

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549**

FORM 10-K

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

For the fiscal year ended December 31, 2018

OR

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

For the transition period from _____ to _____

Commission File Number 1-10258

TREDEGAR CORPORATION
(Exact name of registrant as specified in its charter)

Virginia
(State or other jurisdiction
of incorporation or organization)

54-1497771
(I.R.S. Employer
Identification No.)

**1100 Boulders Parkway,
Richmond, Virginia**
(Address of principal executive offices)

23225
(Zip Code)

Registrant's telephone number, including area code: 804-330-1000
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class

Common Stock

Name of Each Exchange on Which Registered

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 (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for at least 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 period that the registrant was required to submit such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§ 229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, 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. (Check one):

Large accelerated filer	<input type="radio"/>	Accelerated filer	<input checked="" type="radio"/>	Smaller reporting company	<input type="radio"/>
Non-accelerated filer	<input type="radio"/>	(Do not check if a smaller reporting company)		Emerging growth company	<input type="radio"/>

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

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

Aggregate market value of voting and non-voting common equity held by non-affiliates of the registrant as of June 30, 2018 (the last business day of the registrant's most recently completed second fiscal quarter): \$608,660,223*

Number of shares of Common Stock outstanding as of January 31, 2019: 33,176,024 (33,189,073 as of June 30, 2018)

* In determining this figure, an aggregate of 7,288,638 shares of Common Stock beneficially owned by Floyd D. Gottwald, Jr., John D. Gottwald, William M. Gottwald and the members of their immediate families has been excluded because the shares are deemed to be held by affiliates. The aggregate market value has been computed based on the closing price in the New York Stock Exchange on June 30, 2018.

Documents Incorporated By Reference

Portions of the Tredegar Corporation Proxy Statement for the 2019 Annual Meeting of Shareholders (the "Proxy Statement") are incorporated by reference into Part III of this Form 10-K.

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Year Ended December 31, 2018**

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PART I

Item 1. **BUSINESS**

Description of Business

Tredegar Corporation (“Tredegar”), a Virginia corporation incorporated in 1988, is engaged, through its subsidiaries, in the manufacture of polyethylene (“PE”) plastic films, polyester (“PET”) films and aluminum extrusions. Unless the context requires otherwise, all references herein to “Tredegar,” “the Company,” “we,” “us” or “our” are to Tredegar Corporation and its consolidated subsidiaries.

The Company’s reportable business segments are PE Films, Flexible Packaging Films and Aluminum Extrusions.

PE Films

PE Films manufactures plastic films, elastics and laminate materials primarily utilized in personal care materials, surface protection films, and specialty and optical lighting applications. These products are manufactured at facilities in the United States (“U.S.”), The Netherlands, Hungary, China, Brazil and India. PE Films competes in all of its markets on the basis of product innovation, quality, service and price.

Personal Care. Tredegar’s Personal Care unit is a global supplier of apertured, elastic and embossed films, laminate materials, and polyethylene and polypropylene overwrap films for personal care markets, including:

- Apertured film and laminate materials for use as topsheet in feminine hygiene products, baby diapers and adult incontinence products (including materials sold under the Sure&Soft™, ComfortAire™, ComfortFeel™ and FreshFeel™ brand names);
- Elastic materials for use as components for baby diapers, adult incontinence products and feminine hygiene products (including components sold under the ExtraFlex™ and FlexAire™ brand names);
- Three-dimensional apertured film transfer layers for baby diapers and adult incontinence products sold under the Aquisoft™, Aquidry® and Aquidry Plus™ brand names;
- Thin-gauge films that are readily printable and convertible on conventional processing equipment for overwrap for bathroom tissue and paper towels; and
- Polypropylene films for various industrial applications, including tape and automotive protection.

In 2018, 2017 and 2016, personal care materials accounted for approximately 22%, 27% and 30% of Tredegar’s consolidated net sales (sales less freight) from continuing operations, respectively.

Surface Protection. Tredegar’s Surface Protection unit produces single- and multi-layer surface protection films sold under the UltraMask®, ForceField™, ForceField PEARL® and Pearl A™ brand names. These films are used in high-technology applications, most notably protecting high-value components of flat panel displays used in televisions, monitors, notebooks, smart phones, tablets, e-readers, automobiles and digital signage, during the manufacturing and transportation process. In 2018, 2017 and 2016, surface protection films accounted for approximately 10%, 11% and 11%, respectively, of Tredegar’s consolidated net sales from continuing operations.

Bright View Technologies. Tredegar’s Bright View Technologies unit designs and manufactures a range of advanced film-based components that provide specialized functionality for the global engineered optics market. By leveraging multiple platforms, including film capabilities and its patented microstructure technology, Bright View Technologies offers high performance solutions for a variety of LED-based applications such as lighting, consumer electronics, automotive, and other optical management markets.

PE Films' net sales by market segment over the last three years is shown below:

<i>% of PE Films Net Sales by Market Segment *</i>			
	2018	2017	2016
Personal Care	68%	70%	72%
Surface Protection	30%	28%	25%
Bright View	2%	2%	3%
Total	100%	100%	100%

* See previous discussion by market segment for comparison of net sales to the Company's consolidated net sales for each of the years presented.

Raw Materials. The primary raw materials used by PE Films in films are low density, linear low density and high density polyethylene and polypropylene resins. These raw materials are obtained from domestic and foreign suppliers at competitive prices. PE Films believes that there will be an adequate supply of polyethylene and polypropylene resins in the foreseeable future. PE Films also buys polypropylene-based nonwoven fabrics based on the resins previously noted and styrenic block copolymers, and it believes there will be an adequate supply of these raw materials in the foreseeable future.

Customers. PE Films sells to many branded product producers throughout the world, with the top five customers, collectively, comprising 66%, 68% and 69% of its net sales in 2018, 2017 and 2016, respectively. Its largest customer is The Procter & Gamble Company ("P&G"). Net sales to P&G totaled \$107 million in 2018, \$122 million in 2017 and \$129 million in 2016 (these amounts include film sold to third parties that converted the film into materials used with products manufactured by P&G). For additional information, see "Item 1A. Risk Factors".

Flexible Packaging Films

Flexible Packaging Films is comprised of Terphane Holdings LLC ("Terphane"). Flexible Packaging Films produces PET-based films for use in packaging applications that have specialized properties, such as heat resistance, strength, barrier protection and the ability to accept high-quality print graphics. These differentiated, high-value films are primarily manufactured in Brazil and sold in Latin America and the U.S. under the Terphane® and Sealphane® brand names. Major end uses include food packaging and industrial applications. In 2018, 2017 and 2016, Flexible Packaging Films accounted for approximately 12%, 12% and 14%, respectively, of Tredegar's consolidated net sales from continuing operations. Flexible Packaging Films competes in all of its markets on the basis of product quality, service and price.

Raw Materials. The primary raw materials used by Flexible Packaging Films to produce polyester resins are purified terephthalic acid ("PTA") and monoethylene glycol ("MEG"). Flexible Packaging Films also purchases additional polyester resins directly from suppliers. All of these raw materials are obtained from domestic Brazilian suppliers and foreign suppliers at competitive prices, and Flexible Packaging Films believes that there will be an adequate supply of polyester resins as well as PTA and MEG in the foreseeable future.

Aluminum Extrusions

The William L. Bonnell Company, Inc., known in the industry as Bonnell Aluminum, and its operating divisions, AACOA, Inc. and Futura Industries Corporation ("Futura") (together "Aluminum Extrusions"), produce high-quality, soft-alloy and medium-strength aluminum extrusions primarily for building and construction, automotive, consumer durables, machinery and equipment, electrical and distribution markets. Aluminum Extrusions manufactures mill (unfinished), anodized and painted (finished) and fabricated aluminum extrusions for sale directly to fabricators and distributors. It also sells branded flooring trims and aluminum framing systems through its Futura operating division. Aluminum Extrusions competes primarily on the basis of product quality, service and price. Sales are made predominantly in the U.S.

The end-uses in each of Aluminum Extrusions' primary market segments include:

Major Markets	End-Uses
Building & construction - nonresidential	Commercial windows and doors, curtain walls, storefronts and entrances, walkway covers, ducts, louvers and vents, office wall panels, partitions and interior enclosures, acoustical walls and ceilings, point of purchase displays, pre-engineered structures, and flooring trims
Building & construction - residential	Shower and tub enclosures, railing and support systems, venetian blinds, swimming pools and storm shutters
Automotive	Automotive and light truck structural components, spare parts, after-market automotive accessories, grills for heavy trucks, travel trailers and recreation vehicles
Consumer durables	Furniture, pleasure boats, refrigerators and freezers, appliances and sporting goods
Machinery & equipment	Material handling equipment, conveyors and conveying systems, medical equipment, and aluminum framing systems (TSLOTS™)
Distribution (metal service centers specializing in stock and release programs and custom fabrications to small manufacturers)	Various custom profiles including storm shutters, pleasure boat accessories, theater set structures and various standard profiles (including rod, bar, tube and pipe)
Electrical	Lighting fixtures, solar panels, electronic apparatus and rigid and flexible conduits

Aluminum Extrusions' net sales by market segment over the last three years is shown below:

% of Aluminum Extrusions Net Sales by Market Segment*			
	2018	2017	2016
Building and construction:			
Nonresidential	51%	51%	59%
Residential	8%	9%	6%
Automotive	8%	8%	9%
Specialty:			
Consumer durables	12%	12%	11%
Machinery & equipment	7%	7%	6%
Electrical	7%	7%	3%
Distribution	7%	6%	6%
Total	100%	100%	100%

*Includes Futura as of its acquisition date of February 15, 2017.

In 2018, 2017 and 2016, nonresidential building and construction accounted for approximately 28%, 26% and 27% of Tredegar's consolidated net sales from continuing operations, respectively.

Raw Materials. The primary raw materials used by Aluminum Extrusions consist of aluminum ingot, aluminum scrap and various alloys, which are purchased from domestic and foreign producers in open-market purchases and under short-term contracts. Aluminum Extrusions believes that it has adequate supply agreements for aluminum and other required raw materials and supplies in the foreseeable future.

