 2024 to 2043) to be able to fully realize the gross state NOL carryforwards offset by related valuation allowances.

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.

Impairments of Tangible Assets, Intangible Assets and Goodwill – Our indefinite-lived assets include goodwill and other intangibles, primarily trademarks and brand names. Those trademarks and brand names are integral to our corporate identity and are expected to contribute indefinitely to our corporate cash flows. Accordingly, they have been assigned an indefinite life. We conduct our annual impairment tests for these indefinite-lived intangible assets and goodwill during the fourth quarter. These assets undergo more frequent tests if an indication of possible impairment exists. We conduct impairment tests for tangible assets and definite-lived intangible assets when indicators of impairment exist for the asset group, such as operating losses and/or negative cash flows.

The principal assumptions used in our impairment tests for definite-lived intangible assets is operating profit adjusted for depreciation and amortization and, if required to estimate the fair value, the discount rate. The principal assumptions used in our impairment tests for indefinite-lived intangible assets include revenue growth rates, discount rate and royalty rate. The principal assumptions utilized in our impairment tests for goodwill include after-tax cash flows growth rates and discount rate. Revenue growth rates, after-tax cash flows growth rates and operating profit assumptions are derived from those used in our operating plan and strategic planning processes. The discount rate assumption is calculated based upon an estimated weighted average cost of capital 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 related businesses. Methodologies used for valuing our intangible assets did not change from prior periods.

In 2023, indefinite-lived intangibles and goodwill were tested for impairment based on the identified asset (for indefinite-lived intangibles) or on our identified reporting units (for goodwill). There were no impairment charges recorded in 2023, 2022 or 2021 related to intangible assets. We did not test tangible assets for impairment in 2023, 2022 or 2021 as no indicators of impairment existed.

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

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 construction industry, material adverse changes in relationships with significant customers, or strategic decisions made in response to economic and competitive conditions. See Notes 3 and 13 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 environmental laws at two domestically owned locations allegedly resulting from past industrial activity. In both 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. However, we do not expect the total future costs to have a material adverse effect on our liquidity or financial condition as the cash payments may be made over many years.

Business Combinations and Contingent Consideration – Acquired businesses are accounted for using the acquisition method of accounting, which requires that the purchase price be allocated to the assets acquired and liabilities assumed at their respective fair values. Any excess of the purchase price over the estimated fair values of the assets acquired and liabilities assumed is recorded as goodwill. The estimated fair value of contingent consideration is recorded as a liability on the balance sheet at the date of acquisition.

The purchase price allocation requires us to make significant estimates and assumptions, especially at the acquisition date, with respect to intangible assets and contingent consideration. Although we believe the assumptions and estimates we have made are reasonable, they are based in part on historical experience and information obtained from the management of the acquired companies.

We engage independent, third-party valuation specialists to assist in determining the fair values of acquired intangible assets and contingent consideration.

Both the BOK and Insolcorp acquisitions in 2023 include the potential for contingent earn-out payments based on the financial or operational performance of the acquired companies. We estimated the fair value of these contingent consideration liabilities upon acquisition and are required to measure these liabilities at fair value each reporting period until the contingencies are resolved, with changes in the fair value after the acquisition date affecting earnings in the period of the estimated fair value change. See Notes 5 and 19 to the Consolidated Financial Statements for further information.

The principal assumptions used in valuing certain intangible assets and contingent consideration include future expected cash flows from sales and acquired developed technologies, the acquired company's trade names and customer relationships as well as assumptions about the period of time the acquired trade names and customer relationships will continue to be used in the combined company's portfolio, the probability of meeting the future revenue and EBITDA growth targets and discount rates used to determine the present value of estimated future cash flows.

These estimates are inherently uncertain and unpredictable, and if different estimates were used, the total consideration including the estimated fair value of the contingent consideration, could be allocated to the acquired assets and liabilities differently from the allocation that we have made. In addition, unanticipated events and circumstances may occur, which may affect the accuracy or validity of such estimates, and if such events occur, we may be required to record a charge against the value assigned to an acquired asset or an increase in the amounts recorded for assumed liabilities.

ACCOUNTING PRONOUNCEMENTS EFFECTIVE IN FUTURE PERIODS

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

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market Risk

Our primary exposure to market risk is from changes in interest rates that could impact our results of operations, cash flows and financial condition. We use interest rate derivatives to manage our exposures to interest rates. We use these derivative financial instruments as risk management tools and not for speculative trading purposes. In addition, our 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.

Counterparty Risk

We only enter into derivative transactions with established financial institution counterparties having an investment-grade credit rating. We monitor counterparty 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 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 and revolving credit facility. A hypothetical increase of one-quarter percentage point in SOFR interest rates from December 31, 2023 levels would increase 2024 interest expense by approximately $0.7 million. We have active interest rate swaps outstanding, which effectively fix the interest rates for a portion of our debt. These interest rate swaps are included in this calculation.

As of December 31, 2023, we had interest rate swaps outstanding with notional amounts of $400 million. We use interest rate swaps to minimize the fluctuations in earnings caused by interest rate volatility. Under the terms of these swaps, we receive floating rate SOFR and pay a fixed rate over the hedged period. The following table summarizes our interest rate swaps as of December 31, 2023 (dollar amounts in millions):

Coverage Period	Notional Amount	Risk Coverage	Trade Date
March 2021 to March 2024	$ 50.0	USD-SOFR	March 10, 2020
March 2021 to March 2024	$ 50.0	USD-SOFR	March 11, 2020
November 2023 to June 2024	$ 50.0	USD-SOFR	September 18, 2023
March 2021 to March 2025	$ 100.0	USD-SOFR	November 28, 2018
November 2023 to December 2025	$ 50.0	USD-SOFR	October 23, 2023
November 2023 to December 2026	$ 50.0	USD-SOFR	October 10, 2023
November 2023 to November 2027	$ 50.0	USD-SOFR	September 29, 2023

These swaps are designated as cash flow hedges against changes in SOFR for a portion of our variable rate debt. The net liability measured at fair value was $0.4 million as of December 31, 2023.

The table below provides information about our long-term debt obligations as of December 31, 2023, 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)	**2024**	**2025**	**2026**	**2027**	**2028**	**After 2028**	**Total**
Variable rate principal payments	$ 22.5	$ 22.5	$ 22.5	$ 522.5	$ -	$ -	$ 590.0
Average interest rate	4.61%	3.36%	3.22%	3.31%		-	3.31%

Variable rate principal payments reflected in the preceding table exclude $3.2 million of unamortized debt financing costs as of December 31, 2023.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

SUPPLEMENTARY DATA

Quarterly Financial Information for the Quarter Ended December 31, 2023 (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, 2023, 2022 and 2021.

Consolidated Balance Sheets as of December 31, 2023 and 2022.

Consolidated Statements of Shareholders' Equity for the Years Ended December 31, 2023, 2022 and 2021.

Consolidated Statements of Cash Flows for the Years Ended December 31, 2023, 2022 and 2021.

Notes to Consolidated Financial Statements.

Schedule II for the Years Ended December 31, 2023, 2022 and 2021.

Fourth Quarter 2023 Compared to Fourth Quarter 2022 – Continuing Operations

Consolidated fourth-quarter 2023 net sales of $312.3 million increased $7.8 million or 2.6% compared to the prior year quarter. Mineral Fiber net sales increased 2.0% due to favorable AUV of $4 million and an increase in volumes of $1 million. Architectural Specialties net sales increased 4.0% primarily due to contributions from recent acquisitions, partially offset by the impact of unfavorable custom project timing.

For the fourth quarter of 2023, cost of goods sold was 61.7% of net sales, compared to 63.4% in the fourth quarter of 2022. The year-over-year decrease in cost of goods sold as a percent of net sales was driven primarily by improved Architectural Specialties project margins and favorable AUV margin.

SG&A expenses in the fourth quarter of 2023 were $73.3 million, or 23.5% of net sales compared to $59.1 million, or 19.4% of net sales, in the fourth quarter of 2022. The increase in SG&A expenses was driven primarily by a $6 million increase in incentive compensation, a $5 million increase in acquisition-related expenses related to the Architectural Specialties segment and a $3 million increase in selling expenses.

In the fourth quarter of 2023, we recorded $0.1 million of remeasurement losses for a change in the fair value of contingent consideration related to the acquisition of BOK. In the fourth quarter of 2022, we recorded $2.3 million of remeasurement gains for changes in the fair value of contingent consideration related to the acquisition of Turf. See Note 19 to the Consolidated Financial Statements for further information.

Equity earnings in the fourth quarter of 2023 were $20.2 million compared to $15.9 million in the fourth quarter of 2022. The increase in WAVE earnings resulted primarily from lower steel costs and higher volumes. See Note 11 to the Consolidated Financial Statements for further information.

As a result, operating income decreased 6.1% to $66.3 million in the fourth quarter of 2023 compared to $70.6 million in the fourth quarter of 2022.

Interest expense in the fourth quarter of 2023 was $8.6 million compared to $9.2 million in the fourth quarter of 2022. The decrease in interest expense was primarily due to lower average debt balances and the benefits from our existing interest rate swaps, partially offset by higher interest rates on floating rate debt.

Fourth quarter income tax expense was $13.9 million on pre-tax earnings of $60.7 million in 2023 compared to $14.5 million on pre-tax earnings of $63.3 million in 2022, resulting in a 22.9% effective tax rate for the fourth quarter of 2023 and 2022.

Basic and diluted earnings per share were $1.06 in the fourth quarter of 2023, compared to basic and diluted earnings per share of $1.07 in the fourth quarter of 2022.

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, 2023.

KPMG LLP, an independent registered public accounting firm, audited our internal control over financial reporting as of December 31, 2023, as stated in their report included herein.

/s/ Victor D. Grizzle

Victor D. Grizzle
Director, President and Chief Executive Officer

/s/ Christopher P. Calzaretta

Christopher P. Calzaretta
Senior Vice President and Chief Financial Officer

/s/ James T. Burge

James T. Burge
Vice President and Corporate Controller

February 20, 2024

Report of Independent Registered 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, 2023, 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, 2023, 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, 2023 and 2022, the related consolidated statements of earnings and comprehensive income, shareholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2023, and the related notes and financial statement schedule II (collectively, the consolidated financial statements), and our report dated February 20, 2024 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 20, 2024

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, 2023 and 2022, the related consolidated statements of earnings and comprehensive income, shareholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2023, and the related notes and financial statement schedule II (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, 2023 and 2022, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2023, 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, 2023, 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 20, 2024 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.

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of a critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Pension and postretirement benefit obligations

As discussed in Notes 2 and 18 to the consolidated financial statements, the Company's pension projected benefit obligations and the fair value of plan assets for the U.S. plans were $356.5 million and $413.4 million, respectively, as of December 31, 2023, resulting in a funded status of $56.9 million. Additionally, the Company's accumulated postretirement benefit obligation was $47.0 million, which is an unfunded liability.

We identified the evaluation of the Company's measurement of the benefit obligations to be a critical audit matter. Subjective auditor judgment was required to evaluate the discount rates, as minor changes in the rates could have a significant impact on the benefit obligations. Additionally, the assessment of the discount rates required specialized actuarial skills and knowledge.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Company's benefit obligations process, including controls related to the actuarial determination of the discount rates used in the valuation of the benefit obligations. Additionally, we involved an actuarial professional with specialized skill and knowledge, who assisted in the evaluation of the Company's discount rates by:

- assessing changes in the discount rates from the prior year against changes in published indices;
- assessing the discount rates based on the plan type, plan provisions and pattern of cash flows; and
- evaluating the selected yield curve, the consistency of the yield curve with the prior year, and the spot rates.

/s/ KPMG LLP

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

Philadelphia, Pennsylvania
February 20, 2024

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

	Years Ended December 31,		
	2023	2022	2021
Net sales	$ 1,295.2	$ 1,233.1	$ 1,106.6
Cost of goods sold	798.2	784.0	701.0
Gross profit	497.0	449.1	405.6
Selling, general and administrative expenses	262.5	237.0	237.4
Loss (gain) related to change in fair value of contingent consideration	0.1	11.0	(4.1)
Equity (earnings) from joint venture	(89.3)	(77.6)	(87.7)
Operating income	323.7	278.7	260.0
Interest expense	35.3	27.1	22.9
Other non-operating (income), net	(9.9)	(6.0)	(5.6)
Earnings from continuing operations before income taxes	298.3	257.6	242.7
Income tax expense	74.5	57.7	57.4
Earnings from continuing operations	223.8	199.9	185.3
Earnings (loss) from disposal of discontinued businesses, net of tax (benefit) expense of $ -, ($3.0) and $1.7	-	3.0	(2.1)
Net earnings (loss) from discontinued operations	-	3.0	(2.1)
Net earnings	$ 223.8	$ 202.9	$ 183.2
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	0.5	(1.8)	-
Derivative (loss) gain, net	(9.0)	18.6	9.9
Pension and postretirement adjustments	3.9	(7.3)	(10.2)
Total other comprehensive (loss) income	(4.6)	9.5	(0.3)
Total comprehensive income	$ 219.2	$ 212.4	$ 182.9
Earnings per share of common stock, continuing operations:			
Basic	$ 5.00	$ 4.31	$ 3.88
Diluted	$ 4.99	$ 4.30	$ 3.86
Earnings (loss) per share of common stock, discontinued operations:			
Basic	$ -	$ 0.07	$ (0.04)
Diluted	$ -	$ 0.07	$ (0.04)
Net earnings per share of common stock:			
Basic	$ 5.00	$ 4.38	$ 3.84
Diluted	$ 4.99	$ 4.37	$ 3.82
Average number of common shares outstanding:			
Basic	44.7	46.3	47.6
Diluted	44.8	46.4	47.9

See accompanying notes to consolidated financial statements beginning on page 41.

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

	December 31, 2023	December 31, 2022
Assets		
Current assets:		
Cash and cash equivalents	$ 70.8	$ 106.0
Accounts and notes receivable, net	111.0	112.4
Inventories, net	104.0	110.0
Income taxes receivable	0.8	1.8
Other current assets	26.4	26.3
Total current assets	313.0	356.5
Property, plant and equipment, net	566.4	554.4
Operating lease assets	26.6	18.8
Finance lease assets	25.2	16.0
Prepaid pension costs	84.6	83.2
Investment in joint venture	17.4	23.9
Goodwill	175.5	167.3
Intangible assets, net	412.4	407.7
Other non-current assets	51.3	59.4
Total assets	$ 1,672.4	$ 1,687.2
Liabilities and Shareholders' Equity		
Current liabilities:		
Current installments of long-term debt	$ 22.5	$ -
Accounts payable and accrued expenses	159.9	172.5
Operating lease liabilities	6.8	5.9
Finance lease liabilities	3.0	2.2
Income taxes payable	2.3	2.1
Total current liabilities	194.5	182.7
Long-term debt, less current installments	564.3	651.1
Operating lease liabilities	20.4	13.2
Finance lease liabilities	23.4	14.6
Postretirement benefit liabilities	42.4	54.8
Pension benefit liabilities	26.9	27.6
Other long-term liabilities	26.8	25.8
Income taxes payable	15.0	13.1
Deferred income taxes	166.9	169.3
Total non-current liabilities	886.1	969.5
Shareholders' equity:		
Common stock, $0.01 par value per share, 200 million shares authorized, 63,054,340 shares issued and 43,902,061 shares outstanding as of December 31, 2023 and 62,936,820 shares issued and 45,572,185 shares outstanding as of December 31, 2022	0.6	0.6
Capital in excess of par value	591.7	573.6
Retained earnings	1,346.6	1,169.9
Treasury stock, at cost, 19,152,279 shares as of December 31, 2023 and 17,364,635 shares as of December 31, 2022	(1,242.4)	(1,109.0)
Accumulated other comprehensive (loss)	(104.7)	(100.1)
Total shareholders' equity	591.8	535.0
Total liabilities and shareholders' equity	$ 1,672.4	$ 1,687.2

See accompanying notes to consolidated financial statements beginning on page 41.

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

	Common Stock		Additional Paid-In	Retained	Treasury Stock		Accumulated Other Comprehensive	
	Shares	Amount	Capital	Earnings	Shares	Amount	(Loss)	Total
December 31, 2020	47,913,821	$ 0.6	$ 553.7	$ 869.8	14,685,510	$ (863.9)	$ (109.3)	$ 450.9
Stock issuance, net	173,379	-	0.1	-	2,445	(0.1)	-	-
Cash dividends - $0.861 per common share	-	-	-	(41.6)	-	-	-	(41.6)
Share-based employee compensation	-	-	7.5	-	-	-	-	7.5
Net earnings	-	-	-	183.2	-	-	-	183.2
Other comprehensive (loss)	-	-	-	-	-	-	(0.3)	(0.3)
Acquisition of treasury stock	(784,901)	-	-	-	784,901	(80.0)	-	(80.0)
December 31, 2021	47,302,299	$ 0.6	$ 561.3	$ 1,011.4	15,472,856	$ (944.0)	$ (109.6)	$ 519.7
Stock issuance, net	159,628	-	-	-	2,037	-	-	-
Cash dividends - $0.947 per common share	-	-	-	(44.4)	-	-	-	(44.4)
Share-based employee compensation	-	-	12.3	-	-	-	-	12.3
Net earnings	-	-	-	202.9	-	-	-	202.9
Other comprehensive income	-	-	-	-	-	-	9.5	9.5
Acquisition of treasury stock	(1,889,742)	-	-	-	1,889,742	(165.0)	-	(165.0)
December 31, 2022	45,572,185	$ 0.6	$ 573.6	$ 1,169.9	17,364,635	$ (1,109.0)	$ (100.1)	$ 535.0
Stock issuance, net	115,701	-	0.1	-	1,819	(0.1)	-	-
Cash dividends - $1.042 per common share	-	-	-	(47.1)	-	-	-	(47.1)
Share-based employee compensation	-	-	18.0	-	-	-	-	18.0
Net earnings	-	-	-	223.8	-	-	-	223.8
Other comprehensive (loss)	-	-	-	-	-	-	(4.6)	(4.6)
Acquisition of treasury stock	(1,785,825)	-	-	-	1,785,825	(133.3)	-	(133.3)
December 31, 2023	43,902,061	$ 0.6	$ 591.7	$ 1,346.6	19,152,279	$ (1,242.4)	$ (104.7)	$ 591.8

See accompanying notes to consolidated financial statements beginning on page 41.

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

	Years Ended December 31,		
	2023	2022	2021
Cash flows from operating activities:			
Net earnings	$ 223.8	$ 202.9	$ 183.2
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation and amortization	89.2	83.7	96.5
Write-off of debt refinancing fees	-	0.6	-
Loss on disposal of discontinued operations	-	-	0.4
Deferred income taxes	(0.8)	(1.6)	8.7
Share-based compensation	18.8	14.3	11.3
Equity earnings from joint venture	(89.3)	(77.6)	(87.7)
Loss (gain) from change in fair value of contingent consideration	0.1	11.0	(4.1)
Payments of contingent consideration in excess of acquisition date fair value	(5.0)	(1.9)	-
Other non-cash adjustments, net	(0.5)	0.3	1.0
Changes in operating assets and liabilities:			
Receivables	(1.6)	(12.4)	(30.9)
Inventories	6.1	(19.7)	(10.6)
Accounts payable and accrued expenses	8.0	(1.8)	38.6
Income taxes receivable and payable, net	3.2	(6.9)	(2.0)
Other assets and liabilities	(18.5)	(8.5)	(17.2)
Net cash provided by operating activities	233.5	182.4	187.2
Cash flows from investing activities:			
Purchases of property, plant and equipment	(83.8)	(74.8)	(79.8)
Return of investment from joint venture	96.9	104.5	78.3
Cash paid for acquisitions, net of cash acquired	(26.5)	(2.8)	(0.7)
Proceeds from the sale of assets	-	-	0.1
Payments to Knauf upon disposal of discontinued operations	-	-	(11.8)
Proceeds from company-owned life insurance, net	3.0	1.3	-
Net cash (used for) provided by investing activities	(10.4)	28.2	(13.9)
Cash flows from financing activities:			
Proceeds from revolving credit facility	55.0	355.0	95.0
Payments of revolving credit facility	(120.0)	(315.0)	(155.0)
Proceeds from long-term debt	-	450.0	-
Payments of long-term debt	-	(468.7)	(25.0)
Financing costs	-	(3.1)	-
Dividends paid	(46.9)	(44.2)	(41.4)
Payments from share-based compensation plans, net of tax	(1.8)	(2.0)	(3.6)
Payments for finance leases	(2.7)	(2.2)	(2.1)
Payments of acquisition related contingent consideration	(10.2)	(6.7)	-
Payments for treasury stock acquired	(132.0)	(165.0)	(80.0)
Net cash (used for) financing activities	(258.6)	(201.9)	(212.1)
Effect of exchange rate changes on cash and cash equivalents	0.3	(0.8)	-
Net (decrease) increase in cash and cash equivalents	(35.2)	7.9	(38.8)
Cash and cash equivalents at beginning of year	106.0	98.1	136.9
Cash and cash equivalents at end of year	$ 70.8	$ 106.0	$ 98.1
Supplemental Cash Flow Disclosures:			
Interest paid	$ 33.9	$ 26.9	$ 21.5
Income tax payments, net	72.1	63.2	52.5
Amounts in accounts payable for capital expenditures	2.4	2.8	0.3

See accompanying notes to consolidated financial statements beginning on page 41.

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.

Acquisitions

In October 2023, we acquired a portion of the business and certain assets of Insolcorp, LLC ("Insolcorp"), based in Albemarle, NC, used to develop, test and manufacture energy saving products deployed in building and roofing installations. The acquired operations, assets and liabilities of Insolcorp are included in our Mineral Fiber segment.

In July 2023, we acquired all of the issued and outstanding stock of BOK Modern, LLC ("BOK"), based in San Rafael, CA. BOK is a designer of metal facade architectural solutions.

In November 2022, we acquired the business of GC Products, Inc. ("GC Products"), based in Lincoln, CA. GC Products is a designer and manufacturer of glass-reinforced-gypsum, glass-reinforced-cement, molded ceiling and specialty wall products with one manufacturing facility.

The operations, assets and liabilities of BOK and GC Products are included in our Architectural Specialties segment. See Note 5 for additional details.

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 have been recast to conform to the 2023 presentation.

Revenue Recognition. We recognize revenue upon transfer of control of our products to the customer, which typically occurs upon shipment. Our main performance obligation to our customers is the delivery of products in accordance with purchase orders. Each purchase order confirms the transaction price for the products purchased under the arrangement. Direct sales to building materials distributors, home centers, direct customers and retailers represent the majority of our sales. Our standard sales terms are Free On Board ("FOB") shipping point. We have some sales terms that are FOB destination. At the point of shipment, the customer is required to pay under normal sales terms. In most cases our normal payment terms are 45 days or less and our sales arrangements do not have any material financing components. In addition, our customer arrangements do not produce contract assets or liabilities that are material to our Consolidated Financial Statements. Within our Architectural Specialties segment, the majority of revenues are customer project driven, which includes a minority of revenues derived from the sale of customer specified customized products that have no alternative use to us. The manufacturing cycle for these custom products is typically short.

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

Our products are sold with normal and customary return provisions. We provide limited warranties for defects in materials or factory workmanship, sagging and warping, and certain other manufacturing defects. Warranties are not sold separately to customers. Our product warranties place certain requirements on the purchaser, including installation and maintenance in accordance with our written instructions. In addition to our warranty program, under certain limited circumstances, we will occasionally, 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 costs associated with warranty repairs are provided to our independent distributors through a credit against accounts receivable from the distributor to us. Sales returns and warranty claims have historically not been material and do not constitute separate performance obligations. We often offer incentive programs to our customers, primarily volume rebates and promotions. The majority of our rebates are designated as a

percentage of annual customer purchases. We estimate the amount of rebates based on actual sales for the period and accrue for the projected incentive programs' costs. We record the costs of rebate accruals as a reduction to the transaction price.

See Note 4 to the Consolidated Financial Statements for additional information related to our revenues.

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

Advertising Costs. We recognize advertising expenses as they are incurred. See Note 25 to the Consolidated Financial Statements for additional details.

Research and Development Costs. We expense research and development costs, or product innovation costs, as they are incurred. See Note 25 to the Consolidated Financial Statements for additional details.

Business Combinations. We account for acquisitions under the acquisition method and the results of acquired operations are included in the Consolidated Financial Statements from the acquisition date. Acquisition related costs are expensed as incurred. We allocate total consideration to the assets acquired and liabilities assumed based on their estimated fair values, with the remaining unallocated amount recorded as goodwill. Our definite-lived intangible assets are amortized over each respective asset's estimated useful life on a straight-line basis and recorded as a component of operating income. The fair value of acquired intangible assets is estimated by applying discounted cash flow models based on significant inputs not observable in the market. Key assumptions are developed based on each acquirees' historical experience, future projections and comparable market data including future cash flows, long-term growth rates, implied royalty rates, attrition rates and discount rates. Acquisition-related contingent consideration that is classified as a liability is measured at fair value at the acquisition date. Changes in the fair value of contingent consideration liabilities in reporting periods after the acquisition date are recorded within our Consolidated Statements of Earnings and Comprehensive Income.

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 18 to the Consolidated Financial Statements for additional details.

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 are 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 and forecasts of future profitability, 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 earliest.

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

See Note 16 to the Consolidated Financial Statements for additional details.

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 and is calculated using the treasury stock method.

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

Concentration of Credit. We principally sell products to customers in building products industries. We monitor the creditworthiness of our customers and generally do not require collateral. Revenues from two commercial distributors, included within our Mineral Fiber and Architectural Specialties segments, individually exceeded 10% of our revenues in 2023, 2022 and 2021. Gross sales to these two customers totaled $631.9 million, $547.8 million and $495.8 million in 2023, 2022 and 2021, respectively.

Receivables. We sell our products to select, pre-approved customers using customary trade terms that allow for payment in the future. Customer trade 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 creditworthiness 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. When events occur that 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 8 to the Consolidated Financial Statements for additional details.

Property Plant and Equipment. Property plant and equipment is recorded at cost reduced by accumulated depreciation and amortization. Depreciation and amortization expense is recognized on a straight-line basis over the assets' estimated useful lives. Machinery and equipment includes manufacturing equipment (depreciated over 2 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 generally depreciated over shorter periods while heavy production equipment, such as conveyors and production presses, are generally depreciated over longer periods. Buildings are depreciated over 15 to 30 years, depending on factors such as type of construction and use. Computer software is amortized over 3 to 7 years.

Property, plant and equipment is tested for impairment by asset group when indicators of impairment are present, such as operating losses and/or negative cash flows for each identified asset group. 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. If the carrying value exceeds the undiscounted future cash flows, we determine the fair value of the asset group 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. Impairments of assets related to our manufacturing operations are recorded in cost of goods sold. We did not test tangible assets for impairment in 2023, 2022 or 2021 as no indicators of impairment existed.

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

See Note 10 to the Consolidated Financial Statements for additional details.

Leases. We enter into operating and finance leases for certain manufacturing plants, warehouses, equipment and automobiles. Our leases have remaining lease terms of up to 14 years. Several leases include options for us to purchase leased items at fair value or renew for up to 5 years, or multiple 5-year renewal periods. Some of our leases include early termination options. We consider all of these options in determining the lease term used to establish our right-of-use ("ROU") assets and lease liabilities when it is reasonably certain that we will exercise that option. Our lease agreements do not contain any residual value guarantees or material restrictive covenants.

We have lease agreements with lease and non-lease components, which we have elected to combine to determine the ROU assets and lease liabilities. Short-term leases with an initial term of 12 months or less are not recorded on the balance sheet. We recognize lease expense for these leases on a straight-line basis over the lease term.

As most of our leases do not provide an implicit rate, we use our Incremental Borrowing Rate ("IBR") based on information that is available at the lease commencement date to compute the present value of lease payments. Relevant information used in determining the IBR includes the transactional currency of the lease and the lease term.

See Note 12 to the Consolidated Financial Statements for additional details.

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.

Goodwill and Intangible Assets. Our definite-lived intangible assets consist primarily of customer relationships (amortized over 2 to 20 years), developed technology (amortized over 13 to 20 years), acquired internally-developed software (amortized over 5 to 7 years), trademarks and brand names (amortized over 3 to 20 years) and non-compete agreements (amortized over 3 to 5 years). We review definite-lived intangible assets for impairment by asset group when indicators of impairment are present, such as operating losses and/or negative cash flows for the respective asset group. 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. If the carrying value exceeds the undiscounted future cash flows, we determine the fair value of the asset group 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. We did not test definite-lived intangible assets for impairment in 2023, 2022 or 2021 as no indicators of impairment existed.

Our indefinite-lived assets include goodwill, trademarks and brand names, with Armstrong representing our primary trademark. Trademarks and brand names are integral to our corporate identity and are expected to contribute indefinitely to our cash flows. Accordingly, they have been assigned an indefinite life. We conduct our annual impairment tests on these indefinite-lived intangible assets and goodwill during the fourth quarter. These assets undergo more frequent tests if an indication of possible impairment exists. When performing an impairment test for indefinite-lived intangible assets and goodwill, we compare the carrying amount of the asset (when testing indefinite-lived intangible assets) and reporting unit (when testing goodwill) to the estimated fair value. For indefinite-lived intangible assets, the estimated fair value is based on discounted future cash flows using the relief from royalty method. For goodwill, the estimated fair value is based on discounted future cash flows expected to be generated by the reporting unit. If the fair value is less than the carrying value of the asset/reporting unit, we record an impairment charge equal to the difference between the fair value and carrying value of the asset/reporting unit. We did not test indefinite-lived intangible assets for impairment during any interim periods during 2023, as no indicators of impairment existed. We completed our annual impairment test in the fourth quarter of 2023 and no impairment charges were recorded in 2023, 2022 or 2021.

See Note 13 to the Consolidated Financial Statements for additional details.

Foreign Currency Transactions. Assets and liabilities of our subsidiaries operating outside the U.S. that are accounted 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 (loss) income within shareholders' equity. Gains or losses on foreign currency transactions are recognized through earnings.

Financial Instruments and Derivatives. We use derivatives and other financial instruments to offset the effect of interest rate variability. Derivatives are recognized on the balance sheet at fair value. For derivatives that meet the criteria as designated cash flow hedges, the changes in the fair value of the derivative are recognized in other comprehensive (loss) income until the hedged item is recognized in operations. See Notes 19 and 20 to the Consolidated Financial Statements for further discussion.

Share-based Employee Compensation. We generally 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 performance measures. We estimate forfeitures based on actual historical forfeitures. See Note 22 to the Consolidated Financial Statements for additional information.

Treasury Stock. Common shares repurchased by AWI are recorded on the settlement date at cost as treasury shares and result in a reduction of equity. We may reissue these treasury shares. When treasury shares are reissued, we determine the cost using the First-in, first-out cost method ("FIFO"). The difference between the cost of the treasury shares and reissuance price is included in additional paid-in capital or retained earnings.

Recently Issued Accounting Standards

In November 2023, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2023-07, *"Improvements to Reportable Segment Disclosures,"* which modifies reportable segment disclosure requirements. This ASU expands annual and interim reportable segment disclosures, including: disclosure of the title and position of our chief operating decision maker ("CODM"), interim and annual disclosure of significant reportable segment expenses that are components of segment profit or loss information provided to the CODM, and interim disclosure of all annual reportable segment profit or loss and asset data currently only required to be disclosed annually. This guidance is effective for annual periods beginning after December 15, 2023 and interim periods within fiscal years beginning after December 15, 2024. The adoption of this standard is not expected to have an impact on our financial statements, but will result in significantly expanded reportable segment disclosures.

In December 2023, the FASB issued ASU 2023-09, *"Improvements to Income Tax Disclosures,"* which modifies the disclosure requirements for income taxes. This ASU requires disclosure of tabular statutory to effective rate reconciliation in both percentages and dollars, additional disaggregated rate reconciliation categories and disaggregation of both income taxes paid and income tax expense by jurisdiction. This guidance is effective for annual periods beginning after December 15, 2024. We expect this ASU to only impact our disclosures with no impact to our result of operations, cash flows and financial condition.

NOTE 3. NATURE OF OPERATIONS

Our operating segments are as follows: Mineral Fiber, Architectural Specialties and Unallocated Corporate.