General

Intellectual Property. Tredegar considers patents, licenses and trademarks to be significant to PE Films. On December 31, 2018, PE Films held 273 patents (including 63 U.S. patents), licenses under patents owned by third parties, and 109 registered trademarks (including 8 U.S. registered trademarks). Flexible Packaging Films held 1 U.S. patent and 14 registered trademarks (including 2 U.S. registered trademarks). Aluminum Extrusions held no U.S. patents and 2 U.S. registered trademarks. On December 31, 2018, these patents had remaining terms in the range of 1 to 20 years.

Research and Development. Tredegar's spending for research and development ("R&D") activities in 2018, 2017 and 2016 was primarily related to PE Films. PE Films has technical centers in Durham, North Carolina; Richmond, Virginia; and Terre Haute, Indiana. Flexible Packaging has a technical center in Bloomfield, New York. R&D spending by the Company was approximately \$18.7 million, \$18.3 million and \$19.1 million in 2018, 2017 and 2016, respectively.

Backlog. Backlogs are not material to the operations in PE Films or Flexible Packaging Films. Overall backlog for continuing operations in Aluminum Extrusions was approximately \$67.6 million at December 31, 2018 compared to approximately \$46.2 million at December 31, 2017, an increase of \$21.4 million, or approximately 46%. Net sales for Aluminum Extrusions, which the Company believes is cyclical in nature, were \$573.1 million in 2018, \$466.8 million in 2017 and \$360.1 million in 2016.

Government Regulation. U.S. laws concerning the environment to which the Company's domestic operations are or may be subject include, among others, the Clean Water Act, the Clean Air Act, the Resource Conservation and Recovery Act, the Occupational Safety and Health Act, the National Environmental Policy Act, the Toxic Substances Control Act, the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), regulations promulgated under these acts, and other federal, state or local laws or regulations governing environmental matters. Compliance with these laws is an important consideration because Tredegar uses hazardous materials in some of its operations, is a generator of hazardous waste, and wastewater from the Company's operations is discharged to various types of wastewater management systems. Under CERCLA and other laws, Tredegar may be subject to financial exposure for costs associated with waste management and disposal, even if the Company fully complies with applicable environmental laws.

The U.S. Environmental Protection Agency has adopted regulations under the Clean Air Act relating to emissions of carbon dioxide and other greenhouse gases ("GHG"), including mandatory reporting and permitting requirements. Several of the Company's manufacturing operations result in emissions of carbon dioxide or GHG and are subject to the current GHG regulations. The Company's compliance with these regulations has yet to require significant expenditures. The cost of compliance with any future GHG legislation or regulations is not presently determinable, but Tredegar does not anticipate compliance to have a material adverse effect on its consolidated financial condition, results of operations and cash flows based on information currently available.

Tredegar is also subject to the governmental regulations in the countries where it conducts business.

At December 31, 2018, the Company believes that it was in material compliance with all applicable environmental laws, regulations and permits in the U.S. and other countries where it conducts business. Environmental standards tend to become more stringent over time. In addition, consumer preferences, ongoing health, safety and environmental studies on plastics and resins and other related legislative initiatives may adversely affect Tredegar's business. In order to maintain substantial compliance with such standards, the Company may be required to incur additional expenditures, the amounts and timing of which are not presently determinable but which could be significant, in constructing new facilities or in modifying existing facilities. Furthermore, failure to comply with current or future laws and regulations could subject Tredegar to substantial penalties, fines, costs and expenses.

Employees. Tredegar employed approximately 3,200 people at December 31, 2018.

Available Information and Corporate Governance Documents. Tredegar's Internet address is www.tredegar.com. The Company makes available, free of charge through its website, its annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as soon as reasonably practicable after such documents are electronically filed with, or furnished to, the Securities and Exchange Commission ("SEC"). Information filed electronically with the SEC can be accessed on its website at www.sec.gov. In addition, the Company's Corporate Governance Guidelines, Code of Conduct and the charters of the Audit, Executive Compensation, and Nominating and Governance Committees are available on Tredegar's website and are available in print, without charge, to any shareholder upon request by contacting Tredegar's Corporate Secretary at 1100 Boulders Parkway, Richmond, Virginia 23225. The information on or that can be accessed through the Company's website is not, and shall not be deemed to be, a part of this Annual Report on Form 10-K for the year ended December 31, 2018 ("Form 10-K") or incorporated into other filings it makes with the SEC.

Item 1A. RISK FACTORS

There are a number of risks and uncertainties that could have a material adverse effect on the Company's consolidated financial condition, results of operations, or cash flows. The following risk factors should be considered, in addition to the other information included in this Form 10-K, when evaluating Tredegar and its businesses.

PE Films

- ***PE Films is highly dependent on sales associated with its top five customers, the largest of which is P&G.*** PE Films' top five customers comprised approximately 21%, 26% and 29% of Tredegar's consolidated net sales, in 2018, 2017 and 2016, respectively, with net sales to P&G alone comprising approximately 10%, 13% and 16% in 2018, 2017 and 2016, respectively. The loss or significant reduction of sales associated with one or more of these customers without replacement by new business could have a material adverse effect on the Company. Other factors that could adversely affect the business include, by way of example, (i) failure by a key customer to achieve success or maintain share in markets in which they sell products containing PE Films' materials, (ii) key customers using products developed by others that replace PE Films' business with such customer, (iii) delays in a key customer rolling out products utilizing new technologies developed by PE Films and (iv) operational decisions by a key customer that result in component substitution, inventory reductions and similar changes. While PE Films is undertaking efforts to expand its customer base, there can be no assurance that such efforts will be successful, or that they will offset any delay or loss of sales and profits associated with these large customers.

In recent years, PE Films lost substantial sales volume due to product transitions and incurred other sales losses associated with various customers. During October 2018, the Personal Care component of PE Films completed negotiations with a customer regarding a previously disclosed significant product transition. The total annual sales that will be adversely impacted by this product transition is approximately \$70 million. During 2019, the Company expects sales for the product of \$30 to \$35 million with the potential for no sales thereafter. Any actions that the Company takes to reduce fixed costs to partially mitigate the decline in variable contribution that will accompany the decline in sales will depend on the level of success that Personal Care has with replacing the lost business with new products and business.

Personal Care has increased its annual R&D spending by approximately \$5 million since 2014, reaching \$12 million in 2018. Personal Care is also investing capital and is accelerating sales and marketing efforts to capture growth and diversify its customer base and product offerings in personal care products, but there can be no assurance that such efforts will be successful or that they will offset any loss of business due to product transitions.

The Personal Care component of PE Films had operating profit from ongoing operations plus depreciation and amortization in the fourth quarter of 2018 of \$3.1 million. As a result of the decline in sales from the significant product transition discussed above, the Company expects operating profit from ongoing operations plus depreciation and amortization for this component of approximately negative \$1.5 million during the first half of 2019. Personal Care projects its operating profit from ongoing operations plus depreciation and amortization to turn positive in the second half of 2019 assuming production and sales growth targets are achieved.

PE Films also anticipates that a portion of its film used in surface protection applications will be made obsolete by future customer product transitions to less costly alternative processes or materials. These transitions could possibly be fully implemented by the fourth quarter of 2019. When fully implemented, the Company estimates that the annualized adverse impact on future operating profit from this customer shift will be approximately \$11 million. In response, the Company is aggressively pursuing new surface protection products, applications and customers, but there can be no assurance that such efforts will be successful or that they will offset any loss of business due to product transitions.

- ***PE Films and its customers operate in highly competitive markets.*** PE Films competes on product innovation, quality, price and service, and its businesses and their customers operate in highly competitive markets. Global market conditions continue to exacerbate the Company's exposure to margin compression due to competitive forces, especially as certain products move into the later stages of their product life cycles. In addition, the changing dynamics of consumer products retailing, including the impact of on-line retailers such as Amazon, is creating price and margin pressure on the customers of PE Films' personal care business. While PE Films continually works to identify new business opportunities with new and existing customers, primarily through the development of new products with improved performance and/or cost characteristics, there can be no assurances that such efforts will be successful or that they will offset business lost from competitive dynamics or customer product transitions.
- ***Our cost saving initiatives may not achieve the results we anticipate.*** PE Films has undertaken and will continue to undertake cost reduction initiatives to consolidate certain production, improve operating efficiencies and generate cost savings. PE Films cannot be certain that it will be able to complete these initiatives as planned or that the estimated operating efficiencies or cost savings from such activities will be fully realized or maintained over time. In addition, PE

Films may not be successful in moving production to other facilities or timely qualifying new production equipment. Failure to complete these initiatives could adversely affect PE Films' financial condition, results of operations and cash flows.

- ***Failure of PE Films' customers, who are subject to cyclical downturns, to achieve success or maintain market share could adversely impact PE Films' sales and operating margins.*** PE Films' plastic films serve as components for, or are used in the production of, various consumer products sold worldwide. A customer's ability to successfully develop, manufacture and market those products is integral to PE Films' success. Also, consumers of premium products made with or using PE Films' components may shift to less premium or less expensive products, reducing the demand for PE Films' plastic films. Cyclical downturns may negatively affect businesses that use PE Films' plastic film products, which could adversely affect sales and operating margins.
- ***The Company's inability to protect its intellectual property rights or its infringement of the intellectual property rights of others could have a material adverse impact on PE Films.*** PE Films operates in an industry where its significant customers and competitors have substantial intellectual property portfolios. The continued success of PE Films' business depends on its ability not only to protect its own technologies and trade secrets, but also to develop and sell new products that do not infringe upon existing patents or threaten existing customer relationships. Intellectual property litigation is very costly and could result in substantial expense and diversions of Company resources, both of which could adversely affect its consolidated financial condition, results of operations and cash flows. In addition, there may be no effective legal recourse against infringement of the Company's intellectual property by third parties, whether due to limitations on enforcement of rights in foreign jurisdictions or as a result of other factors.
- ***An unstable economic environment could have a disruptive impact on PE Films' supply chain.*** Certain raw materials used in manufacturing PE Films' products are sourced from single suppliers, and PE Films may not be able to quickly or inexpensively re-source from other suppliers. The risk of damage or disruption to its supply chain may increase if and when different suppliers consolidate their product portfolios, experience financial distress or disruption of manufacturing operations (such as, for example, the impact of hurricanes on petrochemical production). Failure to take adequate steps to effectively manage such events, which are intensified when a product is procured from a single supplier or location, could adversely affect PE Films' consolidated financial condition, results of operations and cash flows, as well as require additional resources to restore its supply chain.

Flexible Packaging Films

- ***Overcapacity in Latin American polyester film production and a history of uncertain economic conditions in Brazil could adversely impact the financial condition, results of operations and cash flows of Flexible Packaging Films.*** Competition in Brazil, Terphane's primary market, has been exacerbated by global overcapacity in the polyester industry generally, and by particularly acute overcapacity in Latin America. Additional PET capacity from a competitor in Latin America came on line in 2017. These factors have resulted in significant competitive pricing pressures and U.S. Dollar equivalent margin compression.

For flexible packaging films produced in Brazil, costs for operations in Brazil have been adversely impacted by inflation in Brazil that is higher than in the U.S. Flexible Packaging Films is exposed to additional foreign exchange translation risk because almost 90% of Flexible Packaging Films' Brazilian sales are quoted or priced in U.S. Dollars while a large part of its Brazilian costs are quoted or priced in Brazilian Real. This mismatch, together with a variety of economic variables impacting currency exchange rates, causes volatility that could negatively or positively impact operating profit for Flexible Packaging Films. While Flexible Packaging Films hedges this exposure on a short-term basis with foreign exchange forward rate contracts, the exposure continues to exist beyond the hedging periods.

- ***Governmental failure to extend anti-dumping duties in Brazil on imported products or prevent competitors from circumventing such duties could adversely impact Flexible Packaging Films.*** In recent years, excess global capacity in the industry has led to increased competitive pressures from imports into Brazil. The Company believes that these conditions have shifted the competitive environment from a regional to a global landscape and have driven price convergence and lower product margins for Flexible Packaging Films. Favorable anti-dumping rulings or countervailing duties are in effect for products imported from China, Egypt, India, Mexico, UAE and Turkey. In January 2018, the Brazilian government opened new anti-dumping investigations for products imported from Peru and Bahrain. Competitors not currently subject to anti-dumping duties may choose to utilize their excess capacity by selling product in Brazil, which may result in pricing pressures that Flexible Packaging Films may not be able to offset with cost savings measures and/or manufacturing efficiency initiatives. There can be no assurance that efforts to impose anti-dumping constraints on products imported to Brazil from Peru and Bahrain, or to extend duties beyond 2020 on products imported from certain other countries, will be successful.

Aluminum Extrusions

- **Sales volume and profitability of Aluminum Extrusions is cyclical and seasonal and highly dependent on economic conditions of end-use markets in the U.S., particularly in the construction sector.** Aluminum Extrusions' end-use markets can be cyclical and subject to seasonal swings in volume. Because of the capital intensive nature and level of fixed costs inherent in the aluminum extrusions business, the percentage drop in operating profits in a cyclical downturn will likely exceed the percentage drop in volume. In addition, during an economic slowdown, excess industry capacity often drives increased pricing pressure in many end-use markets as competitors protect their position with key customers. Any benefits associated with cost reductions and productivity improvements may not be sufficient to offset the adverse effects on profitability from pricing and margin pressure and higher bad debts (including a greater chance of loss associated with customers defaulting on fixed-price forward sales contracts) that usually accompany a downturn. In addition, higher energy costs can further reduce profits unless offset by price increases or cost reductions and productivity improvements.
- **Failure to prevent competitors from circumventing anti-dumping and countervailing duties, or a reduction in such duties, could adversely impact Aluminum Extrusions.** As of April 2017, the antidumping duty and countervailing duty orders on aluminum extrusions from China will remain in place until the next five-year review of the orders. Chinese and other overseas manufacturers continue to try to circumvent the antidumping and countervailing orders to avoid duties. A failure by, or the inability of, U.S. trade officials to curtail efforts to circumvent these duties, or the potential reduction of applicable duties pursuant to annual reviews of the orders, could have a material adverse effect on the financial condition, results of operations and cash flows of Aluminum Extrusions.
- **The imposition of tariffs or duties on imported aluminum products could significantly increase the price of Aluminum Extrusions' main raw material, which could adversely impact demand for its products.** In March 2018, the U.S. imposed tariffs of 10% on aluminum ingot and semi-finished aluminum imported into the U.S. from certain countries, including countries from which Bonnell Aluminum has historically sourced aluminum supplies. These tariffs have increased the cost of aluminum ingot used by Bonnell Aluminum to make its products. For the vast majority of its business, Bonnell Aluminum expects to be able to pass through higher aluminum costs to customers. However, sustained higher costs for aluminum extrusions could result in reduced demand and product substitutions in place of aluminum extrusions, which could materially and negatively affect Bonnell Aluminum's business and results of operations.
- **Competition from China could increase significantly if China is granted market economy status by the World Trade Organization.** China has launched a formal complaint at the World Trade Organization challenging its non-market economy status, claiming that as of December 11, 2016, China's transition period as a non-market economy under its Accession Protocol to the World Trade Organization ended. China believes with respect to all Chinese-made products that it should receive market economy status and the rights attendant to that status under World Trade Organization rules. The U.S. and the European Union have each rejected that interpretation. If China is granted market economy status, the extent to which the U.S. antidumping laws will be able to limit unfair trade practices from China will likely be limited because the U.S. government will be forced to utilize Chinese prices and costs that do not reflect market principles in antidumping duty investigations involving China, which could ultimately limit the level of antidumping duties applied to unfairly traded Chinese imports. The volume of unfairly traded imports of Chinese aluminum extrusions could increase as a result and this, in turn, would likely create substantial pricing pressure on Aluminum Extrusions' products and could have a material adverse effect on the financial condition, results of operations and cash flows of Aluminum Extrusions.
- **The markets for Aluminum Extrusions' products are highly competitive with product quality, service, delivery performance and price being the principal competitive factors.** Aluminum Extrusions has approximately 1,400 customers that are in a variety of end-use markets within the broad categories of building and construction, distribution, automotive and other transportation, machinery and equipment, electrical and consumer durables. No single customer exceeds 4% of Aluminum Extrusions' net sales. Future success and prospects depend on Aluminum Extrusions' ability to provide superior service, high quality products, timely delivery and competitive pricing to retain existing customers and participate in overall industry cross-cycle growth. Failure in any of these areas could lead to a loss of customers, which could have an adverse material effect on the financial condition, results of operations and cash flows of Aluminum Extrusions.
- **Aluminum Extrusions may not have sufficient capacity to meet its growth targets and service all of its customers.** Aluminum Extrusions' ability to grow and service existing customers is closely tied to having sufficient capacity. In recent years, increased demand, primarily from the nonresidential building and construction sector, has substantially increased Aluminum Extrusions' average capacity utilization.

General

- ***The Company has identified material weaknesses in its internal control over financial reporting at December 31, 2017 and 2018. The Company's failure to establish and maintain effective internal control over financial reporting and to maintain effective disclosure controls and procedures increases the risk of a material misstatement in its consolidated financial statements, and its failure to meet its reporting and financial obligations, which in turn could have a negative impact on its financial condition.***

Maintaining effective internal control over financial reporting is necessary for the Company to produce reliable financial statements. As discussed in Item 9A. "Controls and Procedures," the Company's management concluded that the Company's internal control over financial reporting was not effective as of December 31, 2017 or December 31, 2018, as a result of certain deficiencies that were determined to constitute material weaknesses in the Company's internal control over financial reporting.

Under standards established by the Public Company Accounting Oversight Board ("PCAOB"), a material weakness is defined as a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis. Under the criteria set forth in *Internal Control - Integrated Framework 2013* issued by the Committee of Sponsoring Organizations of the Treadway Commission, a material weakness in the design of monitoring controls indicates that the Company has not sufficiently developed and/or documented internal controls by which management can review and oversee the Company's financial information to detect and correct material errors or that the personnel responsible for performing the review did not have the sufficient skill set or knowledge of the subject matter to perform a proper assessment.

As discussed in Item 9A. "Controls and Procedures," to remediate the material weaknesses, the Company, with the assistance of its outside consultant, is in the process of implementing certain changes to its internal controls and reviewing the entire control environment to help ensure that there are no other material weaknesses. The Company believes that its remediation plan will be sufficient to remediate the identified material weaknesses and strengthen its internal control over financial reporting. However, remediation of the identified material weaknesses and strengthening the Company's internal control environment will require a substantial effort throughout 2019, and those efforts may extend beyond 2019. As the Company continues to evaluate and work to improve its internal control over financial reporting and disclosure controls and procedures, management may determine to take additional measures to address control deficiencies or determine to modify the remediation plan. The Company cannot assure you, however, when it will remediate such weaknesses, nor can it be certain of whether additional actions will be required or the costs of any such actions. Moreover, the Company cannot assure you that additional material weaknesses will not arise in the future.

While the material weaknesses discussed in Item 9A. "Controls and Procedures" did not result in material misstatements of the Company's financial statements as of and for the year ended December 31, 2017 or December 31, 2018, or any interim period during 2017 or 2018, any failure to remediate the material weaknesses, or the development of new material weaknesses in its internal control over financial reporting, could result in material misstatements in the Company's consolidated financial statements and cause it to fail to meet its reporting and financial obligations, which in turn could have a negative impact on its financial condition.

- ***Tredegar has an underfunded defined benefit (pension) plan.*** Tredegar sponsors a pension plan that covers certain hourly and salaried employees in the U.S. The plan was substantially frozen to new participants in 2007, and frozen to benefit accruals for active participants in 2014. As of December 31, 2018, the plan was underfunded under U.S. generally accepted accounting principles ("GAAP") measures by \$81.9 million. Tredegar expects that it will be required to make a cash contribution of approximately \$8.1 million to its underfunded pension plan in 2019, and may be required to make higher cash contributions in future periods depending on the level of interest rates and investment returns on plan assets.
- ***Noncompliance with any of the covenants in the Company's \$400 million revolving credit facility, which matures in March of 2021, could result in all debt under the agreement outstanding at such time becoming due and limiting its borrowing capacity, which could have a material adverse effect on consolidated financial condition and liquidity.*** The credit agreement governing Tredegar's revolving credit facility contains restrictions and financial covenants that, if violated, could restrict the Company's operational and financial flexibility. Failure to comply with these covenants could result in an event of default, which if not cured or waived, would result in all outstanding debt under the credit facility at such time becoming due, which could have a material adverse effect on the Company's consolidated financial condition and liquidity.