Mineral Fiber – produces suspended mineral fiber and soft fiber ceiling systems. Our mineral fiber products offer various performance attributes such as acoustical control, rated fire protection, and energy efficiency, along with other health and sustainability features and aesthetic appeal. Ceiling products are primarily sold to resale distributors, ceiling systems contractors and wholesalers, and retailers (including large home centers). The Mineral Fiber segment also includes the results of WAVE, which manufactures and sells suspension system (grid) products and ceiling component products that are invoiced by both AWI 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. For some customers, WAVE sells its suspension system products to AWI for resale to customers. Mineral Fiber 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 Corporate segment, including all property and related depreciation 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, designs and sources ceilings, walls and facades primarily for use in commercial settings. Products are available in numerous materials, such as metal, wood and felt, in addition to various colors, shapes and designs. These products offer various performance attributes such as acoustical control, rated fire protection and aesthetic appeal. We sell standard, premium and customized products, a portion of which are sourced from third-party producers. Architectural Specialties products are sold primarily to resale distributors and direct customers, primarily ceiling systems contractors. The majority of this segment's revenues are project driven, which can lead to more variability in sales patterns. Operating results for the Architectural Specialties segment include a portion of allocated Corporate administrative expenses that represent a reasonable allocation of general services to support its operations.

Unallocated Corporate – includes certain assets, liabilities, income and expenses that have not been allocated to our other business segments and consists 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 secured credit facility and income tax balances.

For the year ended 2023	Mineral Fiber	Architectural Specialties	Unallocated Corporate	Total
Net sales to external customers	$ 932.4	$ 362.8	$ -	$ 1,295.2
Equity (earnings) from joint venture	(89.3)	-	-	(89.3)
Segment operating income (loss)	285.7	40.9	(2.9)	323.7
Segment assets	1,091.9	421.1	159.4	1,672.4
Depreciation and amortization	75.3	13.9	-	89.2
Investment in joint venture	17.4	-	-	17.4
Purchases of property, plant and equipment	67.2	16.6	-	83.8

For the year ended 2022	Mineral Fiber	Architectural Specialties	Unallocated Corporate	Total
Net sales to external customers	$ 887.4	$ 345.7	$ -	$ 1,233.1
Equity (earnings) from joint venture	(77.6)	-	-	(77.6)
Segment operating income (loss)	260.9	21.7	(3.9)	278.7
Segment assets	1,096.9	387.5	202.8	1,687.2
Depreciation and amortization	69.5	14.2	-	83.7
Investment in joint venture	23.9	-	-	23.9
Purchases of property, plant and equipment	63.8	11.0	-	74.8

For the year ended 2021	Mineral Fiber	Architectural Specialties	Unallocated Corporate	Total
Net sales to external customers	$ 818.5	$ 288.1	$ -	$ 1,106.6
Equity (earnings) from joint venture	(87.7)	-	-	(87.7)
Segment operating income (loss)	261.2	4.2	(5.4)	260.0
Segment assets	1,133.9	366.3	209.8	1,710.0
Depreciation and amortization	69.9	26.6	-	96.5
Investment in joint venture	50.0	-	-	50.0
Purchases of property, plant and equipment	64.8	15.0	-	79.8

Segment operating income (loss) is the measure of segment profit or loss reviewed by the CODM. 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 (loss) from continuing operations before income taxes. These items are only measured and managed on a consolidated basis:

	2023	2022	2021
Total consolidated operating income	$ 323.7	$ 278.7	$ 260.0
Interest expense	35.3	27.1	22.9
Other non-operating (income), net	(9.9)	(6.0)	(5.6)
Earnings from continuing operations before income taxes	$ 298.3	$ 257.6	$ 242.7

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.

	2023	2022	2021
Geographic Areas			
Net sales			
Mineral Fiber:			
United States	$ 854.2	$ 816.3	$ 754.2
Canada	78.2	71.1	64.3
Total Mineral Fiber	932.4	887.4	818.5
Architectural Specialties:			
United States	349.3	322.1	268.0
Canada	13.5	23.6	20.1
Total Architectural Specialties	362.8	345.7	288.1
Total net sales	$ 1,295.2	$ 1,233.1	$ 1,106.6

Our product-based Mineral Fiber and Architectural Specialties segment net sales represent the product-based group offerings we sell to external customers.

	2023	2022
Property, plant and equipment, net at December 31,		
Mineral Fiber:		
United States	$ 494.9	$ 496.8
Total Mineral Fiber	494.9	496.8
Architectural Specialties:		
United States	66.5	52.3
Canada	5.0	5.3
Total Architectural Specialties	71.5	57.6
Total property, plant and equipment, net	$ 566.4	$ 554.4

NOTE 4. REVENUE

Disaggregation of Revenues

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

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

Home centers – represents net sales to home centers, such as Lowe's Companies, Inc. and The Home Depot, Inc. This category includes sales primarily to U.S. customers.

Direct customers – represents net sales to contractors, subcontractors, and large architect and design firms. This category includes sales primarily to U.S. customers.

Other – represents net sales to independent retailers and certain national account customers, including wholesalers who re-sell our products to dealers who service builders, contractors and consumers, online customers, major facility owners, group purchasing organizations and maintenance, repair and operating entities. Geographically, this category includes sales throughout the U.S., Canada, and Latin America.

The following tables present net sales by major customer group within the Mineral Fiber and Architectural Specialties segments for the years ended December 31, 2023, 2022 and 2021:

Mineral Fiber	2023	2022	2021
Distributors	$ 682.3	$ 654.1	$ 603.9
Home centers	103.5	99.1	94.4
Direct customers	57.1	61.0	59.2
Other	89.5	73.2	61.0
Total	$ 932.4	$ 887.4	$ 818.5

Architectural Specialties	2023	2022	2021
Distributors	$ 192.7	$ 174.4	$ 150.5
Direct customers	159.7	168.0	134.6
Other	10.4	3.3	3.0
Total	$ 362.8	$ 345.7	$ 288.1

NOTE 5. ACQUISITIONS

We account for acquisitions under the acquisition method and the results of operations of acquired operations are included in the Consolidated Financial Statements from the acquisition date. Acquisition related costs are expensed as incurred. For acquired businesses, we allocate total consideration to the assets acquired and liabilities assumed based on their estimated fair values, with the remaining unallocated amount recorded as goodwill. The fair value of acquired intangible assets is estimated by applying discounted cash flow models based on significant level 3 inputs not observable in the market. Key assumptions are developed based on each acquirees' historical experience, future projections and comparable market data including future cash flows, long-term growth rates, implied royalty rates, attrition rates and discount rates. Acquisition-related contingent consideration that is classified as a liability is measured at fair value as of the acquisition date. The fair value of contingent consideration is remeasured at each reporting period, and any future changes in the fair value of contingent consideration recorded in reporting periods after the acquisition date are recorded within loss (gain) related to change in fair value of contingent consideration on our Consolidated Statements of Earnings and Comprehensive Income.

INSOLCORP

In October 2023, we acquired a portion of the business of Insolcorp for $1.7 million of cash and additional contingent consideration payable upon the achievement of certain future performance obligations from 2024 through 2031. We, with the assistance of an independent, third-party valuation specialist, determined the estimated fair value of the contingent consideration of $0.7 million at the acquisition date, resulting in a purchase price of $2.4 million. The total fair value of tangible assets acquired less liabilities assumed was $0.1 million. The total fair value of identifiable intangible assets acquired was $2.1 million, resulting in $0.2 million of goodwill. Acquired intangible assets were comprised of in-process research and development of $1.7 million and amortizable trademarks of $0.4 million. All acquired intangible assets are being amortized on a straight-line basis over a life of 20 years. All of the acquired goodwill is deductible for tax purposes. Valuations for assets acquired and liabilities assumed are based on preliminary estimates that are subject to revisions and may result in adjustments to preliminary values as valuations are finalized.

BOK

In July 2023, we acquired all of the issued and outstanding stock of BOK for a purchase price of $13.8 million and additional contingent consideration payable upon the achievement of certain future performance obligations in 2024 and 2025 not to exceed $3.3 million. We, with the assistance of an independent, third-party valuation specialist, utilized a Monte Carlo simulation to determine the estimated fair value of the contingent consideration of $0.8 million at the acquisition date, resulting in a purchase price of $14.6 million. The total fair value of tangible assets acquired less liabilities assumed was $1.4 million. The total fair value of identifiable intangible assets acquired was $5.4 million, resulting in $7.8 million of goodwill. Acquired intangible assets were comprised of amortizable patents of $1.9 million, amortizable trademarks of $1.8 million, amortizable customer relationships of $1.4 million, and non-compete agreements of $0.3 million, that are being amortized on a straight-line basis over a weighted-average life of 18, 15, 2 and 3 years, respectively. All of the acquired goodwill is deductible for tax purposes. Valuations for assets acquired and liabilities assumed are based on preliminary estimates that are subject to revisions and may result in adjustments to preliminary values as valuations are finalized.

SOFTWARE-RELATED INTELLECTUAL PROPERTY

In May 2023, we acquired a co-ownership interest in certain software-related intellectual property for a total purchase price of $11.0 million, of which $10.0 million was paid in the second quarter of 2023 and an additional $1.0 million was paid in the fourth quarter of 2023. As a result of this transaction, the total fair value of identifiable intangible assets acquired was $6.5 million of software and $4.5 million of developed technology, which are being amortized over a weighted-average life of 5 and 17 years, respectively.

GC PRODUCTS

In November 2022, we acquired the business of GC Products for $2.8 million of cash. The total fair value of tangible assets acquired, less liabilities assumed, was $0.3 million. The total fair value of intangible assets acquired was $1.8 million, resulting in goodwill of $0.7 million. Identified intangible assets consist primarily of amortizable developed technology of $0.7 million, amortizable customer relationships of $0.6 million, and a non-compete agreement of $0.2 million, which are being amortized over a weighted-average life of 20, 6 and 3 years, respectively. All of the acquired goodwill is deductible for tax purposes.

NOTE 6. DISCONTINUED OPERATIONS

EMEA AND PACIFIC RIM BUSINESSES

In 2019, we completed the sale of certain subsidiaries comprising our businesses and operations in Europe, the Middle East and Africa (including Russia) ("EMEA") and the Pacific Rim, including the corresponding businesses and operations conducted by WAVE (collectively, the "Sale"), to Knauf International GmbH ("Knauf"). In 2021, we recorded a pre-tax loss on sale of $0.4 million for final purchase price adjustments related to certain pension liabilities included in the Sale and paid $11.8 million to Knauf related to this purchase price adjustment. In 2022, we recorded a $2.0 million tax benefit related to federal tax statute of limitation closures.

ARMSTRONG FLOORING, INC. ("AFI")

On April 1, 2016, we completed our separation of AFI by transferring 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. In 2022, we recorded a $1.0 million tax benefit related to federal tax statute of limitation closures.

Summarized Financial Information of Discontinued Operations

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

	EMEA and Pacific Rim Businesses	AFI	Total
2022			
Earnings from discontinued businesses before income tax	$ -	$ -	$ -
Income tax benefit	(2.0)	(1.0)	(3.0)
Net earnings from discontinued operations, net of tax	$ 2.0	$ 1.0	$ 3.0
Net earnings from discontinued operations	$ 2.0	$ 1.0	$ 3.0

	EMEA and Pacific Rim Businesses
2021	
(Loss) from disposal of discontinued businesses, before income tax	$ (0.4)
Income tax expense	1.7
(Loss) from disposal of discontinued businesses, net of tax	$ (2.1)
Net (loss) from discontinued operations	$ (2.1)

NOTE 7. ACCOUNTS AND NOTES RECEIVABLE

	December 31, 2023	December 31, 2022
Customer receivables	$ 102.1	$ 107.4
Miscellaneous receivables	11.8	8.2
Less allowance for warranties, discounts and losses	(2.9)	(3.2)
Accounts and notes receivable, net	$ 111.0	$ 112.4

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.

As of December 31, 2022, miscellaneous receivables included $4.8 million of Employee Retention Credit ("ERC") receivables, representing a refundable payroll tax credit for eligible wages paid to our employees in 2020 and 2021 under the Coronavirus Aid, Relief, and Economic Recovery Act ("CARES Act"). During the first quarter of 2023, all of the outstanding ERC receivables were collected. See Note 16 to the Consolidated Financial Statements for further information.

NOTE 8. INVENTORIES

	December 31, 2023	December 31, 2022
Finished goods	$ 55.1	$ 60.9
Goods in process	5.1	6.5
Raw materials and supplies	66.7	63.0
Less LIFO reserves	(22.9)	(20.4)
Total inventories, net	$ 104.0	$ 110.0

Approximately 62% and 58% of our total inventory in 2023 and 2022, respectively, were valued on a Last-in, first-out ("LIFO") basis.

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

	December 31, 2023	December 31, 2022
U.S. locations	$ 35.3	$ 43.2
Canada locations	4.0	3.1
Total	$ 39.3	$ 46.3

Our U.S. locations generally use the weighted average cost method of inventory valuation and primarily represent certain finished goods sourced from third party suppliers and certain entities within our Architectural Specialties segment, most notably recent acquisitions, that also use the weighted average cost method given the nature of the inventory.

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 reporting purposes. In these situations, a conversion to LIFO would be highly complex and involve excessive cost and effort to achieve under local tax reporting requirements.

NOTE 9. OTHER CURRENT ASSETS

	December 31, 2023	December 31, 2022
Prepaid expenses	$ 15.9	$ 16.6
Assets held for sale	6.7	4.6
Fair value of derivative assets	1.1	3.7
Other	2.7	1.4
Total other current assets	$ 26.4	$ 26.3

As of December 31, 2023, assets held for sale included the land and property, plant and equipment of our idled Mineral Fiber plant in St. Helens, Oregon and the building and related land of an Architectural Specialties design center in Chicago, Illinois. As of December 31, 2022, assets held for sale included the land and property, plant and equipment of our idled Mineral Fiber plant in St. Helens, Oregon.

NOTE 10. PROPERTY, PLANT AND EQUIPMENT

	December 31, 2023	December 31, 2022
Land	$ 31.0	$ 31.8
Buildings	273.3	267.8
Machinery and equipment	713.5	686.1
Computer software	85.1	69.2
Construction in progress	61.7	49.0
Less accumulated depreciation and amortization	(598.2)	(549.5)
Net property, plant and equipment	$ 566.4	$ 554.4

NOTE 11. EQUITY INVESTMENTS

Investment in joint venture as of December 31, 2023 and 2022 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 cumulative earnings approach to determine the appropriate classification of distributions from WAVE within our cash flow statement. For all years presented, cumulative distributions received in prior periods, less distributions that were returns of investment, exceeded our cumulative equity earnings from WAVE as adjusted for the amortization of basis differences. Accordingly, the distributions were reflected as returns of investment in cash flows from investing activities in our Consolidated Statements of Cash Flows for all years presented. Distributions from WAVE in 2023, 2022 and 2021, were $96.9 million, $104.5 million, and $78.3 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 $47.2 million, $47.3 million and $42.3 million for the years ended 2023, 2022 and 2021, respectively.

Condensed financial data for WAVE is summarized below.

	December 31, 2023	December 31, 2022
Current assets	$ 88.9	$ 100.8
Non-current assets	87.2	86.3
Current liabilities	33.0	31.3
Non-current liabilities	363.9	372.3

	2023	2022	2021
Net sales	$ 449.0	$ 458.2	$ 430.8
Gross profit	263.2	231.1	244.5
Net earnings	187.2	163.7	184.6

Our recorded investment in WAVE was higher than our 50% share of the carrying values reported in WAVE's consolidated financial statements by $127.9 million as of December 31, 2023 and $132.2 million as of December 31, 2022. 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, 2023	December 31, 2022
Property, plant and equipment	$ 0.4	$ 0.4
Other intangibles	97.1	101.4
Goodwill	30.4	30.4
Total	$ 127.9	$ 132.2

Other intangibles include customer relationships and trademarks. Customer relationships are amortized over 20 years and trademarks have an indefinite life.

Management regularly evaluates its investment in WAVE for impairment. Based on those evaluations, management concluded that its investment in WAVE was not impaired in 2023, 2022 or 2021.