- **Tredegar’s performance is influenced by costs incurred by its operating companies, including, for example, the cost of raw materials and energy.** These costs include, without limitation, the cost of resin (the raw material on which PE Films primarily depends), PTA and MEG (the raw materials on which Flexible Packaging Films primarily depends), aluminum (the raw material on which Aluminum Extrusions primarily depends), natural gas (the principal fuel necessary for Aluminum Extrusions’ plants to operate), electricity and diesel fuel. Resin, aluminum and natural gas prices are volatile as shown in the charts in the **Quantitative and Qualitative Disclosures** section. The Company attempts to mitigate the effects of increased costs through price increases and contractual pass-through provisions, but there are no assurances that higher prices can effectively be passed through to customers or that Tredegar will be able to offset fully or on a timely basis the effects of higher raw material and energy costs through price increases or pass-through arrangements. Further, the Company’s cost control efforts may not be sufficient to offset any increases in raw material, energy or other costs.
- **Tredegar may not be able to successfully integrate strategic acquisitions.** Acquisitions involve special risks, including, without limitation, meeting revenue, margin, working capital and capital expenditure expectations that substantially drive valuation, diversion of management’s time and attention from existing businesses, the potential assumption of unanticipated liabilities and contingencies and potential difficulties in integrating acquired businesses and achieving anticipated operational improvements. Acquired businesses may not achieve expected results.
- **Tredegar is subject to various environmental laws and regulations and could become exposed to material liabilities and costs associated with such laws.** The Company is subject to various environmental obligations and could become subject to additional obligations in the future. Changes in environmental laws and regulations, or their application, including those relating to global climate change and plastic products, could subject Tredegar to significant additional capital expenditures and operating expenses. Moreover, future developments in federal, state, local and international environmental laws and regulations are difficult to predict. Environmental laws have become and are expected to continue to become increasingly strict. As a result, Tredegar expects to be subject to new environmental laws and regulations. However, any such changes are uncertain and, therefore, it is not possible for the Company to predict with certainty the amount of additional capital expenditures or operating expenses that could be necessary for compliance with respect to any such changes. See **Government Regulation** in “Item 1. Business” for a further discussion of this risk factor.
- **Material disruptions at one of the Company’s major manufacturing facilities could negatively impact financial results.** Tredegar believes its facilities are operated in compliance with applicable local laws and regulations and that the Company has implemented measures to minimize the risks of disruption at its facilities. Such a disruption could be a result of any number of events: an equipment failure with repairs requiring long lead times, labor stoppages or shortages, cybersecurity attacks, utility disruptions, constraints on the supply or delivery of critical raw materials, and severe weather conditions. A material disruption in one of the Company’s operating locations could negatively impact production and its consolidated financial condition, results of operations and cash flows.
- **An inability to renegotiate the Company’s collective bargaining agreements could adversely impact its consolidated financial condition, results of operations and cash flows.** Some of the Company’s employees are represented by labor unions under various collective bargaining agreements with varying durations and expiration dates. Tredegar may not be able to satisfactorily renegotiate collective bargaining agreements when they expire, which could result in strikes or work stoppages or higher labor costs. In addition, existing collective bargaining agreements may not prevent a strike or work stoppage at the Company’s facilities in the future. Any such work stoppages (or potential work stoppages) could negatively impact Tredegar’s ability to manufacture its products and adversely affect its consolidated financial condition, results of operations and cash flows.
- **Tredegar’s valuation of its \$7.5 million cost-basis investment in kaléo is volatile and uncertain.** Tredegar uses the fair value method to account for its fully-diluted ownership interest of approximately 20% in kaleo, Inc. (“kaléo”), a privately held specialty pharmaceutical company. There is no active secondary market for buying or selling stock in kaléo. The Company’s fair value estimates can fluctuate materially between reporting periods, primarily due to variances in its performance versus expectations and changes in the valuation of guideline public companies as measured by their enterprise value-to-EBITDA (earnings before interest, taxes, depreciation and amortization) multiples. Additionally, the estimated fair value of the Company’s investment in kaléo could decline. Kaléo’s first product, an epinephrine auto-injector, was licensed to Sanofi-Aventis U.S. LLC (“Sanofi”) in 2009. Sanofi commenced commercial sales in the first quarter of 2013. Kaléo subsequently developed and commenced commercial sales of its second product, a naloxone auto-injector (“Evzio”), in the third quarter of 2014. Public pressure to lower the price of pharmaceutical products continues to mount, which could affect the price at which kaléo sells its products. The U.S. Department of Justice began an investigation of kaléo’s Evzio business in 2018, the impact of which on kaléo and on the value of the Company’s interest in kaléo cannot yet be estimated with any certainty. See Note 4 to the **Notes to Financial Statements** (“Note 4”) for more information.

- **Rising trade tensions.** A significant portion of the Company’s business involves imports to and from the U.S. and other countries where the Company produces and sells its products. Trade tensions have been rising between the U.S. and other countries, particularly China. An increase in tariffs and other trade barriers between the U.S. and China, or between the U.S. and other countries, could cause an increase in the cost of the Company’s products or otherwise negatively impact the production and sale of the Company’s products in world markets.
- **A failure in the Company’s information technology systems as a result of cybersecurity attacks or other causes could negatively affect Tredegar’s business.** The Company depends on information technology (“IT”) to record and process customers' orders, manufacture and ship products in a timely manner, secure its production processes and know-how, and maintain the financial accuracy of its business records. An IT system failure due to computer viruses, internal or external security breaches, cybersecurity attacks, or other malicious causes could disrupt our operations and prevent us from being able to process transactions with our customers, operate our manufacturing facilities and properly report transactions in a timely manner. Increased global IT security threats and cyber-crime pose a potential risk to the security and availability of the Company’s IT systems, networks, and services, including those that are managed, hosted, provided, or used by third parties, as well as to the confidentiality, availability, and integrity of the Company’s data. To date, interruptions of the Company’s IT systems have been infrequent and have not had a material impact on the Company’s operations. A significant protracted failure of or security breach of the IT systems, networks, or service providers the Company relies upon, or a loss or disclosure of business or other sensitive information, as a result of a cybersecurity incident or other cause, could result in damage to the Company’s reputation and legal challenges, and adversely affect our results of operations, financial condition or cash flows.

Item 1B. UNRESOLVED STAFF COMMENTS

None.

Item 2. PROPERTIES

General

Most of the improved real property and the other assets used in the Company's operations are owned. Certain of the owned property is subject to an encumbrance under the Company's revolving credit facility (see Note 11 for more information). Tredegar considers the manufacturing facilities, warehouses and other properties and assets that it owns or leases to be in generally good condition. Capacity utilization at its various manufacturing facilities can vary with product mix and normal fluctuations in sales levels. The Company believes that its PE Films and Flexible Packaging Films manufacturing facilities have sufficient capacity to meet current production requirements. Bonnell Aluminum's average capacity utilization during the fourth quarter of 2018 was in excess of 90%. Tredegar's corporate headquarters, which is leased, is located at 1100 Boulders Parkway, Richmond, Virginia 23225.

The Company's principal manufacturing plants and facilities as of December 31, 2018 are listed below:

PE Films

Locations in the U.S.

Lake Zurich, Illinois
Durham, North Carolina (technical center and production facility) (leased)
Pottsville, Pennsylvania
Richmond, Virginia (technical center) (leased)
Terre Haute, Indiana (technical center and production facility)

Locations Outside the U.S.

Guangzhou, China
Kerkrade, The Netherlands
Pune, India
Rétság, Hungary
São Paulo, Brazil

Principal Operations

Production of plastic films, elastics and laminate materials

Flexible Packaging Films

Locations in the U.S.

Bloomfield, New York (technical center and production facility)

Locations Outside the U.S.

Cabo de Santo Agostinho, Brazil

Principal Operations

Production of PET-based films

Aluminum Extrusions

Locations in the U.S.

Carthage, Tennessee
Elkhart, Indiana
Newnan, Georgia
Niles, Michigan
Clearfield, Utah (leased)

Principal Operations

Production of aluminum extrusions, fabrication and finishing

Item 3. LEGAL PROCEEDINGS

None.

Item 4. MINE SAFETY DISCLOSURES

None.

PART II

Item 5. MARKET FOR TREDEGAR'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Prices of Common Stock and Shareholder Data

Tredegear's common stock is traded on the New York Stock Exchange ("NYSE") under the ticker symbol "TG". There were 33,176,024 shares of common stock held by 1,948 shareholders of record on December 31, 2018.

The following table shows the reported high and low closing prices of Tredegear's common stock by quarter for the past two years.

	2018		2017	
	High	Low	High	Low
First quarter	\$ 20.25	\$ 15.60	\$ 25.00	\$ 16.50
Second quarter	24.60	16.99	17.65	14.90
Third quarter	26.25	20.60	18.35	14.85
Fourth quarter	21.56	15.00	20.20	18.20

The closing price of Tredegear's common stock on March 11, 2019 was \$17.21.

Dividend Information

Tredegear has paid a dividend every quarter since becoming a public company in July 1989. During the past three years, the Company paid quarterly dividends of 11 cents per share in each quarter of 2016, 2017 and 2018.

All decisions with respect to the declaration and payment of dividends will be made by the Board of Directors ("Board") in its sole discretion based upon earnings, financial condition, anticipated cash needs, restrictions in the Company's revolving credit facility and other such considerations as the Board deems relevant. See Note 11 for the restrictions on the payment of dividends contained in the Company's revolving credit agreement related to aggregate dividends permitted.