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

NOTE 12. LEASES

The following table presents our lease costs:

	2023	2022	2021
Operating lease cost	$ 8.5	$ 7.0	$ 6.4
Finance lease cost:			
Amortization of leased assets	$ 3.1	$ 2.4	$ 2.4
Interest on lease liabilities	0.9	0.6	0.7
Total finance lease cost	$ 4.0	$ 3.0	$ 3.1

Short-term lease expense and variable lease cost were not material for the years ended December 31, 2023, 2022 and 2021 and are excluded from the table above. As of December 31, 2023, we did not have any material leases that have not yet commenced.

The following table presents supplemental cash flow information related to our leases:

	2023	2022	2021
Cash paid for amounts included in the measurement of lease liabilities			
Operating cash flows from operating leases	$ 8.0	$ 6.8	$ 6.3
Operating cash flows from finance leases	0.8	0.6	0.7
Financing cash flows from finance leases	2.7	2.2	2.1
ROU assets obtained in exchange for lease liabilities			
Operating leases [1]	$ 15.8	$ 3.9	$ 7.3
Finance leases [2]	12.3	-	0.3

(1) The year ended December 31, 2023 included a decrease of $1.0 million in ROU assets due to a change in lease classification upon modification and an increase of $0.6 million resulting from modifications that did not involve obtaining a new ROU asset. The years ended December 31, 2022 and 2021 included increases in ROU assets of $1.0 million and $3.2 million, respectively, resulting from modifications that did not involve obtaining a new ROU asset. Modifications resulted primarily from changes in the terms of existing leases.

(2) The year ended December 31, 2023 included increases in ROU assets of $8.6 million due to the change in lease classification upon modification for an existing manufacturing facility within our Architectural Specialties segment which had a modified expected lease term of 13 years, in addition to an increase of $3.7 million for a lease modification that did not involve obtaining a new ROU asset.

During 2023, we entered into a new operating lease for a manufacturing facility within our Architectural Specialties segment which, upon commencement, resulted in an initial ROU asset and lease liability of $13.0 million based on an expected lease term of approximately 5 years.

The following table presents the weighted average assumptions used to compute our ROU assets and lease liabilities:

	December 31, 2023	December 31, 2022
Weighted average remaining lease term (in years)		
Operating leases	4.8	5.1
Finance leases	9.5	9.4
Weighted average discount rate		
Operating leases	5.7%	3.8%
Finance leases	4.7%	3.7%

Undiscounted future minimum lease payments as of December 31, 2023, by year and in the aggregate, having non-cancelable lease terms in excess of one year are as follows:

	Operating Leases	Finance Leases
Maturity of lease liabilities		
2024	$ 7.9	$ 4.2
2025	6.6	4.0
2026	5.3	4.2
2027	5.0	4.4
2028	3.5	2.5
Thereafter	2.5	14.3
Total lease payments	30.8	33.6
Less interest	(3.6)	(7.2)
Present value of lease liabilities	$ 27.2	$ 26.4

NOTE 13. GOODWILL AND INTANGIBLE ASSETS

We conduct our annual impairment testing of goodwill and non-amortizing intangible assets during the fourth quarter. The 2023, 2022 and 2021 reviews concluded that no impairment charges were necessary. See Note 2 to the Consolidated Financial Statements for a discussion of our accounting policy for goodwill and intangible assets.

The following table details amounts related to our goodwill and intangible assets as of December 31, 2023 and 2022:

		December 31, 2023		December 31, 2022	
	Estimated Useful Life	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Amortizing intangible assets					
Customer relationships	2-20 years	$ 183.6	$ 152.1	$ 182.1	$ 142.0
Developed technology	13-20 years	101.4	84.4	93.8	83.3
Software	5-7 years	15.6	4.6	9.1	2.6
Trademarks and brand names	3-20 years	6.2	3.4	4.0	2.6
Non-compete agreements	3-5 years	6.1	3.8	5.8	2.6
Other	Various	2.8	0.2	1.1	0.1
Total		$ 315.7	$ 248.5	$ 295.9	$ 233.2
Non-amortizing intangible assets					
Trademarks and brand names	Indefinite	345.2		345.0	
Total intangible assets		$ 660.9		$ 640.9	
Goodwill	Indefinite	$ 175.5		$ 167.3	

The increase in goodwill as of December 31, 2023 compared to December 31, 2022 resulted from the acquisitions of Insolcorp and BOK, in addition to foreign exchange movements.

	2023	2022	2021
Amortization expense	$ 15.3	$ 16.3	$ 33.8

The expected annual amortization expense for the years 2024 through 2028 are as follows:

2024	$ 16.2
2025	15.2
2026	11.2
2027	5.0
2028	2.9

NOTE 14. OTHER NON-CURRENT ASSETS

	December 31, 2023	December 31, 2022
Cash surrender value of company-owned life insurance policies	$ 40.3	$ 42.8
Investment in employee deferred compensation plans	8.3	7.7
Fair value of derivative assets	1.8	7.7
Other	0.9	1.2
Total other non-current assets	$ 51.3	$ 59.4

NOTE 15. ACCOUNTS PAYABLE AND ACCRUED EXPENSES

	December 31, 2023	December 31, 2022
Payables, trade and other	$ 91.0	$ 105.0
Employment costs	33.6	20.0
Current portion of pension and postretirement liabilities	8.0	9.9
Acquisition-related contingent consideration	-	15.2
Other	27.3	22.4
Total accounts payable and accrued expenses	$ 159.9	$ 172.5

NOTE 16. INCOME TAXES

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 to realize deferred tax assets, net of valuation allowances. In arriving at this conclusion, we considered the profit before tax generated for the years 2021 through 2023, future reversals of existing taxable temporary differences, and projections of future profit before tax.

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 consider 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 and forecasts of future profitability, 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, 2023 and 2022, we had $646.7 million and $675.5 million, respectively, of gross state net operating loss (“NOL”) carryforwards expiring between 2024 and 2043. As of December 31, 2023 and 2022, we had capital loss carryforwards of $18.8 million that expire between 2024 and 2036.

As of December 31, 2023 and 2022, we had valuation allowances of $49.1 million and $48.7 million, respectively. As of December 31, 2023, our valuation allowance consisted of $28.2 million for state deferred tax assets related to operating loss carryforwards, $17.9 million for federal and state deferred tax assets related to capital loss carryforwards and $3.0 million for state deferred tax assets related to state tax credits.

We estimate we will need to generate future taxable income of approximately $240.9 million for state income tax purposes during the respective realization periods (ranging from 2024 to 2043) to be able to fully realize the net deferred income tax assets discussed above. We estimate we will need to generate capital gain income of $66.4 million to fully realize our federal capital loss carryforwards before they expire between 2024 and 2026. We estimate we will need to generate capital gain income of $184.6 million to fully realize our state capital loss carryforwards before they expire between 2024 and 2036. 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, 2023	December 31, 2022
Deferred income tax assets (liabilities)		
Net operating losses	$ 32.2	$ 34.2
Postretirement benefits	13.1	16.7
Pension benefit liabilities	8.1	8.2
Deferred compensation	6.8	7.1
State tax credit carryforwards	4.4	4.7
Capital loss carryforwards	18.8	18.8
Capitalized research expenses	15.3	9.4
Lease liabilities	9.5	9.7
Other	9.0	3.8
Total deferred income tax assets	117.2	112.6
Valuation allowances	(49.1)	(48.7)
Net deferred income tax assets	68.1	63.9
Intangibles	(84.7)	(85.1)
Partnerships and investments	(25.4)	(25.5)
Accumulated depreciation	(87.3)	(86.4)
Prepaid pension costs	(21.6)	(21.2)
Inventories	(4.4)	(4.9)
Lease assets	(9.9)	(9.9)
Other	(1.7)	(0.3)
Total deferred income tax liabilities	(235.0)	(233.3)
Net deferred income tax liabilities	$ (166.9)	$ (169.4)

	2023	2022	2021
Details of taxes			
Earnings from continuing operations before income taxes			
Domestic	$ 291.9	$ 251.7	$ 239.3
Foreign	6.4	5.9	3.4
Total	$ 298.3	$ 257.6	$ 242.7
Income tax expense (benefit):			
Current:			
Federal	$ 59.8	$ 46.3	$ 39.4
Foreign	1.7	1.3	0.6
State	13.9	11.3	8.7
Total current	75.4	58.9	48.7
Deferred:			
Federal	(3.2)	(1.9)	3.6
Foreign	(0.2)	(0.2)	0.6
State	2.5	0.9	4.5
Total deferred	(0.9)	(1.2)	8.7
Total income tax expense	$ 74.5	$ 57.7	$ 57.4

The unremitted earnings of our foreign subsidiaries are not permanently reinvested. Accordingly, at December 31, 2023 and 2022, we have recorded deferred income taxes for foreign withholding taxes of $0.9 million and $0.9 million on approximately $17.5 million and $17.7 million of net undistributed earnings of foreign subsidiaries, respectively.

	2023	2022	2021
Reconciliation to U.S. statutory tax rate			
Continuing operations tax expense at statutory rate	$ 62.6	$ 54.1	$ 51.0
Increase (decrease) in valuation allowances on deferred income tax assets	0.3	(1.7)	(17.8)
Expiration of deferred income tax assets	0.2	0.7	18.3
State income tax expense, net of federal impact	13.7	11.0	11.0
Statute closures	(0.6)	(5.1)	(3.8)
Excess tax benefits on share-based compensation	(0.1)	(0.5)	(0.8)
U.S. permanent differences	(2.6)	(0.8)	(1.3)
Other	1.0	-	0.8
Tax expense at effective rate	$ 74.5	$ 57.7	$ 57.4

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 for which we are 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 had $26.9 million of Unrecognized Tax Benefits (“UTB”) as of December 31, 2023, $12.8 million ($11.7 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. Over the next twelve months we estimate that UTB’s may decrease by $0.5 million related to state statutes expiring.

We account for all interest and penalties on uncertain income tax positions as income tax expense. We have $2.3 million and $1.7 million of interest and penalties accrued in non-current income tax payable in the Consolidated Balance Sheets as of December 31, 2023 and 2022, respectively.

We had the following activity for UTB’s for the years ended December 31, 2023, 2022 and 2021:

	2023	2022	2021
Unrecognized tax benefits balance at January 1,	$ 27.3	$ 35.6	$ 41.7
Gross change for current year positions	0.4	0.4	1.7
Increase for prior period positions	0.2	0.2	-
Decrease for prior period positions	(0.5)	(1.4)	(3.6)
Decrease due to statute expirations	(0.5)	(7.5)	(4.2)
Unrecognized tax benefits balance at December 31,	$ 26.9	$ 27.3	$ 35.6

We file income tax returns in the U.S. and various states and international jurisdictions. In the normal course of business, we are subject to examination by taxing authorities in Canada and the U.S. 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 2018. However, the U.S. federal return remains subject to examination by taxing authorities for 2017, specifically as it relates to the Section 965 Transition Tax incurred related to the Tax Cuts and Jobs Act of 2017. With few exceptions, the statute of limitations is no longer open for state or non-U.S. income tax examinations for years before 2019. With the exception of extending the 2018 and 2019 statute of limitations to August 31, 2024 as a result of ongoing U.S. federal income tax audits, 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.

	2023	2022	2021
Other taxes			
Payroll taxes	$ 20.8	$ 18.3	$ 13.4
Property, franchise and capital stock taxes	5.4	4.5	4.4

In 2021, we recorded a $5.9 million ERC benefit, representing a refundable payroll tax credit for eligible wages paid to our employees in 2020 and 2021 under the CARES Act. We accounted for the ERC by applying the grant model. Based on our evaluation, we recognized the ERC benefit during 2021, primarily as an offset to payroll tax expenses within cost of goods sold and SG&A expenses in our Consolidated Statements of Earnings and Comprehensive Income.

NOTE 17. DEBT

	December 31, 2023	December 31, 2022
Revolving credit facility (due 2027)	$ 140.0	$ 205.0
Term loan A (due 2027)	450.0	450.0
Principal debt outstanding	590.0	655.0
Unamortized debt financing costs	(3.2)	(3.9)
Long-term debt	586.8	651.1
Less current installments of long-term debt	22.5	-
Total long-term debt, less current installments of long-term debt	$ 564.3	$ 651.1

We have a $950.0 million variable rate senior secured credit facility, which is comprised of a $500.0 million revolving credit facility (with a $150.0 million sublimit for letters of credit) and a $450.0 million Term Loan A. The revolving credit facility and Term Loan A are currently priced at 1.375% over the Secured Overnight Financing Rate (“SOFR”), plus a 10-basis point adjustment. We also have a $25.0 million bi-lateral letter of credit facility. The revolving credit facility and Term Loan A mature in December 2027.

On December 7, 2022, we amended and restated our senior secured credit facility, extending the maturity of both the revolving credit facility and Term Loan A from September 2024 to December 2027. In connection with the refinancing, we paid $3.1 million of bank, legal and other fees, of which $3.0 million were capitalized. These fees are reflected as a component of long-term debt and amortized into interest expense over the lives of the underlying debt. Additionally, during the fourth quarter of 2022, we wrote off $0.6 million of unamortized debt financing costs, included as a component of interest expense, related to our previous credit facility.

The senior secured credit facility includes two financial covenants that require the ratio of consolidated earnings before interest, taxes, depreciation and amortization (“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 ratio of consolidated funded indebtedness, minus AWI and domestic subsidiary unrestricted cash and cash equivalents up to $100 million, to consolidated EBITDA to be less than or equal to 3.75 to 1.0 (subject to certain exceptions for certain acquisitions). As of December 31, 2023, we were in compliance with all covenants of the senior secured credit facility.

Our debt agreements include other restrictions, including restrictions pertaining to the incurrence 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.

Scheduled payments of long-term debt:

2024	$ 22.5
2025	22.5
2026	22.5
2027	522.5

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 and our bi-lateral 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 facilities:

Financing Arrangements	December 31, 2023 Limit	Used	Available
Bi-lateral facility	$ 25.0	$ 7.7	$ 17.3
Revolving credit facility	150.0	-	150.0
Total	$ 175.0	$ 7.7	$ 167.3

NOTE 18. 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 defined contribution benefit plans were $10.4 million in 2023, $8.4 million in 2022 and $9.1 million in 2021.

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 a qualified, funded RIP and a Retirement Benefit Equity Plan (“RBEP”), 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.

We have a defined benefit pension plan in Germany which remains from previously discontinued entities. This plan uses assumptions which are consistent with, but not identical to, those of the U.S. plans. The accumulated benefit obligation for the non-U.S. defined benefit pension plan was $2.0 million and $1.8 million as of December 31, 2023 and 2022, respectively.

The following tables summarize the balance sheet impact of our U.S. 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.

	2023	2022
Change in benefit obligations:		
Benefit obligations as of beginning of period	$ 337.1	$ 435.1
Service cost	2.6	3.7
Interest cost	16.9	10.5
Actuarial loss (gain)	13.7	(99.8)
Benefits paid	(13.8)	(12.4)
Benefit obligations as of end of period	$ 356.5	$ 337.1

	2023	2022
Change in plan assets:		
Fair value of plan assets as of beginning of period	$ 391.7	$ 506.7
Actual return on plan assets	32.7	(105.4)
Employer contributions	2.8	2.8
Benefits paid	(13.8)	(12.4)
Fair value of plan assets as of end of period	$ 413.4	$ 391.7
Funded status	$ 56.9	$ 54.6

	2023	2022
Weighted-average assumptions used to determine benefit obligations at end of period:		
Discount rate	5.01%	5.21%
Rate of compensation increase	3.33%	3.33%
Weighted-average assumptions used to determine net periodic benefit cost for the period:		
Discount rate	5.21%	2.97%
Expected return on plan assets	6.50%	3.75%
Rate of compensation increase	3.33%	3.05%

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 3.75% for the years ended December 31, 2023 and 2022, respectively.

The accumulated benefit obligation for the U.S. defined benefit pension plans was $355.2 million and $335.7 million as of December 31, 2023 and 2022, respectively. In 2023, the largest contributor to the net actuarial loss affecting the benefit obligations for the defined benefit pension plans was a decrease in discount rate and changes in census data. In 2022, the largest contributor to the net actuarial gains affecting the benefit obligations for the defined benefit pension plans was an increase in the discount rate, which was partially offset by other changes in assumptions and changes in census data.