Issuer Purchases of Equity Securities

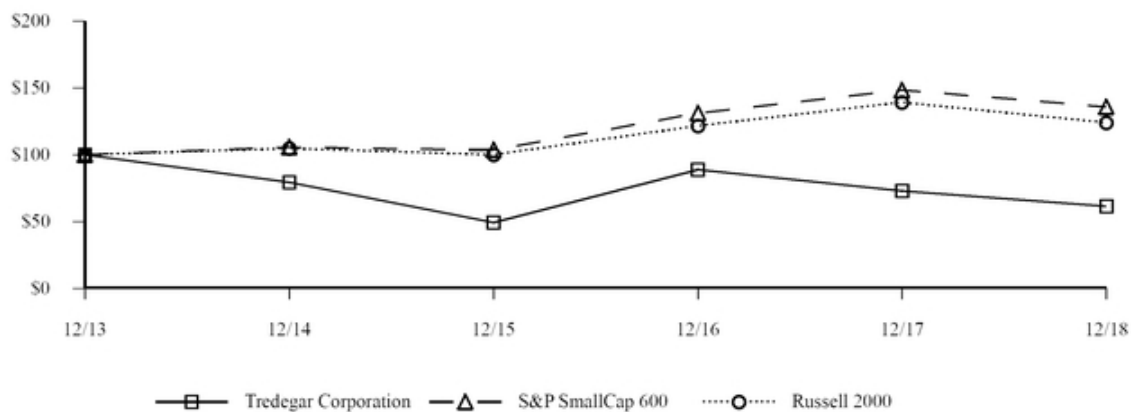
On January 7, 2008, Tredegear announced that its Board approved a share repurchase program whereby management is authorized at its discretion to purchase, in the open market or in privately negotiated transactions, up to 5 million shares of the Company's outstanding common stock. The authorization has no time limit. Tredegear did not repurchase any shares in the open market or otherwise in 2018, 2017 or 2016 under this standing authorization. The maximum number of shares remaining under this standing authorization was 1,732,003 at December 31, 2018.

Comparative Tredegar Common Stock Performance

The following graph compares cumulative total shareholder returns for Tredegar, the S&P SmallCap 600 Stock Index (an index comprised of companies with market capitalizations similar to Tredegar) and the Russell 2000 Index for the five years ended December 31, 2018. Tredegar is part of both the S&P SmallCap 600 Index and Russell 2000 Index.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

Among Tredegar Corporation, the S&P SmallCap 600 Index, and the Russell 2000 Index



*\$100 invested on 12/31/13 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

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Quarterly Information

Tredegar does not generate or distribute quarterly reports to its shareholders. Information on quarterly results can be obtained from the Company's website, www.tredegar.com. In addition, Tredegar files quarterly, annual and other information electronically with the SEC, which can be accessed on its website at www.sec.gov.

Item 6. SELECTED FINANCIAL DATA

The tables that follow present certain selected financial and segment information for the five years ended December 31, 2018.

FIVE-YEAR SUMMARY

Tredegar Corporation and Subsidiaries

Years Ended December 31	2018	2017	2016	2015	2014
(In thousands, except per-share data)					
Results of Operations:					
Sales	\$1,065,471	\$ 961,330	\$ 828,341	\$ 896,177	\$ 951,826
Other income (expense), net (k)	30,459 (a)	51,713 (b)	2,381 (c)	(20,113)	(6,697) (f)
	1,095,930	1,013,043	830,722	876,064	945,129
Cost of goods sold (m)	849,756 (a)	767,550 (b)	659,867 (c)	715,744 (e)	772,897 (f)
Freight	36,027	33,683	29,069	29,838	28,793
Selling, general & administrative expenses (m)	85,283 (a)	83,386 (b)	73,466 (c)	69,384 (e)	68,110
Research and development expenses	18,707	18,287	19,122	16,173	12,147
Amortization of identifiable intangibles	3,976	6,198	3,978	4,073	5,395
Pension and postretirement benefits (m)	10,406	10,193	11,047	12,242	6,632
Interest expense	5,702	6,170	3,806	3,502	2,713
Asset impairments and costs associated with exit and disposal activities	2,913 (a)	102,488 (b)	2,684 (c)	3,850 (e)	3,026 (f)
Goodwill impairment charge	46,792 (d)	—	—	44,465 (d)	—
	1,059,562	1,027,955	803,039	899,271	899,713
Income (loss) from continuing operations before income taxes	36,368	(14,912)	27,683	(23,207)	45,416
Income tax expense (benefit)	11,526	(53,163)	3,217	8,928	9,387
Income (loss) from continuing operations	24,842	38,251	24,466	(32,135)	36,029
Income (loss) from discontinued operations, net of tax	—	—	—	—	850 (g)
Net income (loss)	\$ 24,842	\$ 38,251	\$ 24,466	\$ (32,135)	\$ 36,879
Diluted earnings (loss) per share:					
Continuing operations	\$ 0.75	\$ 1.16	\$ 0.75	\$ (0.99)	\$ 1.11
Discontinued operations	—	—	—	—	0.02 (g)
Net income (loss)	\$ 0.75	\$ 1.16	\$ 0.75	\$ (0.99)	\$ 1.13

Refer to **Notes to Financial Tables** that follow these tables.

FIVE-YEAR SUMMARY

Tredegar Corporation and Subsidiaries

Years Ended December 31	2018	2017	2016	2015	2014
(In thousands, except per-share data)					
Share Data:					
Equity per share (l)	\$ 10.70	\$ 10.41	\$ 9.44	\$ 8.35	\$ 11.47
Cash dividends declared per share	\$ 0.44	\$ 0.44	\$ 0.44	\$ 0.42	\$ 0.34
Weighted average common shares outstanding during the period	33,068	32,946	32,762	32,578	32,302
Shares used to compute diluted earnings (loss) per share during the period	33,092	32,951	32,775	32,578	32,554
Shares outstanding at end of period	33,176	33,017	32,934	32,682	32,422
Closing market price per share:					
High	\$ 26.25	\$ 25.00	\$ 25.55	\$ 23.76	\$ 28.45
Low	\$ 15.00	\$ 14.85	\$ 11.68	\$ 12.63	\$ 16.76
End of year	\$ 15.86	\$ 19.20	\$ 24.00	\$ 13.62	\$ 22.49
Total return to shareholders (h)	(15.1)%	(18.2)%	79.4%	(37.6)%	(20.8)%
Financial Position:					
Total assets	\$ 707,373	\$ 755,743	\$ 651,162	\$ 623,260	\$ 788,626
Cash and cash equivalents	\$ 34,397	\$ 36,491	\$ 29,511	\$ 44,156	\$ 50,056
Debt	\$ 101,500	\$ 152,000	\$ 95,000	\$ 104,000	\$ 137,250
Shareholders' equity (net book value)	\$ 354,857	\$ 343,780	\$ 310,783	\$ 272,748	\$ 372,029
Equity market capitalization (i)	\$ 526,172	\$ 633,935	\$ 790,411	\$ 445,131	\$ 729,173

Refer to **Notes to Financial Tables** that follow these tables.

SEGMENT TABLES

Tredegar Corporation and Subsidiaries

Net Sales (j)

Years Ended December 31	2018	2017	2016	2015	2014
(In thousands)					
PE Films	\$ 332,488	\$ 352,459	\$ 331,146	\$ 385,550	\$ 464,339
Flexible Packaging Films	123,830	108,355	108,028	105,332	114,348
Aluminum Extrusions	573,126	466,833	360,098	375,457	344,346
Total net sales	1,029,444	927,647	799,272	866,339	923,033
Add back freight	36,027	33,683	29,069	29,838	28,793
Sales as shown in Consolidated Statements of Income	\$1,065,471	\$ 961,330	\$ 828,341	\$ 896,177	\$ 951,826

Identifiable Assets

As of December 31	2018	2017	2016	2015	2014
(In thousands)					
PE Films	\$ 231,720	\$ 289,514	\$ 278,558	\$ 270,236	\$ 283,606
Flexible Packaging Films	58,964	49,915	156,836	146,253	262,604
Aluminum Extrusions	281,372	268,127	147,639	136,935	143,328
Subtotal	572,056	607,556	583,033	553,424	689,538
General corporate	100,920	111,696	38,618	25,680	49,032
Cash and cash equivalents	34,397	36,491	29,511	44,156	50,056
Total	\$ 707,373	\$ 755,743	\$ 651,162	\$ 623,260	\$ 788,626

Refer to **Notes to Financial Tables** that follow these tables.

SEGMENT TABLES

Tredegar Corporation and Subsidiaries

Operating Profit

Years Ended December 31	2018	2017	2016	2015	2014
(In thousands)					
PE Films:					
Ongoing operations	\$ 36,181	\$ 41,546	\$ 26,312	\$ 48,275	\$ 60,971
Plant shutdowns, asset impairments, restructurings and other	(5,905) (a)	(4,905) (b)	(4,602) (c)	(4,180) (e)	(12,236) (f)
Goodwill impairment charge	(46,792) (d)	—	—	—	—
Flexible Packaging Films:					
Ongoing operations	9,892	(2,626)	1,774	5,453	(2,917)
Plant shutdowns, asset impairments, restructurings and other	(45) (a)	(89,398) (b)	(214) (c)	(185) (e)	(591) (f)
Goodwill impairment charge	—	—	—	(44,465) (d)	—
Aluminum Extrusions:					
Ongoing operations	48,613	43,454	37,794	30,432	25,664
Plant shutdowns, asset impairments, restructurings and other	(505) (a)	321 (b)	(741) (c)	(708) (e)	(976) (f)
Total	41,439	(11,608)	60,323	34,622	69,915
Interest income	369	209	261	294	588
Interest expense	5,702	6,170	3,806	3,502	2,713
Gain (loss) on investment in kaléo accounted for under the fair value method (k)	30,600	33,800	1,600	(20,500)	2,000
Gain (loss) on sale of investment property	(38)	—	—	—	1,208 (f)
Unrealized loss on investment property	186	—	1,032	—	—
Stock option-based compensation expense	1,221	264	56	483	1,272
Corporate expenses, net	28,893 (a)	30,879 (b)	29,607 (c)	33,638 (e)	24,310 (f)
Income (loss) from continuing operations before income taxes	36,368	(14,912)	27,683	(23,207)	45,416
Income tax expense (benefit)	11,526	(53,163)	3,217	8,928	9,387
Income (loss) from continuing operations	24,842	38,251	24,466	(32,135)	36,029
Income (loss) from discontinued operations, net of tax	—	—	—	—	850 (g)
Net income (loss)	\$ 24,842	\$ 38,251	\$ 24,466	\$ (32,135)	\$ 36,879

 Refer to **Notes to Financial Tables** that follow these tables.