	2023	2022
Pension plans with benefit obligations in excess of assets		
RBEP Projected benefit obligation, December 31	$ 27.7	$ 28.6
RBEP Accumulated benefit obligation, December 31	27.7	28.6

The components of the pension cost for the U.S. defined benefit pension plans are as follows:

	2023	2022	2021
Service cost of benefits earned during the period	$ 2.6	$ 3.7	$ 4.8
Interest cost on projected benefit obligation	16.9	10.5	9.0
Expected return on plan assets	(25.0)	(18.4)	(16.5)
Amortization of net actuarial loss	5.4	4.2	3.5
Net periodic pension (credit) cost	$ (0.1)	$ -	$ 0.8

For 2023, 2022 and 2021, actuarial gains and losses were amortized over the remaining life expectancy of plan participants, which was approximately 26 years for 2023, 26 years for 2022 and 27 years for 2021 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 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/or (d) using derivatives to either implement investment positions efficiently or to hedge risk but not to create investment leverage.

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, 2023 and 2022 positions for each asset class:

Asset Class	Target Weight at December 31, 2023	Position at December 31, 2023	Position at December 31, 2022
Long duration bonds	90.0%	90.0%	90.0%
Equities, real estate and private equity	10.0%	10.0%	10.0%

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:

	Value at December 31, 2023			
Description	Level 1	Level 2	Level 3	Total
Collective trust funds - bonds	$ -	$ 371.5	$ -	$ 371.5
Collective trust funds - equities	-	34.3	-	34.3
Cash, other short-term investments and payables, net	(0.3)	3.8	-	3.5
Net assets measured at fair value	$ (0.3)	$ 409.6	$ -	$ 409.3
Investments measured at net asset value as a practical expedient				4.1
Net assets				$ 413.4

	Value at December 31, 2022			
Description	Level 1	Level 2	Level 3	Total
Collective trust funds - bonds	$ -	$ 350.3	$ -	$ 350.3
Collective trust funds - equities	-	32.6	-	32.6
Cash, other short-term investments and payables, net	(0.3)	3.5	-	3.2
Net assets measured at fair value	$ (0.3)	$ 386.4	$ -	$ 386.1
Investments measured at net asset value as a practical expedient				5.6
Net assets				$ 391.7

The RIP has investments in alternative investment funds as of December 31, 2023 and 2022 which are reported at fair value. These 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, 2023, 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, 2023			
Description	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Real estate	$ 4.1	$ 2.2	Quarterly	60 days

	Value at December 31, 2022			
Description	Fair Value	Unfunded Commitments	Redemption Frequency	Redemption Notice Period
Real estate	$ 5.6	$ 2.2	Quarterly	60 days

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

Collective trust funds – bonds: Consists primarily of collective trust funds, in addition to registered investment funds and common trust funds, which invest in fixed income securities tailored to institutional investors. There are no readily available market quotations for registered investment company funds. The fair value of collective trust funds, registered investment funds and common trust funds have been classified as Level 2 assets above based on the determination that the funds have quoted prices in non-active markets. The funds are priced on a daily basis by their trustee and therefore have a readily determinable fair value; however, the number of trades occurring is not sufficient for the market to be considered active. Investments in pooled funds traded in a non-active market were valued at bid price and classified as Level 2 assets above.

Collective trust funds – equities: Represents collective trust and funds holding equity investments, fixed income securities, commodity futures contracts, cash and other short-term securities. The fair value of collective trust funds have been classified as Level 2 assets above based on the determination that the funds have quoted prices in non-active markets. The funds are priced on a daily basis by their trustee and therefore have a readily determinable fair value; however, the number of trades occurring is not sufficient for the market to be considered active.

Cash, other short-term investments and payables: Consists 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 payables and receivables consist primarily of accrued fees and receivables related to investment positions liquidated for which proceeds had not been received as of December 31.

Real estate: Consists of both open-end and closed-end real estate 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.

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.

The following tables summarize the balance sheet impact of our 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.

	2023	2022
Change in benefit obligations:		
Benefit obligation as of beginning of period	$ 61.9	$ 78.0
Interest cost	2.9	1.5
Plan participants' contributions	1.7	1.6
Actuarial gain	(11.6)	(12.4)
Benefits paid	(7.3)	(6.8)
Benefit obligations as of end of period	$ 47.6	$ 61.9

	2023	2022
Change in plan assets:		
Fair value of plan assets as of beginning of period	$ -	$ -
Employer contributions	5.6	5.2
Plan participants' contributions	1.7	1.6
Benefits paid	(7.3)	(6.8)
Fair value of plan assets as of end of period	$ -	$ -
Funded status	$ (47.6)	$ (61.9)

	2023	2022
Weighted-average discount rate used to determine benefit obligations at end of period	4.96%	5.12%
Weighted-average discount rate used to determine net periodic benefit cost for the period	5.13%	2.73%

In 2023, the largest contributor to the actuarial gains affecting the benefit obligation for the postretirement plans was an update to the per capita claims assumption and updated healthcare cost trend rates, partially offset by a decrease in discount rate. In 2022, the largest contributor to the actuarial gains affecting the benefit obligations for the postretirement plans was an increase in the discount rate, which was partially offset by an update to the per capita claims assumption.

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

	2023	2022	2021
Interest cost on accumulated postretirement benefit obligation	$ 2.9	$ 1.5	$ 1.2
Amortization of prior service (credit)	(0.3)	(0.3)	(0.3)
Amortization of net actuarial gain	(5.9)	(2.8)	(2.2)
Net periodic postretirement benefit (credit)	$ (3.3)	$ (1.6)	$ (1.3)

For measurement purposes, an average rate of annual increase in the per capita cost of covered health care benefits of 7.8% for pre-65 retirees and 10.4% for post-65 retirees was assumed for 2023, decreasing ratably to an ultimate rate of 4.5% in 2033.

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	
	2023	2022	2023	2022	2023	2022
Prepaid pension costs	$ 84.6	$ 83.2	$ -	$ -	$ -	$ -
Accounts payable and accrued expenses	(2.7)	(2.7)	(0.1)	(0.1)	(5.2)	(7.1)
Postretirement benefit liabilities	-	-	-	-	(42.4)	(54.8)
Pension benefit liabilities	(25.0)	(25.9)	(1.9)	(1.7)	-	-
Net amount recognized	$ 56.9	$ 54.6	$ (2.0)	$ (1.8)	$ (47.6)	$ (61.9)

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

	U.S. Pension Plans		Retiree Health and Life Insurance Benefits	
	2023	2022	2023	2022
Net actuarial (loss) gain	$ (172.4)	$ (171.9)	$ 28.9	$ 23.3
Prior service credit	-	-	0.9	1.2
Accumulated other comprehensive (loss) income	$ (172.4)	$ (171.9)	$ 29.8	$ 24.5

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. plans:

	U.S. Pension Benefits [1]	Retiree Health and Life Insurance Benefits, Net
2024	$ 19.2	$ 5.3
2025	21.1	4.8
2026	22.4	4.6
2027	23.7	4.2
2028	24.4	4.0
2029 - 2033	126.5	16.6

(1) We were not required and did not make contributions to the RIP during 2023, 2022 or 2021 as, based on guidelines established by the Pension Benefit Guaranty Corporation, the RIP had sufficient assets to fund its distribution obligations. Benefit payments to RIP participants have been made directly from the RIP while benefit payments under the RBEP are funded by the Company.

NOTE 19. FINANCIAL INSTRUMENTS AND CONTINGENT CONSIDERATION

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

	December 31, 2023		December 31, 2022	
	Carrying amount	Estimated fair value	Carrying amount	Estimated fair value
Assets (liabilities), net:				
Total long-term debt, including current portion	$ (586.8)	$ (586.8)	$ (651.1)	$ (645.3)
Interest rate swap contracts	(0.4)	(0.4)	11.4	11.4
Acquisition-related contingent consideration	(1.6)	(1.6)	(15.2)	(15.2)

The carrying amounts of cash and cash equivalents, receivables, accounts payable, and accrued expenses approximate fair value because of the short-term maturity of these instruments. The fair value estimates of long-term debt are based on quotes from a major financial institution of recently observed trading levels of our Term Loan A debt. The fair value estimates for interest rate swap contracts are estimated with the assistance of third-party valuation experts and verified by obtaining quotes from major financial institutions. We engaged independent, third-party valuation specialists to determine the fair value estimates for acquisition-related contingent consideration payable based on performance, which were primarily measured using a Monte Carlo simulation. As of December 31, 2023, acquisition-related contingent consideration liabilities of $1.6 million related to future financial and performance milestones for the BOK and Insolcorp acquisitions were classified as long-term liabilities on our Consolidated Balance Sheets. As of December 31, 2022, $15.2 million of acquisition-related contingent consideration liabilities payable, related to the final achievement of certain financial and performance milestones through December 31, 2022 for the acquisitions of Moz and Turf, was classified as accounts payable and accrued expenses on our Consolidated Balance Sheet and was equal to fair value as milestone achievements were known.

The fair value measurement of assets and liabilities measured at fair value on a recurring basis and reported on the Consolidated Balance Sheets is summarized below:

	December 31, 2023		December 31, 2022
	Fair value based on		Fair value based on
	Other observable inputs Level 2	Other unobservable inputs Level 3	Other observable inputs Level 2
Assets (liabilities), net:			
Interest rate swap contracts	$ (0.4)	$ -	$ 11.4
Acquisition-related contingent consideration	-	(1.6)	-

Acquisition-related contingent consideration of $1.6 million as of December 31, 2023 was measured with the use of significant unobservable inputs, which included financial projections over the earn-out period, the volatility of the underlying financial metrics and estimated discount rates. All changes in the contingent consideration liability subsequent to the initial acquisition-date measurements were recorded as a component of operating income on our Consolidated Statements of Earnings and Comprehensive Income.

The following table summarizes the weighted-average of the significant unobservable inputs as of December 31, 2023:

	BOK	Insolcorp
Unobservable input		
Volatility	24.3%	20.0%
Discount rates	4.5%	4.8%

The changes in fair value of the acquisition-related contingent consideration liabilities for the years ended December 31, 2023, 2022 and 2021 were as follows:

	Fair Value of Contingent Consideration
Balance as of December 31, 2020	$ 16.9
(Gain) related to change in fair value of contingent consideration	(4.1)
Balance as of December 31, 2021	$ 12.8
Cash consideration paid	(8.6)
Loss related to change in fair value of contingent consideration	11.0
Balance as of December 31, 2022	$ 15.2
Cash consideration paid	(15.2)
Acquisition date fair value of BOK contingent consideration	0.8
Acquisition date fair value of Insolcorp contingent consideration	0.7
Loss related to change in fair value of contingent consideration	0.1
Balance as of December 31, 2023	$ 1.6

As of December 31, 2023, acquisition-related contingent consideration liabilities represented additional cash consideration payable related to our acquisitions of Insolcorp and BOK that will be paid upon the final achievement of certain financial and performance milestones. As of December 31, 2022, the acquisition-related contingent consideration liabilities represented the additional cash consideration payable related to our acquisition of Turf upon the final achievement of certain financial and performance milestones through December 31, 2022, which we paid in the first quarter of 2023.

During 2023, the change in fair value was due to changes in Monte Carlo simulation inputs for BOK. During 2022, the change in fair value was due to changes in Turf actual and projected results over the earn out period. During 2021, the change in fair value was primarily due to changes in Turf and Moz actual and projected results over the earn out period.

During 2023, we paid $15.2 million of additional cash consideration for the acquisition of Turf, which represented the final achievement of certain financial and performance milestones through December 31, 2022. During 2022, we paid $8.6 million of additional cash consideration for the acquisitions of Moz and Turf, which represented the final achievement of certain financial and performance milestones through December 31, 2021.

The additional cash consideration paid was classified as cash flows from financing activities in our Consolidated Statements of Cash Flows, up to the acquisition date fair value. The portions of additional cash consideration paid in excess of the acquisition date fair value was classified as cash flows from operating activities in our Consolidated Statements of Cash Flows.

NOTE 20. 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 interest rate derivatives to manage our exposures to interest rates. At inception, interest rate swap derivatives that we designate as hedging instruments are formally documented as a hedge of a forecasted transaction or cash flow 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 the 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 financial institution counterparties having an investment-grade credit rating. We monitor counterparty 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 we consider the risk of counterparty default to be negligible.

Interest Rate Risk

We utilize interest rate swaps to minimize the fluctuations in earnings caused by interest rate volatility. In March 2023, we amended our interest rate swaps outstanding in accordance with ASU 2020-04, "Facilitation of the Effects of Reference Rate Reform on Financial Reporting," changing our hedged interest rate from the discontinued London Interbank Offered Rate, or LIBOR, to SOFR.

These swaps are designated as cash flow hedges against changes in the SOFR for a portion of our variable rate debt. The following table summarizes our interest rate swaps as of December 31, 2023:

Coverage Period	Notional Amount	Risk Coverage	Trade Date
March 2021 to March 2024	$ 50.0	USD-SOFR	March 10, 2020
March 2021 to March 2024	$ 50.0	USD-SOFR	March 11, 2020
November 2023 to June 2024	$ 50.0	USD-SOFR	September 18, 2023
March 2021 to March 2025	$ 100.0	USD-SOFR	November 28, 2018
November 2023 to December 2025	$ 50.0	USD-SOFR	October 23, 2023
November 2023 to December 2026	$ 50.0	USD-SOFR	October 10, 2023
November 2023 to November 2027	$ 50.0	USD-SOFR	September 29, 2023

Under the terms of our interest rate swaps with trade dates prior to January 1, 2023 above, we pay a fixed rate monthly and receive a floating rate based on SOFR, inclusive of a 0% floor. Under the terms of our interest rate swaps with trade dates after January 1, 2023 above, we pay a fixed rate monthly and receive a floating rate based on SOFR.

Financial Statement Impacts

The following tables detail amounts related to our derivatives as of December 31, 2023 and 2022. We did not have any derivative assets or liabilities not designated as hedging instruments as of December 31, 2023 or 2022. The derivative asset and liability amounts below are shown gross and have not been netted.

	Derivative Assets			Derivative Liabilities		
		Fair Value			Fair Value	
	Balance Sheet Location	December 31, 2023	December 31, 2022	Balance Sheet Location	December 31, 2023	December 31, 2022
Interest rate swap contracts	Other current assets	$ 1.1	$ 3.7	Accounts payable and accrued expenses	$ 0.1	$ -
Interest rate swap contracts	Other non-current assets	1.8	7.7	Other long-term liabilities	3.2	-

	Amount of (Loss) Gain Recognized in AOCI			Location of Gain (Loss) Reclassified from AOCI into Net Earnings	Gain Reclassified from AOCI into Net Earnings		
	2023	2022	2021		2023	2022	2021
Derivatives in cash flow hedging relationships							
Interest rate swap contracts	$ (0.6)	$ 26.9	$ 21.9	Interest expense	$ 11.5	$ 2.0	$ 8.5

As of December 31, 2023, the amount of existing gains in AOCI expected to be recognized in earnings over the next twelve months was $3.2 million.

NOTE 21. OTHER LONG-TERM LIABILITIES

	December 31, 2023	December 31, 2022
Long-term deferred compensation arrangements	$ 12.3	$ 15.4
Fair value of derivative liabilities	3.2	-
Environmental insurance recoveries received in excess of cumulative expenses incurred	2.6	3.5
Acquisition-related contingent consideration	1.6	-
Other	7.1	6.9
Total other long-term liabilities	$ 26.8	$ 25.8

NOTE 22. SHARE-BASED COMPENSATION PLANS

The 2022 Equity and Cash Incentive Plan (“2022 ECIP”) authorizes us to issue stock options, stock appreciation rights, restricted stock awards, performance-based awards and cash awards to officers and key employees. The 2022 ECIP authorizes us to issue up to 2,651,472 shares of common stock, and expires on June 15, 2032, after which time no further awards may be made. As of December 31, 2023, 2,492,005 shares were available for future grants under the 2022 ECIP, which includes anticipated future adjustments to shares for performance-based awards that have been previously granted.

The 2016 Directors Stock Unit Plan (“2016 Director’s Plan”) authorizes us to issue stock units to non-employee directors and expires on July 8, 2026. The 2016 Director’s Plan authorizes us to issue up to 250,000 shares of common stock, which includes all shares that have been issued under the 2016 Director’s Plan. As of December 31, 2023, 132,351 shares were available for future grants under the 2016 Director’s Plan.

The 2020 Inducement Award Plan (“2020 Inducement Plan”) authorizes us to issue stock options, stock appreciation rights, restricted stock awards and stock units to key employees and expires on December 14, 2030, after which time no further awards may be made. The 2020 Inducement Plan authorizes us to issue up to 19,000 shares of common stock. As of December 31, 2023, 8,903 shares were available for future grants under the 2020 Inducement Plan.

The following table presents stock option activity for the year ended December 31, 2023:

	Number of shares (thousands)	Weighted-average exercise price	Weighted-average remaining contractual term (years)	Aggregate intrinsic value (millions)
Option shares outstanding, December 31, 2022	33.9	$ 47.35		
Option shares exercised	(27.7)	$ 47.01		
Option shares outstanding, December 31, 2023	6.2	$ 48.86	0.4	$ 0.3
Option shares exercisable, vested and expected to vest, December 31, 2023	6.2	$ 48.86	0.4	$ 0.3

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:

	2023	2022	2021
Total intrinsic value of stock options exercised	$ 1.3	$ 1.3	$ 4.1
Cash proceeds received from stock options exercised	0.2	1.8	2.5
Tax deduction realized from stock options exercised	0.3	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 have been no option grants since 2014.

We also grant non-vested stock awards in the form of Restricted Stock Units (“RSUs”), Performance Stock Units (“PSUs”) and Restricted Stock Awards ("RSAs"). A summary of the 2023 activity related to the RSUs, PSUs and RSAs is as follows:

	Non-Vested Stock Awards					
	RSUs		PSUs		RSAs	
	Number of shares (thousands)	Weighted-average fair value at grant date	Number of shares (thousands)	Weighted-average fair value at grant date	Number of shares (thousands)	Weighted-average fair value at grant date
December 31, 2022	112.1	$ 86.66	306.4	$ 99.38	50.7	$ 78.05
Granted	180.5	73.61	101.1	98.06	-	-
Performance adjustments	-	-	(80.3)	(101.96)	-	-
Vested	(76.0)	(86.36)	-	-	(50.6)	(78.05)
Forfeited	(11.2)	(81.83)	(18.7)	(96.62)	(0.1)	(77.22)
December 31, 2023	205.4	$ 75.56	308.5	$ 98.44	-	$ -

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 prescribed service period is fulfilled and the defined financial targets are achieved at the end of the performance period. Upon vesting, final adjustments based upon financial achievements are reflected as performance adjustments in the table above. RSUs and PSUs generally have vesting periods of three years at the grant date. RSUs and PSUs earn dividends during the vesting period that are subject to forfeiture if the awards do not vest.

In connection with the acquisition of Arktura in 2020, we issued RSAs to the former owners of Arktura as of the acquisition date that had an original vesting period of five years from the grant date and earn dividends during the vesting period, subject to the former owners’ continued employment. These awards to sellers were not issued under the 2020 Inducement Plan. In the fourth quarter of 2023, we accelerated the vesting of all outstanding awards due to a mutually agreed upon separation of service of the former owners of Arktura, resulting in no outstanding RSAs as of December 31, 2023.

Also in connection with the acquisition of Arktura, we issued RSAs under the 2020 Inducement Plan to key employees as of the acquisition date, which had a vesting period of three years from the grant date and earned dividends during the vesting period, which were subject to forfeiture if the awards did not vest. Upon forfeiture, the key employee awards transferred to the former owners of

Arktura. During the vesting period, 2,089 RSAs forfeited by key employees were transferred to the former owners of Arktura. All awards vested during the fourth quarter of 2023, resulting in none outstanding as of December 31, 2023.

RSUs, PSUs and RSAs 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 2023 and 2022, we granted 48,073 and 57,439 PSUs, respectively, 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 are presented in the table below.

	2023	2022
Weighted-average grant date fair value of market-based PSUs granted (dollars per award)	$ 121.69	$ 104.92
Assumptions		
Risk-free rate of return	4.5%	1.8%
Expected volatility	38.7%	37.0%
Expected term (in years)	3.1	3.1
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 historical volatility of our stock price commensurate with the expected term of the PSUs. The expected term represented the performance period for the underlying award. The expected dividend yield was assumed to be zero under the assumption that dividends distributed during the performance period are reinvested in AWI's common stock.

As of December 31, 2023 and 2022, there were 53,938 and 80,890 RSUs, respectively, outstanding under the 2016 Directors Stock Unit Plan not reflected in the non-vested stock awards table above. In 2023 and 2022, we granted 13,086 and 13,467 RSUs, respectively, to non-employee directors. These awards generally have a vesting period of one year, and as of December 31, 2023 and 2022, 40,852 and 67,423 shares, respectively, were vested but not yet delivered. The awards are generally payable upon vesting or the director's deferral election. These awards earn dividends during the vesting period that are subject to forfeiture if the underlying award does not vest.

We recognize share-based compensation expense on a straight-line basis over the vesting period. Share-based compensation cost was $18.8 million ($14.1 million net of tax benefit) in 2023, $14.3 million ($10.8 million net of tax benefit) in 2022, and $11.3 million ($8.5 million net of tax benefit) in 2021.

As of December 31, 2023, there was $21.0 million of total unrecognized compensation cost related to non-vested share-based compensation arrangements which is expected to be recognized over a weighted-average period of 2.0 years.

NOTE 23. EMPLOYEE COSTS

	2023	2022	2021
Wages, salaries and incentive compensation	$ 282.1	$ 259.7	$ 259.9
Payroll taxes	20.8	18.3	13.4
Defined contribution and defined benefit pension plan expense, net	10.4	8.5	10.0
Insurance and other benefit costs	32.5	29.9	28.2
Share-based compensation	18.8	14.3	11.3
Total	$ 364.6	$ 330.7	$ 322.8

NOTE 24. SHAREHOLDERS' EQUITY

Common Stock Repurchase Plan

On July 29, 2016, our Board of Directors approved a share repurchase program authorizing us to repurchase up to $150.0 million of our outstanding shares of common stock (the "Program"). Since inception of the Program we have been authorized to repurchase up to an aggregate of $1,700.0 million of our outstanding shares of common stock through December 31, 2026. We had $716.8 million remaining under the Board's repurchase authorization as of December 31, 2023.

Repurchases of our common stock under the Program may be made through open market, block and privately negotiated transactions, including Rule 10b5-1 plans, at such times and in such amounts as management deems appropriate, subject to market and business

conditions, regulatory requirements and other factors. The Program does not obligate AWI to repurchase any particular amount of common stock and may be suspended or discontinued at any time without notice.

During 2023, we repurchased 1.8 million shares under the Program for a total cost of $132.0 million, excluding commissions and taxes, or an average price of $73.91 per share. Since inception, we have repurchased 14.2 million shares under the Program for a total cost of $983.2 million, excluding commissions and taxes, or an average price of $69.32 per share.

Dividends

In February, April and July 2023, our Board of Directors declared $0.254 per share quarterly dividends, which were paid to shareholders in March, May and August 2023. In October 2023, our Board of Directors declared a $0.28 per share quarterly dividend, which was paid to shareholders in November 2023. On February 14, 2024, our Board of Directors declared a $0.28 per share quarterly dividend to be paid in March 2024.

Accumulated Other Comprehensive (Loss)

The balance of each component of accumulated other comprehensive (loss), net of tax is presented in the table below.

	December 31, 2023	December 31, 2022
Foreign currency translation adjustments	$ 1.0	$ 0.5
Derivative gain, net	0.5	9.5
Pension and postretirement adjustments	(106.2)	(110.1)
Accumulated other comprehensive (loss)	$ (104.7)	$ (100.1)

The amounts and related tax effects allocated to each component of other comprehensive income (loss) for 2023, 2022, and 2021 are presented in the tables below.

	Pre-tax Amount	Tax (Expense) Benefit	After-tax Amount
2023			
Foreign currency translation adjustments	$ 0.5	$ -	$ 0.5
Derivative (loss), net	(12.1)	3.1	(9.0)
Pension and postretirement adjustments	5.2	(1.3)	3.9
Total other comprehensive (loss)	$ (6.4)	$ 1.8	$ (4.6)

	Pre-tax Amount	Tax (Expense) Benefit	After-tax Amount
2022			
Foreign currency translation adjustments	$ (1.8)	$ -	$ (1.8)
Derivative gain, net	24.9	(6.3)	18.6
Pension and postretirement adjustments	(9.6)	2.3	(7.3)
Total other comprehensive income	$ 13.5	$ (4.0)	$ 9.5

	Pre-tax Amount	Tax Benefit (Expense)	After-tax Amount
2021			
Derivative gain, net	$ 13.4	$ (3.5)	$ 9.9
Pension and postretirement adjustments	(13.4)	3.2	(10.2)
Total other comprehensive (loss)	$ -	$ (0.3)	$ (0.3)

The following table summarizes the activity, by component, related to the change in AOCI for December 31, 2023 and 2022:

	Foreign Currency Translation Adjustments	Derivative (Loss) Gain [1]	Pension and Postretirement Adjustments [1]	Total Accumulated Other Comprehensive (Loss) Income [1]
Balance, December 31, 2021	$ 2.3	$ (9.1)	$ (102.8)	$ (109.6)
Other comprehensive (loss) income before reclassifications, net of tax (expense) benefit of $-, ($6.7), $2.6 and ($4.1)	(1.8)	20.2	(8.1)	10.3
Amounts reclassified from accumulated other comprehensive (loss)	-	(1.6)	0.8	(0.8)
Net current period other comprehensive (loss) income	(1.8)	18.6	(7.3)	9.5
Balance, December 31, 2022	0.5	9.5	(110.1)	(100.1)
Other comprehensive income (loss) before reclassifications, net of tax benefit (expense) of $-, $0.2, ($1.5) and ($1.3)	0.5	(0.4)	4.5	4.6
Amounts reclassified from accumulated other comprehensive (loss)	-	(8.6)	(0.6)	(9.2)
Net current period other comprehensive income (loss)	0.5	(9.0)	3.9	(4.6)
Balance, December 31, 2023	$ 1.0	$ 0.5	$ (106.2)	$ (104.7)

(1) Amounts are net of tax and include our 50% share of AOCI components from our WAVE joint venture.

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

	Amounts Reclassified from Accumulated Other Comprehensive (Loss)		Affected Line Item in the Consolidated Statements of Earnings and Comprehensive Income
	2023	2022	
Derivative Adjustments:			
Interest rate swap contracts, before tax	$ (11.5)	$ (2.0)	Interest expense
Tax impact	2.9	0.4	Income tax expense
Total (income), net of tax	(8.6)	(1.6)	
Pension and Postretirement Adjustments:			
Prior service credit amortization	(0.3)	(0.3)	Other non-operating (income), net
Amortization of net actuarial (gain) loss	(0.5)	1.4	Other non-operating (income), net
Total (income) loss, before tax	(0.8)	1.1	
Tax impact	0.2	(0.3)	Income tax expense
Total (income) loss, net of tax	(0.6)	0.8	
Total reclassifications for the period	$ (9.2)	$ (0.8)	

NOTE 25. SUPPLEMENTAL FINANCIAL INFORMATION

	2023	2022	2021
Selected operating expense			
Maintenance and repair costs	$ 48.3	$ 42.7	$ 41.9
Product innovation costs	14.5	14.9	14.6
Advertising costs	8.9	9.2	8.0
Other non-operating (income), net			
Interest income	$ (3.5)	$ (0.5)	$ (0.1)
Pension and postretirement (credits)	(5.9)	(5.3)	(5.3)
Other	(0.5)	(0.2)	(0.2)
Total	$ (9.9)	$ (6.0)	$ (5.6)

NOTE 26. RELATED PARTIES

For some customers, we purchase grid products from WAVE for resale to customers. The total amount of these purchases was $32.6 million in 2023, $34.5 million in 2022 and $27.9 million in 2021. We also provide certain selling, promotional and administrative processing services to WAVE for which we receive reimbursement. Those services amounted to $27.8 million in 2023, $29.1 million in 2022, and $21.6 million in 2021. The net amount due to WAVE from us for all of our relationships was $1.9 million as of December 31, 2023 and $5.3 million as of December 31, 2022. See Note 11 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. While these expenditures are not typically material, the applicable regulatory requirements continually change and, as a result, we cannot predict with certainty the amount, nature or timing of future expenditures associated with environmental compliance.

Environmental Sites

Summary

We are actively involved in the investigation and 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 two domestically owned locations allegedly resulting from past industrial activity.

In each location, we are one of multiple 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 have pursued coverage and recoveries under those applicable insurance policies with respect to certain of the sites, including the Macon, GA site and the Elizabeth City, NC site, each of which is summarized below. Other than disclosed below, we are unable to predict the outcome of these matters or the timing of any future 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.

Between 2017 and 2021, we entered settlement agreements totaling $53.0 million with certain legacy insurance carriers to resolve ongoing litigation and recover fees and costs previously incurred by us in connection with certain environmental sites. These settlements were recorded as reductions to cost of goods sold and SG&A expenses, reflecting the same income statement categories where environmental expenditures were historically recorded. Beginning in 2020, cumulative insurance recoveries exceeded cumulative expenses to date related to the respective environmental sites and the excess was recorded within long-term liabilities on our Consolidated Balance Sheets. As of December 31, 2023 and 2022, insurance recoveries in excess of cumulative expenses were $2.6 million and $3.5 million, respectively. The excess recoveries will be released to offset any future expenses, including additional reserves for potential liabilities, incurred on the respective environmental sites. We may enter into additional settlement agreements in the future, which may or may not be material, with other legacy insurers to obtain reimbursement or contribution for environmental site expenses.

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

Specific Material Events

Macon, GA

The U.S. Environmental Protection Agency (the “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 (the “Removal Action”) with the EPA to investigate PCB contamination in one of the landfills on our property, the Wastewater Treatment Plant Landfill (“Operable Unit 1”). After completing an investigation of Operable Unit 1 and submitting our final Engineering Evaluation/Cost Analysis, the EPA issued an Action Memorandum in July 2013 selecting our recommended remedy for the Removal Action. The Operable Unit 1 response action is complete and the final report was submitted to the EPA in October 2016. The EPA approved the final report in November 2016, and a Post-Removal Control Plan was submitted to the EPA in March 2017.

In September 2015, AWI and other Potential Responsible Parties (“PRPs”) received a Special Notice Letter from the EPA under CERCLA inviting AWI and the PRPs to enter into the negotiation of a Remedial Investigation and Feasibility Study (“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 our property and Rocky Creek (“Operable Unit 2”). We and the other PRPs entered into a settlement agreement with the EPA effective September 2018, in response to the Special Notice Letter to conduct the RI/FS. The PRPs submitted an RI/FS work plan, which was approved by the EPA in September 2019. Investigative work on this portion of the site commenced in December 2019.

In June 2021, the PRPs submitted a Site Characterization Summary Report (“SCSR”) for Operable Unit 2 to the EPA. The purpose of the SCSR was to demonstrate that the available data for Operable Unit 2 was adequate for the risk assessment and for the development of remedial action objectives. In the second half of 2022, the EPA and the PRP's agreed to separate all non-groundwater aspects of the site. In August 2022, the PRPs submitted a Human Health Baseline Risk Assessment to the EPA, and in December 2022, the PRPs submitted a final Baseline Ecological Risk Assessment for Operable Unit 2 to the EPA. Both risk assessments serve as exhibits to the Remedial Investigation Report (“RIR”), which the EPA approved in July 2023.

Based on findings in the RIR, the PRPs developed a draft Feasibility Study (“FS”) to identify and evaluate potential remedial alternatives for all non-groundwater elements of Operable Unit 2. The draft FS was submitted to the EPA in August 2023. The EPA and the State of Georgia provided comments in October 2023 and a revised FS was submitted in November 2023. The EPA is currently reviewing the FS and will ultimately select a remedy and issue a Proposed Remedial Action Plan for the non-groundwater elements at the site. The PRPs are now turning attention to completing the Remedial Investigation for the groundwater beneath Operable Unit 2.

It is probable that we will incur field investigation, engineering and oversight costs associated with finalizing the FS for all non-groundwater elements of Operable Unit 2 and for completing an RI/FS for all groundwater elements of Operable Unit 2. We may also ultimately incur costs in remediating any contamination discovered during the RI/FS. The current estimate of future liability at this site includes only our estimated share of the costs of the investigative work that the EPA is requiring the PRPs to perform at this time. We are unable to reasonably estimate our final share of the total costs associated with the investigation work or any resulting remediation therefrom, although such amounts may be material to any one quarter's or year's results of operations in the future. We do not expect the total future costs to have a material adverse effect on our liquidity or financial condition as the cash payments may be made over many years.