SEGMENT TABLES

Tredegar Corporation and Subsidiaries

Depreciation and Amortization

Years Ended December 31	2018	2017	2016	2015	2014
(In thousands)					
PE Films	\$ 15,513	\$ 14,609	\$ 13,653	\$ 15,480	\$ 21,399
Flexible Packaging Films	1,262	10,443	9,505	9,697	9,331
Aluminum Extrusions	16,866	15,070	9,173	9,698	9,974
Subtotal	33,641	40,122	32,331	34,875	40,704
General corporate	163	155	141	107	114
Total depreciation and amortization expense	\$ 33,804	\$ 40,277	\$ 32,472	\$ 34,982	\$ 40,818

Capital Expenditures

Years Ended December 31	2018	2017	2016	2015	2014
(In thousands)					
PE Films	\$ 21,998	\$ 15,029	\$ 25,759	\$ 21,218	\$ 17,000
Flexible Packaging Films	5,423	3,619	3,391	3,489	21,806
Aluminum Extrusions	12,966	25,653	15,918	8,124	6,092
Subtotal	40,387	44,301	45,068	32,831	44,898
General corporate	427	61	389	—	—
Total capital expenditures	\$ 40,814	\$ 44,362	\$ 45,457	\$ 32,831	\$ 44,898

Refer to *Notes to Financial Tables* that follow these tables.

NOTES TO FINANCIAL TABLES

- (a) Plant shutdowns, asset impairments, restructurings and other charges for 2018 include charges of \$3.3 million associated with the shutdown of PE Films' manufacturing facility in Shanghai, China, which consists of severance and other employee-related costs of \$2.2 million (\$0.4 million included in "Cost of goods sold" in the consolidated statements of income), accelerated depreciation of \$0.6 million (included in "Cost of goods sold" in the consolidated statements of income) and other facility consolidation-related expenses of \$0.5 million (\$0.1 million included in "Cost of goods sold" in the consolidated statements of income); charges of \$2.0 million for estimated excess costs associated with the ramp-up of new product offerings and additional expenses for strategic capacity expansion projects (included in "Cost of goods sold" in the consolidated statements of income); charges of \$0.8 million for professional fees associated with the Terphane Limitada worthless stock deduction, the impairment of assets of Flexible Packaging Films, determining the effect of the new U.S. federal income tax law, and a market study for PE Films (included in "Selling, general and administrative expense" in the consolidated statements of income); charges of \$0.8 million for severance and other employee-related costs associated with restructurings in PE Films (\$0.7 million) and Aluminum Extrusions (\$0.1 million); charges of \$0.5 million associated with a business development projects (included in "Selling, general and administrative" in the consolidated statements of income); charges of \$0.3 million related to expected environmental costs at certain Aluminum Extrusions manufacturing facilities (included in "Cost of goods sold" in the consolidated statements of income); charges of \$0.5 million for professional fees associated with the implementation of new accounting guidance and analysis and revision to the Company's internal control over financial reporting (included in "Selling, general and administrative" in the consolidated statements of income); income of \$0.3 million from the reversal of a PE Films' contingent liability related to the acquisition of Bright View Technologies (included in "Other income (expense), net" in the consolidated statements of income); charges of \$0.1 million related to wind damage that occurred in the third quarter of 2018 at the aluminum extrusions manufacturing facility in Elkhart, Indiana (included in "Selling, general and administrative expense" in the consolidated statements of income); and charges of \$0.1 million related to a fire that occurred in the fourth quarter of 2018 at the PE Films facility in Retsag, Hungary (included in "Selling, general and administrative expense" in the consolidated statements of income).
- (b) Plant shutdowns, asset impairments, restructurings and other charges for 2017 include charges of \$101.3 million related to the impairment of assets of Flexible Packaging Films; income of \$11.9 million related to the settlement of an escrow arrangement established upon the acquisition of Terphane in 2011 (included in "Other income (expense), net" in the consolidated statements of income); charges of \$3.3 million related to the acquisition of Futura (\$1.7 million included in "Cost of goods sold" and \$1.6 million included in "Selling, general and administrative expense" in the consolidated statements of income), offset by pretax income of \$0.7 million related to the fair valuation of an earnout provision (included in "Other income (expense), net" in the condensed consolidated statements of income); charges of \$4.1 million for estimated excess costs associated with the ramp-up of new product offerings and additional expenses for strategic capacity expansion projects (included in "Cost of goods sold" in the consolidated statements of income); income of \$5.6 million related to the explosion that occurred in the second quarter of 2016 at the aluminum extrusions manufacturing facility in Newnan, Georgia, including the recognition of a gain of \$5.3 million for a portion of the insurance recoveries received from the insurer for the replacement of capital equipment, plus the recovery of excess production costs incurred in 2016 for which recovery from insurance carriers was not previously considered to be reasonably assured, net of other nonrecoverable costs, of \$0.3 million (\$0.4 million benefit included in "Cost of goods sold" in the consolidated statements of income and \$0.1 million charge included in "Selling, general and administrative expenses" in the consolidated statements of income); charges of \$0.8 million associated with the consolidation of domestic PE Films manufacturing facilities, which includes asset impairments of \$0.1 million, accelerated depreciation of \$0.3 million and other facility consolidation-related expenses of \$0.5 million (included in "Cost of goods sold" in the consolidated statements of income) offset by income of \$0.1 million related to a reduction of severance and other employee-related accrued costs; charges of \$2.4 million associated with business development projects (included in "Selling, general and administrative" in the consolidated statements of income); charges of \$1.9 million related to expected future environmental costs at certain Aluminum Extrusions manufacturing facilities (included in "Cost of goods sold" in the consolidated statements of income); charges of \$0.8 million at Corporate related to expected future environmental costs at various shutdown facilities (included in "Cost of goods sold" in the consolidated statements of income); charge of \$0.7 million for severance and other employee-related costs associated with restructurings in PE Films (\$0.2 million), Aluminum Extrusions (\$0.1 million) and Corporate (\$0.4 million, included in "Corporate expenses, net" in the statements of net sales and operating profit by segment); charges of \$0.4 million for professional fees associated with the Terphane Limitada worthless stock deduction and impairment of assets of Flexible Packaging Films; charges of \$0.3 million associated with asset impairments in PE Films; and charges of \$0.2 million associated with the settlement of customer claims and the shutdown of the aluminum extrusions manufacturing facility in Kentland, Indiana.
- (c) Plant shutdowns, asset impairments, restructurings and other charges for 2016 include income of \$0.4 million related to the explosion that occurred in the second quarter of 2016 at the aluminum extrusions manufacturing facility in Newnan, Georgia, which includes the recognition of a gain of \$1.9 million for a portion of the insurance recoveries approved by the insurer to begin the replacement of capital equipment, offset by the impairment of equipment damaged by the explosion of \$0.3 million (net amount included in "Other income (expense), net" in the consolidated statements of income) and other costs related to the explosion that are not recoverable from insurance of \$0.6 million (included in "Selling, general and administrative") and excess production costs for which recovery from insurance is not assured of \$0.6 million (included in "Cost of goods sold" in the consolidated statements of income); charges of \$4.3 million associated with the consolidation of domestic PE Films manufacturing facilities, which includes severance and other employee-related costs of \$1.2 million, asset impairments of \$0.4 million, accelerated depreciation of \$0.6 million (included in "Cost of goods sold" in the consolidated statements of income) and other facility consolidation-related expenses of \$2.0 million (\$1.6 million is included in "Cost of goods sold" in the consolidated statements of income); charges of \$0.4 million associated with a business development project included in "Selling, general and administrative" in the consolidated statements of income); charges of \$0.3 million for severance and other employee-related costs associated with restructurings in PE Films (\$0.1 million) and Corporate (\$0.2 million); charges of \$0.6 million associated with the acquisition of Futura (included in "Selling, general and administrative" in the consolidated statements of income); charges of \$0.5 million related to expected future environmental costs at the Company's aluminum extrusions manufacturing facility in Newnan, Georgia (included in "Cost of goods sold" in the consolidated statements of income); charges of \$0.3 million related to the settlement of a tax dispute in the Flexible Packaging Films segment (included in "Cost of goods sold" in the consolidated statements of income); charges of \$0.2 million associated with asset impairments in PE Films; gain of \$0.1 million from the settlement of a Terphane pre-acquisition contingency (included in "Other income (expense), net" in the consolidated statements of income); charge of \$0.1 million from the sale of the aluminum extrusions manufacturing facility in Kentland, Indiana, which includes a pretax gain of \$0.2 million, related to the sale of property, offset by pretax charges of \$0.3 million associated with the shutdown of this facility.
- (d) Results for 2018 included a goodwill impairment charge of \$46.8 million (\$38.2 million after taxes) recognized in PE Films in the third quarter of 2018 upon completion of an impairment analysis performed as of September 30, 2018. Results for 2015 included a goodwill impairment charge of \$44.5 million (\$44.5 million after taxes) recognized in Flexible Packaging Films in the third quarter of 2015 upon completion of an impairment analysis performed as of September 30, 2015.
- (e) Plant shutdowns, asset impairments, restructurings and other charges for 2015 include charges of \$3.9 million (included in "Selling, general and administrative" in the consolidated statements of income) for severance and other employee-related costs associated with the resignation of the Company's former chief executive and chief financial officers; charges of \$2.2 million associated with the consolidation of domestic PE Films manufacturing facilities, which includes severance and other employee-related costs of \$0.8 million, asset impairments of \$0.4 million, accelerated depreciation of \$0.4 million (included in "Cost of goods sold" in the consolidated statements of income) and other facility consolidation-related expenses of \$0.6 million (\$0.1 million is included in "Cost of goods sold" in the consolidated statements of income); charge of \$2.2 million for severance and other employee-related costs associated with restructurings in PE Films (\$2.0 million) (\$0.4 million included in "Selling, general and administrative expense" in the consolidated statement of income), Flexible Packaging Films (\$0.2 million), Aluminum Extrusions (\$35,000) and Corporate (\$26,000); charges of \$1.0 million associated with a business development project (included in "Cost of goods sold" in the consolidated statements of income); charges of \$0.4 million associated with the shutdown of the aluminum extrusions manufacturing facility in Kentland, Indiana; and charges of \$0.3 million related to expected future environmental costs at the aluminum extrusions manufacturing facility in Newnan, Georgia (included in "Cost of goods sold" in the consolidated statements of income).
- (f) Plant shutdowns, asset impairments, restructurings and other for 2014 include a charge of \$10.0 million (included in "Other income (expense), net" in the consolidated statements of income) associated with the one-time, lump sum license payment to 3M Company ("3M") after the Company settled all litigation issues associated with a patent infringement complaint; charges of \$2.3 million for severance and other employee-related costs in connection with restructurings in PE Films (\$1.7 million), Flexible Packaging Films (\$0.6 million) and Aluminum Extrusions (\$31,000); charges of \$0.9 million related to expected future environmental costs at the aluminum extrusions manufacturing facility in Newnan, Georgia (included in "Cost of goods sold" in the consolidated statement of income); charges of \$0.7 million associated with the shutdown of the film products manufacturing facility in Red Springs, North Carolina, which includes severance and other employee-related costs of \$0.4 million and asset impairment and other shutdown-related charges of \$0.3 million; gain of \$0.1 million related to the sale of previously shutdown film products manufacturing facility in LaGrange, Georgia (included in "Other income (expense), net" in the consolidated statements of income); and charges of \$54,000 associated with the shutdown of the aluminum extrusions manufacturing facility in Kentland, Indiana. The unrealized loss of \$0.8 million on the Company's investment in Harbinger Capital Partners Special Situations Fund L.P. ("Harbinger") and the gain of \$1.2 million on sale on a portion the Company's investment property in Allegheny and Bath County, Virginia in 2014 are included in "Other income (expense), net" in the consolidated statements of income.
- (g) On February 12, 2008, Tredgar sold its aluminum extrusions business in Canada. All historical results for this business have been reflected as discontinued operations. In 2014, accruals for indemnifications under the purchase agreement were adjusted, resulting in income from discontinued operations of \$0.9 million.
- (h) Total return to shareholders is defined as the change in stock price during the year plus dividends per share, divided by the stock price at the beginning of the year.
- (i) Equity market capitalization is the closing market price per share for the period multiplied by the shares outstanding at the end of the period.
- (j) Net sales represent gross sales less freight. Net sales is the measure used by the chief operating decision maker for purposes of assessing performance.
- (k) The gains and losses on the Company's investment in kaléo are included in "Other income (expense), net" in the consolidated statements of income.
- (l) Equity per share is computed by dividing shareholders' equity at year end by the shares outstanding at end of period.
- (m) For the years ended December 31, 2014 to 2017, the pension and postretirement benefit expenses recorded in Cost of goods sold and Selling, general and administrative have been reclassified to a new line item, Pension and postretirement benefits, on the consolidated statements of income, due to the retrospective adoption of ASU 2017-07.

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

Forward-looking and Cautionary Statements

Some of the information contained in this Form 10-K may constitute "forward-looking statements" within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. When using the words "believe," "estimate," "anticipate," "expect," "project," "likely," "may" and similar expressions, Tredegar does so to identify forward-looking statements. Such statements are based on then current expectations and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those addressed in the forward-looking statements. It is possible that actual results and financial condition may differ, possibly materially, from the anticipated results and financial condition indicated in or implied by these forward-looking statements. Accordingly, you should not place undue reliance on these forward-looking statements. For risks and important factors that could cause actual results to differ from expectations, refer to the reports that Tredegar files with or furnishes the SEC from time-to-time, including the risks and important factors set forth in "Risk Factors" in Part I, Item 1A of this Form 10-K. Readers are urged to review and consider carefully the disclosures Tredegar makes in the reports Tredegar files with or furnishes to the SEC. Tredegar does not undertake, and expressly disclaims any duty, to update any forward-looking statement to reflect any change in management's expectations or any change in conditions, assumptions or circumstances on which such statements are based, except as required by applicable law.

Executive Summary

General

Tredegar is a manufacturer of polyethylene ("PE") plastic films, polyester films, and aluminum extrusions. Descriptions of all the Company's businesses are provided in the **Business** section.

Sales were \$1.1 billion in 2018 compared to \$961.3 million in 2017. Net income was \$24.8 million (\$0.75 per diluted share) in 2018, compared with \$38.3 million (\$1.16 per diluted share) in 2017.

The 2018 results include:

- An after-tax impairment of the total goodwill balance of PE Films' Personal Care division was recorded in the amount of \$38.2 million (\$1.15 per share after-tax). See the *Customer Product Transitions in Personal Care and Surface Protection* section below and Note 8 for more details; and
- An unrealized after-tax gain on the Company's investment in kaléo of \$23.9 million (\$0.72 per share), which is accounted for under the fair value method (see Note 4 for more details);

The 2017 results include:

- An unrealized after-tax gain on the Company's investment in kaléo of \$24.0 million (\$0.73 per share);
- An after-tax gain of \$11.9 million (\$0.36 per share) from the settlement of an escrow agreement related to the Terphane acquisition in 2011 (see Note 17 for more details);
- An income tax benefit of \$61.4 million (\$1.86 per share) associated with the write-off of the stock basis of Terphane Limitada, Terphane's Brazilian subsidiary, and Terphane's U.S. subsidiary, Terphane Inc., computed at the 35% U.S. corporate federal income tax rate in effect in 2017 (\$56.6 million (\$1.72 per share) when reduced for the deductions applicable to the 21% U.S. corporate federal income tax rate effective in 2018 under the Tax Cuts and Jobs Act (the "TCJA")) (see Note 16 for more details);
- An income tax benefit from the adjustment of deferred income tax liabilities as a result of the reduction of U.S. federal corporate income tax rates effective in 2018 and other law changes of \$4.4 million (\$0.13 per share) (see Note 16 for more details); and
- An after-tax write-down of the assets of Flexible Packaging Films of \$87.2 million (\$2.65 per share) (see Note 17 for more details).

Other losses associated with plant shutdowns, asset impairments and restructurings and gains and losses on the sale of assets, and other items are described in Note 17. Net sales (sales less freight) and operating profit from ongoing operations are the measures of sales and operating profit used by the chief operating decision maker of each segment for purposes of assessing performance. See the table in Note 5 for a presentation of Tredegar's net sales and operating profit by segment for the years ended December 31, 2018 and 2017.

PE Films

A summary of operating results for PE Films is provided below:

(In thousands, except percentages)	Year Ended December 31		Favorable/ (Unfavorable)
	2018	2017	% Change
Sales volume (lbs)	123,583	138,999	(11.1)%
Net sales	\$ 332,488	\$ 352,459	(5.7)%
Operating profit from ongoing operations	\$ 36,181	\$ 41,546	(12.9)%

Net sales in 2018 decreased by \$20.0 million versus 2017 primarily due to:

- The volume decline in Personal Care was primarily related to topsheet business lost from competitive pressures in North America, Europe and Asia, including at the Shanghai, China, facility that was shut down in the fourth quarter of 2018. A small portion of the volume decline was associated with the start of the previously disclosed customer product transition discussed below. Volume for elastics products in Personal Care increased year-over-year.
- Slightly lower sales in Surface Protection caused by lower volume and the adverse impact of quality claims, partially offset by higher volume-based selling prices.

Operating profit from ongoing operations in 2018 decreased by \$5.4 million versus 2017 primarily due to:

- Lower contribution to profits from Personal Care, primarily due to lower volume and unfavorable product mix (\$9.3 million), partially offset by volume-based higher selling pricing (\$2.2 million), lower fixed and selling, general and administrative costs (\$1.1 million), the timing of resin cost passthroughs (\$0.7 million), productivity improvements (\$0.3 million) and net favorable impact from the change in U.S. Dollar value of currencies for operations outside of the U.S. (\$0.8 million);
- Lower contribution to profits from Surface Protection, primarily due to lower volumes and unfavorable product mix (\$4.1 million), the adverse impact of quality claims (\$1.3 million), higher fixed and other manufacturing costs (\$1.6 million), higher research and development spending and selling, general and administrative costs (\$0.4 million) and higher freight costs (\$0.5 million), partially offset by volume-based higher selling prices (\$4.4 million); and
- Realized cost savings associated with the North American consolidation of our PE Films manufacturing facilities completed in 2017 (\$2.4 million).

In June 2018, the Company announced plans to close its facility in Shanghai, China, which primarily produced topsheet films used as components for personal care products. Production ceased at this plant during the fourth quarter of 2018. Net annual cash savings from consolidating operations is projected at \$1.7 million. Additional information on costs associated with exit and disposal activities (currently estimated at \$5.0 million) and other details are available in Note 17.

Customer Product Transitions in Personal Care and Surface Protection

During October 2018, the Personal Care component of PE Films completed negotiations with a customer regarding a previously disclosed significant product transition. The total annual sales that will be adversely impacted by this product transition is approximately \$70 million. During 2019, the Company expects sales for the product of \$30 to \$35 million with the potential for no sales thereafter. Any actions that the Company takes to reduce fixed costs to partially mitigate the decline in variable contribution that will accompany the decline in sales will depend on the level of success that Personal Care has with replacing the lost business with new products and business.

Personal Care has increased its annual R&D spending by approximately \$5 million since 2014, reaching \$12 million in 2018. Personal Care is also investing capital and is accelerating sales and marketing efforts to capture growth and diversify its customer base and product offerings.