Elizabeth City, NC

This site is a former cabinet manufacturing facility that from 1977 until 1996 was operated by Triangle Pacific Corporation, which became Armstrong Wood Products, Inc. (“AWP”), and is now known as AHF Products, LLC. The site was formerly owned by the U.S. Navy (“Navy”) and Westinghouse, which was purchased by Paramount Global (“Paramount”) (then known as CBS Corporation). We assumed ownership of the site when we acquired the stock of AWP in 1998. Prior to our acquisition, the North Carolina Department of Environment and Natural Resources listed the site as a hazardous waste site. In 1997, AWP 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, AWP and Paramount entered into an Administrative Order on Consent to conduct an RI/FS with the EPA for the site. In 2007, we and Paramount 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 draft RI and Risk Assessment reports and conducted supplemental investigative work based upon agency comments to those reports. In connection with the separation of Armstrong Flooring, Inc. in 2016, we agreed to retain any legacy environmental liabilities associated with the AWP site. The EPA published an Interim Action Proposed Plan for the site in April 2018 seeking public comment until June 2018. The EPA evaluated comments, including ours, and has published its Interim Record Of Decision (“IROD”) selecting an interim cleanup approach. In September 2018, AWI and Paramount received a Special Notice Letter from the EPA under CERCLA inviting AWI and Paramount to enter into the negotiation of a settlement agreement to conduct or finance the response action at the site. In response to the September 2018 Special Notice Letter, we and Paramount submitted a good faith offer to the EPA in May 2019. In June 2021, we entered into a negotiated Partial Consent Decree and Site Participation Agreement with the EPA, Paramount and the U.S. on behalf of the Navy for the remedial design and remedial action for the interim remedy. Because the U.S. does not conduct work as a PRP at Superfund sites, similar to the 2007 agreement, the U.S. agreed to pay its share of the estimated costs of performing the work. The Partial Consent Decree was entered by the U.S. District Court for the Eastern District of North Carolina in January 2022. A Remedial Design Work Plan (“RDWP”) for the site was submitted to the EPA in June 2022, and AWI and Paramount responded on November 2022 to comments received from the EPA in September 2022. The EPA approved the revised RDWP in February 2023 and in June 2023, the parties submitted a Pre-Design Investigation Work Plan. The EPA provided comments on the Pre-Design Investigation Work Plan in November 2023 and the revised document was submitted to the EPA in December 2023. The current estimate of future liability at this site includes only our estimated share of the costs of implementing the interim remedial action under the IROD. We are unable to reasonably estimate our final share of the total costs associated with the interim or final remediation at the site, although such amounts may be material to any one quarter's or one year’s results of operations in the future. We do not expect the total future costs to have a material adverse effect on our liquidity or financial condition as the cash payments may be made over many years.

Summary of Financial Position

Total liabilities, reflected within other long-term liabilities on the Consolidated Balance Sheets, for environmental matters that we consider probable and for which a reasonable estimate of the probable liability could be made were $0.5 million as of December 31, 2023 and 2022. During 2023, 2022 and 2021, we recorded $0.5 million, $1.3 million, and $0.2 million, respectively, of additional reserves for potential environmental liabilities. As noted above, expenses associated with the additional reserves recorded in 2023, 2022 and 2021 were offset through the release of a portion of the balance of insurance recoveries in excess of cumulative expenses. 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 environmental liabilities above do not take into account any claims for additional recoveries from insurance or third parties. It is our policy to record insurance recoveries as assets in the Consolidated Balance Sheets when realizable. We incur costs to pursue environmental insurance recoveries, which are expensed as incurred.

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

From time to time, we are involved in other various lawsuits, claims, investigations and other legal matters that arise in the ordinary course of business, including matters involving our products, intellectual property, relationships with suppliers, relationships with distributors, other customers or end users, relationships with competitors, employees and other matters. In connection with those matters, we may have rights of indemnity, contribution or reimbursement from other parties or coverage under applicable insurance policies. When applicable and appropriate, we will seek indemnity, contribution or reimbursement from other parties and 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 any proceedings relating to these matters, 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

The following table is a reconciliation of earnings to earnings attributable to common shares used in our basic and diluted Earnings (Loss) Per Share ("EPS") calculations for the years ended December 31, 2023, 2022 and 2021. EPS components may not add due to rounding.

	2023	2022	2021
Earnings from continuing operations	$ 223.8	$ 199.9	$ 185.3
(Earnings) allocated to participating vested share awards	(0.1)	(0.3)	(0.3)
Earnings from continuing operations attributable to common shares	$ 223.7	$ 199.6	$ 185.0

The following table is a reconciliation of basic shares outstanding to diluted shares outstanding for the years ended December 31, 2023, 2022 and 2021 (shares in millions):

	2023	2022	2021
Basic shares outstanding	44.7	46.3	47.6
Dilutive effect of common stock equivalents	0.1	0.1	0.3
Diluted shares outstanding	44.8	46.4	47.9

Anti-dilutive stock awards excluded from the computation of dilutive EPS for 2023, 2022 and 2021 were 46,846, 19,134 and 8,548, respectively.

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS 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, 2023. 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 material changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2023 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 to this Annual Report on Form 10-K.

ITEM 9B. OTHER INFORMATION

Trading Arrangements of Directors and Executive Officers

During the three months ended December 31, 2023, no director or officer of the Company adopted or terminated a "Rule 10b5-1 trading arrangement" or "non-Rule 10b5-1 trading arrangement," as each term is defined in item 408(a) of Regulation S-K.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information regarding individuals who serve as our executive officers required by Item 10 is incorporated by reference to the section entitled "Executive Officers" in the Company's proxy statement for its 2024 annual meeting of shareholders to be filed no later than April 29, 2024.

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 https://investors.armstrongworldindustries.com/governance/governance-documents/default.aspx 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, Governance and Social Responsibility 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 "Investor Relations" page of our website. There were no waivers or exemptions from the Code of Business Conduct in 2023 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 "Security Ownership of Certain Beneficial Owners, Management and Directors" in the Company's proxy statement for its 2024 annual meeting of shareholders to be filed no later than April 29, 2024.

Insider Trading Policy

We have adopted an insider trading policy (the "Insider Trading Policy") governing the purchase, sale, and/or other dispositions of Company securities by our employees, officers, directors, consultants, agents and temporary workers. We believe the Insider Trading Policy is reasonably designed to promote compliance with relevant insider trading laws, rules and regulations, and any listing standards applicable to us. A copy of the Insider Trading Policy is filed with this Annual Report on Form 10-K as Exhibit 19.

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," "2023 Summary Compensation Table," "Grants of Plan-Based Awards," "Outstanding Equity Awards at Fiscal Year-End," "Options Exercised and Stock Vested," "Pension Benefits," "Nonqualified Deferred Compensation," "Potential Payments Upon Termination or Change in Control," "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 2024 annual meeting of shareholders to be filed no later than April 29, 2024.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN 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, Management and Directors" and “Securities Authorized for Issuance Under Equity Compensation Plans” in the Company’s proxy statement for its 2024 annual meeting of shareholders to be filed no later than April 29, 2024.

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

The information required by Item 13 is incorporated by reference to the sections entitled “Review of Related Person Transactions” and “Director Independence” in the Company’s proxy statement for its 2024 annual meeting of shareholders to be filed no later than April 29, 2024.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by Item 14 is incorporated by reference to the sections entitled “Fees Paid to Independent Registered Public Accounting Firm” in the Company’s proxy statement for its 2024 annual meeting of shareholders to be filed no later than April 29, 2024.

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 2023 Annual Report on Form 10-K is listed in the "Index to Financial Statements and Schedules" on Page 31.

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, 2023, 2022, and 2021 (filed herewith as Exhibit 99.1).

3. The following exhibits are filed as part of this 2023 Annual Report on Form 10-K:

Exhibit No.	Description
3.1	Amended and Restated Articles of Incorporation of Armstrong World Industries, Inc. are incorporated by reference from the Quarterly 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 April 25, 2023, wherein it appeared as Exhibit 3.1.
4.1	Description of Securities Registered under Section 12 of the Securities Exchange Act of 1934.†
10.1	Second Amended and Restated Credit Agreement, dated as of December 7, 2022, 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 the administrative agent, the collateral agent, a letter of credit issuer and the swing line lender, Citizens Bank, N.A., Manufacturers & Traders Trust Company, PNC Bank, National Association, TD Bank, N.A. and Truist Bank, as co-syndication agents, JPMorgan Chase Bank, N.A., The Bank of Nova Scotia, and First National Bank of Pennsylvania, as co-documentation agents, BofA Securities, Inc., Citizens Bank, N.A., Manufacturers & Traders Trust Company, PNC Capital Markets, LLC, TD Bank, N.A., and Truist Securities, Inc., as joint lead arrangers and joint bookrunners and the other lenders and letter of credit issuers party thereto is incorporated by reference from the Current Report on Form 8-K filed on December 12, 2022, wherein it appeared as Exhibit 10.1.
10.2	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.
10.3	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.
10.4	Trademark License Agreement, dated as of April 1, 2016, by and between Armstrong World Industries, Inc., AWI Licensing LLC 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.
10.5	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.
10.6	Deed of Amendment to the Share Purchase Agreement dated as of July 18, 2018, 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 July 19, 2018, wherein it appeared as Exhibit 2.1.
10.7	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.*
10.8	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.*
10.9	Armstrong World Industries, Inc. 2016 Long-Term Incentive Plan, effective as of July 8, 2016 and amended and restated effective February 20, 2019, is incorporated by reference from the Annual Report on Form 10-K filed on February 25, 2019, wherein it appeared as Exhibit 10.42.*

10.10	Form of Long-Term Performance-Based Restricted Stock Unit Grant for 2019 and later years under the 2016 Long-Term Incentive Plan is incorporated by reference from the Annual Report on Form 10-K, filed on February 23, 2021, wherein it appeared as Exhibit 10.25.*‡
10.11	Form of Long-Term Time-Based Restricted Stock Unit Grant for 2022 under the 2016 Long-Term Incentive Plan is incorporated by reference from the Annual Report on Form 10-K, filed on February 22, 2022, wherein it appeared as Exhibit 10.18.*
10.12	Armstrong World Industries, Inc. 2020 Inducement Award Plan, is incorporated by reference from the Registration Statement on Form S-8 filed on December 15, 2020, wherein it appeared as Exhibit 4.4.*
10.13	Nonqualified Deferred Compensation Plan effective January 2005, as amended July 23, 2010 and January 1, 2014.*†
10.14	Armstrong World Industries, Inc. Equity and Cash Incentive Plan effective as of June 16, 2022, in incorporated by reference to Armstrong World Industries, Inc.'s Definitive Proxy Statement on Schedule 14A for the Armstrong World Industries, Inc. 2022 Annual Meeting of Shareholders held on June 16, 2022 filed on April 27, 2022, wherein it appeared as Annex B.*
10.15	Form of Long-Term Performance-Based Restricted Stock Unit Grant for 2022 under the 2022 Equity and Cash Incentive Plan, is incorporated by reference from the Annual Report on Form 10-K filed on February 21, 2023, wherein it appeared as Exhibit 10.17.*
10.16	Form of Long-Term Time-Based Restricted Stock Unit Grant for 2022 under the 2022 Equity and Cash Incentive Plan, is incorporated by reference from the Annual Report on Form 10-K filed on February 21, 2023, wherein it appeared as Exhibit 10.18.*
10.17	Form of Long-Term Performance-Based Restricted Stock Unit Grant for 2023 under the 2022 Equity and Cash Incentive Plan.*†
10.18	Form of Long-Term Time- Based Restricted Stock Unit Grant for 2023 under the 2022 Equity and Cash Incentive Plan.*†
10.19	Form of 2023 Long-Term Time-Based Restricted Stock Unit Grant—Tier 1 (CEO) under the Armstrong World Industries, Inc. Equity and Cash Incentive Plan is incorporated by reference from the Current Report on Form 8-K filed on May 2, 2023, wherein it appeared as Exhibit 10.1.*
10.20	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.*
10.21	2008 Directors Stock Unit Plan, as amended December 8, 2008, August 5, 2010 and April 29, 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.*
10.22	Form of 2009 and 2010 Award under the 2008 Directors 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.*
10.23	Form of 2011, 2012, 2013, 2014 and 2015 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.*
10.24	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.*
10.25	Form of 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.*
10.26	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.*
10.27	Offer Letter to Mark A. Hershey dated November 14, 2021 is incorporated by reference from the Annual Report on Form 10-K, filed on February 22, 2022, wherein it appeared as Exhibit 10.28.*
10.28	Offer Letter to Austin So dated January 6, 2022 is incorporated by reference from the Annual Report on Form 10-K, filed on February 22, 2022, wherein it appeared as Exhibit 10.29.*
10.29	Offer Letter to Christopher Calzaretta dated June 9, 2022, is incorporated by reference from the Annual Report on Form 10-K filed on February 21, 2023, wherein it appeared as Exhibit 10.28.*

10.30	Offer Letter to Monica Maheshwari dated January 20, 2023.*†
10.31	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 July 27, 2021, wherein it appeared as Exhibit 10.1.*
10.32	Form of Amended and Restated 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.*
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.
19	Trading in Company Securities By Employees, Officers and Directors.*†
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-14(a) or 15d-14(a) of the Securities Exchange Act.†
31.2	Certification of Chief Financial Officer required by Rule 13a-14(a) or 15d-14(a) of the Securities Exchange Act.†
32.1	Certification of Chief Executive Officer required by Rule 13a and 18 U.S.C. Section 1350.††
32.2	Certification of Chief Financial Officer required by Rule 13a and 18 U.S.C. Section 1350.††
97	Armstrong World Industries, Inc. Incentive Compensation Recoupment Policy.*†
99.1	Worthington Armstrong Venture consolidated financial statements as of December 31, 2023 and 2022 and for the years ended December 31, 2023, 2022 and 2021.†
101	Inline Interactive Data Files**
104	The cover page from the Company's Annual Report on Form 10-K for the year ended December 31, 2023 has been formatted in Inline XBRL.

* Management Contract or Compensatory Plan.

† Filed herewith.

†† Furnished herewith.

‡ Portions of this exhibit have been omitted as permitted by applicable regulations.

** 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.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

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 20, 2024

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 20, 2024
/s/ Christopher P. Calzaretta Christopher P. Calzaretta	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 20, 2024
/s/ James T. Burge James T. Burge	Vice President and Controller (Principal Accounting Officer)	February 20, 2024
/s/ Richard D. Holder Richard D. Holder	Director	February 20, 2024
/s/ Barbara L. Loughran Barbara L. Loughran	Director	February 20, 2024
/s/ James C. Melville James C. Melville	Director	February 20, 2024
/s/ William H. Osborne William H. Osborne	Director	February 20, 2024
/s/ Wayne R. Shurts Wayne R. Shurts	Director	February 20, 2024
/s/ Roy W. Templin Roy W. Templin	Director	February 20, 2024
/s/ Cherryl T. Thomas Cherryl T. Thomas	Director	February 20, 2024

SCHEDULE 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
2021				
Provision for bad debts	$ 1.4	$ 0.4	$ (0.8)	$ 1.0
Provision for discounts	1.3	21.7	(21.3)	1.7
Provision for warranties	0.9	3.9	(4.0)	0.8
Provision for inventory obsolescence	-	0.3	(0.1)	0.2
2022				
Provision for bad debts	$ 1.0	$ 0.1	$ (0.7)	$ 0.4
Provision for discounts	1.7	24.4	(24.0)	2.1
Provision for warranties	0.8	5.6	(5.7)	0.7
Provision for inventory obsolescence	0.2	0.2	(0.1)	0.3
2023				
Provision for bad debts	$ 0.4	$ 0.4	$ (0.4)	$ 0.4
Provision for discounts	2.1	26.4	(26.4)	2.1
Provision for warranties	0.7	5.4	(5.7)	0.4
Provision for inventory obsolescence	0.3	-	(0.3)	-

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Forward-Looking Statements

Certain information in this report and in our other public documents and comments contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Those statements provide our future expectations or forecasts and can be identified by our use of words such as "anticipate," "estimate," "expect," "project," "intend," "plan," "believe," "outlook," and other words or phrases of similar meaning in connection with any discussion of future operating or financial performance. Forward-looking statements, by their nature, address matters that are uncertain and involve risks because they relate to events and depend on circumstances that may or may not occur in the future. As a result, our actual results may differ materially from our expected results and from those expressed in our forward-looking statements. A more detailed discussion of the risks and uncertainties that could cause our actual results to differ materially from those projected, anticipated or implied is included in the "Risk Factors" and "Management's Discussion and Analysis" sections of our recent reports on Forms 10-K and 10-Q filed with the U.S. Securities and Exchange Commission. Forward-looking statements speak only as of the date they are made. We undertake no obligation to update any forward-looking statements beyond what is required under applicable securities law.

In addition, we have reported non-Generally Accepted Accounting Principles in the United States (GAAP) financial measures within the meaning of U.S. Securities and Exchange Commission Regulation G. A reconciliation of the differences between these measures with the most directly comparable financial measures calculated in accordance with GAAP are included below and are available on the Investor Relations page of our website at www.armstrongworldindustries.com. All dollar and shares outstanding figures below are in millions, except per share data.

Adjusted Diluted EPS Reconciliation

	Year Ended December 31				
	2019	2020	2021	2022	2023
Net earnings (loss)	**$215**	**($99)**	**$183**	**$203**	**$224**
Less: Net (loss) earnings from discontinued operations	(28)	(15)	(2)	3	-
Earnings (loss) from continuing operations	**$242**	**($84)**	**$185**	**$200**	**$224**
Add/(Less): Income tax expense (benefit)	57	(43)	57	58	75
Earnings (loss) from continuing operations before income taxes	**$299**	**($127)**	**$243**	**$258**	**$298**
(Less)/Add: RIP (credit) expense[1]	(8)	368	-	(1)	(1)
Add/(Less): Net environmental expenses (recoveries)	1	(6)	-	-	-
Add: Cost reduction initiatives and other	-	-	-	-	3
Add: Litigation expense	20	-	-	-	-
Add: WAVE pension settlement	1	-	-	-	-
Add: WAVE FSA[2]	4	-	-	-	-
(Less): AWI portion of WAVE's (gain) on sale of international	(21)	-	-	-	-
(Less): Gain on sale of idled China facility	-	(21)	-	-	-
Add: Accelerated depreciation from St. Helen's facility	-	3	-	-	-
Add: Charitable contribution – AWI Foundation[3]	-	10	-	-	-
Add: Acquisition-related impacts[4]	-	3	10	19	11
Add: Acquisition-related amortization[5]	-	7	21	8	6
Adjusted earnings from continuing operations before income taxes	**$297**	**$236**	**$274**	**$283**	**$318**
(Less): Adjusted income tax expense[6]	(61)	(56)	(65)	(63)	(79)
Adjusted earnings from continuing operations	**$237**	**$180**	**$209**	**$220**	**$238**
Diluted shares outstanding[7]	49.5	48.2	47.9	46.4	44.8
Tax Rate	20%	24%	24%	22%	25%
Per Diluted Share from continuing operations	**2019**	**2020**	**2021**	**2022**	**2023**
As Reported	**$4.88**	**($1.76)**	**$3.86**	**$4.30**	**$4.99**
Adjusted	**$4.78**	**$3.74**	**$4.36**	**$4.74**	**$5.32**

1 U.S. Retirement Income Plan ("RIP") (credit) expense represents the entire actuarial net periodic pension (credit) expense recorded as a component of earnings from continuing operations. For all periods presented, we were not required to and did not make cash contributions to our RIP.

2 WAVE Fresh Start Accounting asset impairment charge due to sale of our non-Americas international businesses.

3 Endowment level donation to the AWI Foundation.

4 Represents the impact of acquisition-related adjustments for the fair value of acquired inventory and deferred revenue, changes in fair value of contingent consideration, deferred compensation and restricted stock expenses.

5 Represents the intangible amortization related to acquired entities, including customer relationships, developed technology, software, trademarks and brand names, non-compete agreements and other intangibles.

6 Adjusted income tax expense is calculated using the tax rate multiplied by the adjusted earnings from continuing operations before income taxes.

7 2020 Dilutive shares outstanding include anti-dilutive common stock equivalents which are excluded from U.S. GAAP Accounting.

Adjusted Free Cash Flow Reconciliation

	Year Ended December 31				
	2019	2020	2021	2022	2023
Net cash provided by operating activities	**$183**	**$219**	**$187**	**$182**	**$234**
Net cash (used for) provided by investing activities	**($89)**	**($141)**	**($14)**	**$28**	**($10)**
Net cash provided by operating and investing activities	**$94**	**$78**	**$173**	**$211**	**$223**
Add: Acquisitions, net	56	165	1	3	27
Add (Less): (Proceeds) payments related to sale of international, net[1]	66	(20)	12	-	-
Add (Less): Net environmental (recoveries) expenses	5	(12)	(1)	1	1
Add: Litigation, net	23	-	-	-	-
Add: Net payments to WAVE for portion of proceeds from sale of international business	-	13	-	-	-
(Less): Proceeds from sale of idled China plant facility	-	(22)	-	-	-
Add: Charitable contribution - AWI Foundation[2]	-	10	-	-	-
Add: Arktura deferred compensation[3]	-	-	5	5	8
Add: Contingent consideration in excess of acquisition-date fair value[4]	-	-	-	2	5
Adjusted Free Cash Flow	**$244**	**$212**	**$190**	**$221**	**$263**

1 Includes related income tax payments for 2020.

2 Endowment level donation to the AWI Foundation.

3 Contingent compensation payments related to the acquisition.

4 Contingent compensation payments related to 2020 acquisitions recorded as a component of net cash provided by operating activities.

Adjusted EBITDA Reconciliation

	Year Ended December 31				
	2019	2020	2021	2022	2023
Net earnings (loss)	**$215**	**($99)**	**$183**	**$203**	**$224**
Less: Net (loss) earnings from discontinued operations	(28)	(15)	(2)	3	-
Earnings (loss) from continuing operations	**$242**	**($84)**	**$185**	**$200**	**$224**
Add: Income tax expense (benefit)	57	(43)	57	58	$75
Earnings (loss) from continuing operations before income taxes	**$299**	**($127)**	**$243**	**$258**	**$298**
Add: Interest/other income and expense, net	18	382	17	21	$25
Operating Income	**$317**	**$255**	**$260**	**$279**	**$324**
Add: RIP expense[1]	5	6	5	4	3
Add: Cost reduction initiatives and other	-	-	-	-	3
Add/(Less): Net environmental expenses (recoveries)	1	(6)	-	-	-
Add: Litigation expense	20	-	-	-	-
Add: WAVE pension settlement	1	-	-	-	-
Add: WAVE FSA[2]	4	-	-	-	-
(Less): AWI portion of WAVE's (gain) on sale of international	(21)	-	-	-	-
Add: Charitable contribution – AWI Foundation[3]	-	10	-	-	-
(Less): (Gain) on sale of idled China facility	-	(21)	-	-	-
Add: Acquisition-related impacts[4]	-	3	10	19	11
Adjusted Operating Income	**$328**	**$246**	**$275**	**$301**	**$340**
Add: Depreciation and amortization	75	84	97	84	89
Adjusted EBITDA	**$403**	**$330**	**$372**	**$385**	**$430**

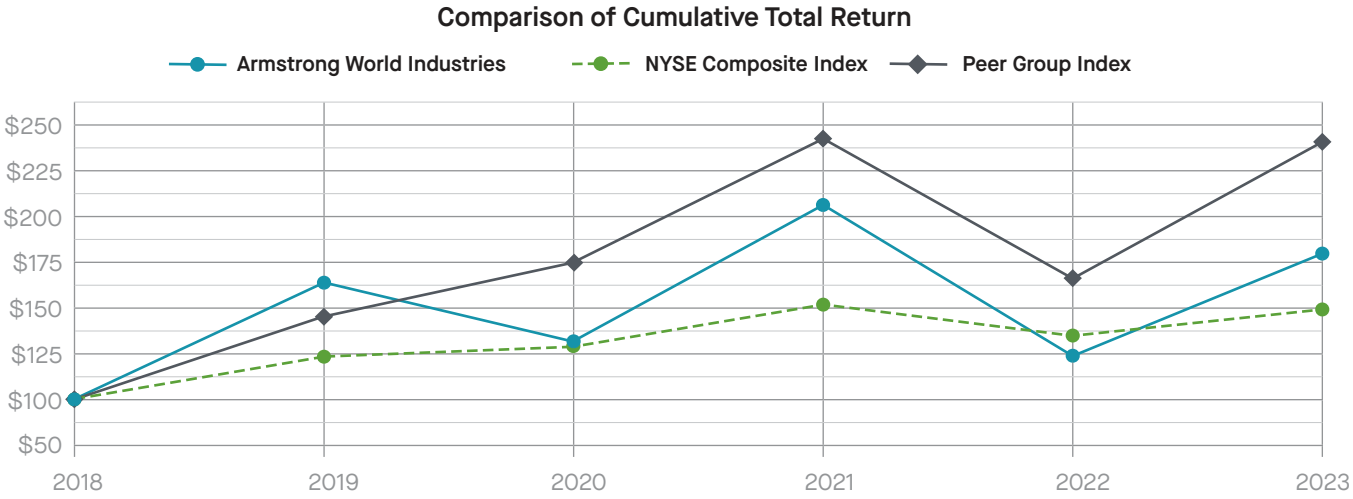
1 RIP expense represents only the plan service cost that is recorded within Operating Income. For all periods presented, we were not required to and did not make cash contributions to our RIP.

2 WAVE Fresh Start Accounting asset impairment charge due to sale of our non-Americas international businesses.

3 Endowment level donation to the AWI Foundation.

4 Represents the impact of acquisition-related adjustments for the fair value of acquired inventory and deferred revenue, changes in fair value of contingent consideration, deferred compensation and restricted stock expenses.

The following graph shows the cumulative total shareholder return for shares of Armstrong World Industries, Inc. common stock (NYSE: AWI) during the period from December 31, 2018 to December 31, 2023. The graph also shows the cumulative returns of the NYSE Composite Index and a building materials peer group composed of the companies listed below the chart. The performance shown in the chart assumes $100 invested on December 31, 2018, with dividends reinvested, and it should not be considered indicative of future performance.



Period Ending

Company/Market/Peer Group	12/31/18	12/31/19	12/31/20	12/31/21	12/31/22	12/31/23
Armstrong World Industries, Inc.	$100.00	$162.79	$130.26	$205.07	$122.50	$178.07
NYSE Composite Index	$100.00	$122.32	$127.68	$150.88	$133.44	$148.14
Peer Group Index	$100.00	$144.28	$173.68	$241.17	$164.83	$239.55

The performance peer group is composed of the following companies:
(Market Cap is the base year)

	% of Total Market Cap
Allegion PLC	7%
A.O. Smith Corporation	7%
Apogee Enterprises, Inc.	1%
Acuity Brands, Inc.	6%
Masonite International Corp.	1%
Fortune Brands Home & Security, Inc.	5%
James Hardie Industries	7%

	% of Total Market Cap
Lennox International inc.	8%
Masco Corporation	8%
Mohawk Industries, Inc.	8%
Owens Corning	5%
Sherwin-Williams Company	34%
Simpson Manufacturing Co., Inc.	2%
Interface, Inc.	1%
	100%

Corporate Information

Transfer Agent and Registrar

Equiniti Trust Company, LLC
55 Challenger Road, Floor 2
Ridgefield Park, NJ 07660

www.equiniti.com

NOTE: References to our website are textual references only, and neither the website nor any information contained on it are included in this report, or incorporated by reference.

Annual Meeting of Shareholders

The 2024 Annual Meeting of Shareholders of Armstrong World Industries, Inc. will be held virtually on June 13, 2024, at 11:00 a.m. Eastern Time.

Certifications

The certifications of our Chief Executive Officer and Chief Financial Officer, as required by Section 302 of the Sarbanes-Oxley Act of 2002, have been filed with the Securities and Exchange Commission as exhibits to our 2023 Annual Report on Form 10-K. In addition, in 2023 our Chief Executive Officer provided the required annual certification to the New York Stock Exchange.

Executive Management

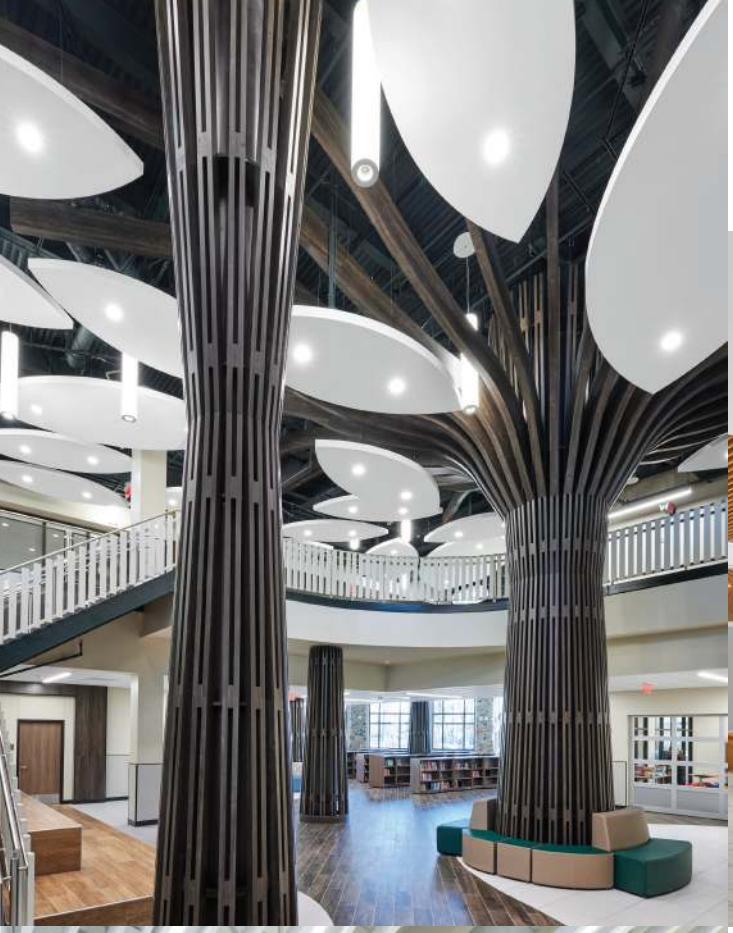




Independent Members of the Board of Directors







WoodWorks® ACGI Custom Grille





Our Products

We are a leading producer of ceilings and specialty wall solutions for use in the construction and renovation of commercial buildings. Mineral Fiber ceiling tiles are our core product offering. We manufacture these tiles at four plants in the United States. In addition to recycled fibers, including recycled ceiling tiles and paper, we use mineral wool that we manufacture from converted slag, a by-product of steel production, as well as perlite, fiberglass, starch and various coatings in our ceiling tile products. Through our constant focus on innovation and product development, we have continued to enhance and expand our core products.

Through our Architectural Specialties segment, we manufacture and source a broad portfolio of specialty ceiling, wall, and facade products that complement our core offerings to provide integrated solutions. These products use a variety of materials including metal, wood and felt, as well as special coatings and manufacturing techniques to bring the visions of architects and designers to life. We provide both highly customized solutions as well as standard products with short lead times to meet the needs of a broad range of construction projects.

Through our joint venture with Worthington Enterprises called Worthington Armstrong Venture (WAVE), we manufacture ceiling suspension systems that are sold through our sales and distribution channels.

Top: WoodWorks® ACGI Beam System, AcoustiBuilt® Ceiling System – Cloud Installation

Bottom: MetalWorks™ Blades – Classics Custom Blades

Experience, Above All™

Armstrong®
World Industries

Armstrong World Industries, Inc.
2500 Columbia Avenue
Lancaster, PA 17603

Additional information about Armstrong is available without charge to shareholders by directing a request to Investor Relations:

Theresa L. Womble: tlwomble@armstrongceilings.com
Corporate Website: www.armstrongworldindustries.com
For Investors: 717.396.6354
For News Media: 866.321.6677

Cover photo: MetalWorks™ RH215 Custom Ceilings, Móz™ Column Covers
Flap: CastWorks™ Metaphors® Ceiling Panels, Optima® PB Ceiling Panels, Suprafine® XL®

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