The Personal Care component of PE Films had operating profit from ongoing operations plus depreciation and amortization in the fourth quarter of 2018 of \$3.1 million. As a result of the decline in sales from the significant product transition discussed above, the Company expects operating profit from ongoing operations plus depreciation and amortization for this component of approximately negative \$1.5 million during the first half of 2019. Personal Care projects its operating

profit from ongoing operations plus depreciation and amortization to turn positive in the second half of 2019 assuming production and sales growth targets are achieved.

Because of the significance of the customer transition discussed above, the Company performed an asset recoverability test and goodwill impairment analysis for the Personal Care component of PE Films. The Company's analysis concluded that the fair value of the Personal Care reporting unit was less than its carrying value. Accordingly, the goodwill associated with Personal Care of \$46.8 million (\$38.2 million after deferred income tax benefits) was written off during the third quarter of 2018.

The Surface Protection component of PE Films supports manufacturers of optical and other specialty substrates used in flat panel display products. These films are primarily used by customers to protect components of displays in the manufacturing and transportation processes and then discarded.

The Company previously reported the risk that a portion of its film products used in surface protection applications will be made obsolete by possible future customer product transitions to less costly alternative processes or materials. These transitions could possibly be fully implemented by the fourth quarter of 2019. When fully implemented, the Company estimates that the annualized adverse impact on future operating profit from this customer shift will be approximately \$11 million. The Company is aggressively pursuing new surface protection products, applications and customers.

Capital Expenditures and Depreciation

Capital expenditures in PE Films were \$22.0 million in 2018 compared to \$15.0 million in 2017. The Company's business plans for 2019 include projected capital expenditures of approximately \$45 million including: \$12 million of a total \$25 million needed to complete the North American capacity expansion for elastics products and \$9 million for other projects to support next generation elastics in Personal Care; \$5 million in Personal Care in support of topsheet products; \$4 million for a new scale-up line in Surface Protection to improve development and speed to market for new products; \$5 million for other development projects; and \$10 million for capital expenditures required to support continuity of current operations.

From 2016 to 2018, the Company spent annually on average approximately \$15 million less than originally planned for capital expenditures. Actual capital expenditures in 2019 will depend on approval of specific capital project requests and will consider progress towards replacing lost business with new products and business in Personal Care.

Depreciation expense was \$15.4 million in 2018 and \$14.5 million in 2017. Depreciation expense is projected to be \$16 million in 2019.

Flexible Packaging Films

A summary of operating results for Flexible Packaging Films is provided below:

(In thousands, except percentages)	Year Ended December 31		Favorable/ (Unfavorable)
	2018	2017	% Change
Sales volume (lbs)	98,994	89,325	10.8%
Net sales	\$ 123,830	\$ 108,355	14.3%
Operating profit (loss) from ongoing operations	\$ 9,892	\$ (2,626)	n/a

Net sales in 2018 increased versus 2017 primarily due to higher sales volume and increased selling prices associated with the pass-through of higher resin costs. The higher sales volume was supported by increased production capacity for Brazilian operations resulting from the re-start in June 2018 of a previously idled production line.

Terphane had operating profit from ongoing operations in 2018 of \$9.9 million versus an operating loss from ongoing operations in 2017 of \$2.6 million. The resulting favorable change of \$12.5 million for the period was primarily due to:

- Significantly lower depreciation and amortization of \$8.9 million resulting from the \$101 million non-cash asset impairment loss recognized in the fourth quarter of 2017;
- A benefit from higher volume (\$5.5 million) and favorable tax incentives (\$1.3 million), partially offset by the unfavorable impact of mix and higher resin costs, net of higher selling prices (\$2.2 million);

- Higher fixed and other manufacturing costs and selling, general and administrative costs, primarily related to higher volume (\$2.0 million);
- Favorable foreign currency translation of Real-denominated operating costs (\$3.2 million), which was offset by a \$1.7 million loss on foreign currency forward contracts that partially hedged Real-denominated operating costs; and
- Unfavorable net foreign currency transaction impact (\$0.6 million) resulting from foreign currency transaction losses of \$0.8 million in 2018 and losses of \$0.2 million in 2017.

Capital Expenditures, Depreciation & Amortization

Capital expenditures in Flexible Packaging were \$5.4 million in 2018 compared to \$3.6 million in 2017. Capital expenditures are projected to be \$13 million in 2019, including \$7 million for new capacity for value-added products and productivity projects and \$6 million for capital expenditures required to support continuity of current operations. Depreciation expense was \$0.8 million in 2018 and \$7.5 million in 2017. Depreciation expense is projected to be \$1 million in 2019. Amortization expense was \$0.4 million in 2018 and \$3.0 million in 2017, and is projected to be \$0.5 million in 2019. Depreciation and amortization expense projections in 2018 were significantly lower than 2017 due to the non-cash write-down of Terphane's long-lived assets during the fourth quarter of 2017.

Aluminum Extrusions

A summary of operating results for Aluminum Extrusions is provided below:

(In thousands, except percentages)	Year Ended December 31		Favorable/ (Unfavorable)
	2018	2017	% Change
Sales volume (lbs)*	190,696	176,269	8.2%
Net sales	\$ 573,126	\$ 466,833	22.8%
Operating profit from ongoing operations	\$ 48,613	\$ 43,454	11.9%

*Sales volume for the years ended December 31, 2018 and 2017 excludes sales volume of 33,170 lbs. and 23,166 lbs., respectively, associated with Futura, which was acquired on February 15, 2017.

Net sales in 2018 increased versus 2017 primarily due to higher volume and an increase in average selling prices from the pass-through of higher market-driven raw material costs. Futura contributed \$102.5 million of net sales in 2018 versus \$71.0 million for the 10½ months owned during 2017. Excluding the impact of Futura, the increase in net sales was the result of higher sales volume (\$32.4 million), an increase in average selling prices as noted above (\$31.7 million) and improved mix (\$10.8 million).

Volume on an organic basis, (which excludes the impact of the Futura acquisition) increased by 8.2% in 2018 versus 2017 due to higher volume in all of Aluminum Extrusion's primary markets. Overall average capacity utilization during the fourth quarter of 2018 was in excess of 90%. Bookings and backlog at the end of 2018 remained strong.

Operating profit from ongoing operations in 2018 increased by \$5.2 million in comparison to 2017. Excluding the favorable profit impact of owning Futura for a full twelve-month period (\$2.8 million) and the benefit for inventories accounted for under the LIFO method in the fourth quarter of 2018, as noted above (\$2.3 million), operating profit from ongoing operations increased \$0.1 million, primarily due to:

- Higher volume (\$5.1 million) and favorable mix (\$5.8 million), which were offset by higher employee-related costs (\$5.2 million), higher supplies and maintenance (\$2.3 million), higher freight (\$1.7 million), higher utilities, primarily in the first quarter of 2018 at the Newnan, Georgia facility (\$0.9 million), and higher depreciation (\$0.9 million).

The Company continues to focus on fixing inefficiencies associated with the new extrusion line at its Niles, Michigan plant and estimates that operating profit from ongoing operations in 2018 would have been higher by \$3 million if not for these inefficiencies. These inefficiencies are reflected in the higher costs noted above.

Capital Expenditures and Depreciation & Amortization

Capital expenditures for Aluminum Extrusions were \$13.0 million in 2018 compared to \$25.7 million in 2017. Capital expenditures are projected to be \$18 million in 2019, including approximately \$9 million for infrastructure upgrades at the

Carthage, Tennessee facility and other productivity improvement projects, and approximately \$8 million for capital expenditures required to support continuity of current operations. Depreciation expense was \$13.4 million in 2018 compared to \$11.9 million in 2017 and is projected to be \$13 million in 2019. Amortization expense was \$3.4 million in 2018 and \$3.1 million in 2017 and is projected to be \$4 million in 2019.

Corporate Expenses, Investments, Interest and Income Taxes

Pension expense was \$10.3 million in 2018, an unfavorable change of \$0.2 million from 2017. Most of the impact on earnings from lower pension expense is reflected in "Corporate expenses, net" in the Operating Profit table in Note 5. Pension expense is projected to be \$9.6 million in 2019. Corporate expenses, net, decreased in 2018 versus 2017 primarily due to lower business development and environmental costs, partially offset by higher stock-based employee benefit costs.

Interest expense decreased to \$5.7 million in 2018 from \$6.2 million in 2017, primarily due to lower average debt levels, partially offset by higher interest rates in 2018.

During 2018, the Company recognized consolidated income tax expense of \$11.5 million based on pretax income of \$36.4 million. During 2017, the Company recognized a consolidated income tax benefit of \$53.2 million based on pretax loss of \$14.9 million. Information on the significant differences between the effective tax rate for income and the U.S. federal statutory rate for 2018 and 2017 are further detailed in the effective income tax rate reconciliation provided in Note 16.

Total debt was \$101.5 million at December 31, 2018, compared to \$152.0 million at December 31, 2017. Net debt (debt in excess of cash and cash equivalents) was \$67.1 million at December 31, 2018, compared to \$115.5 million at December 31, 2017. The decline in net debt includes the impact of U.S. federal income tax refunds of \$26 million received in 2018. Net debt is calculated as follows:

(In millions)	December 31, 2018	December 31, 2017
Debt	\$ 101.5	\$ 152.0
Less: Cash and cash equivalents	34.4	36.5
Net debt	\$ 67.1	\$ 115.5

Net debt, a financial measure that is not calculated or presented in accordance with GAAP, is not intended to represent debt as defined by GAAP, but is utilized by management in evaluating financial leverage and equity valuation. The Company believes that investors also may find net debt helpful for the same purposes. Consolidated net capitalization and other credit measures are provided in the **Financial Condition** section.

Critical Accounting Policies

In the ordinary course of business, the Company makes a number of estimates and assumptions relating to the reporting of results of operations and financial position in the preparation of financial statements in conformity with GAAP. Actual results could differ significantly from those estimates under different assumptions and conditions. The Company believes the following discussion addresses its critical accounting policies. These policies require management to exercise judgments that are often difficult, subjective and complex due to the necessity of estimating the effect of matters that are inherently uncertain.

Impairment and Useful Lives of Long-lived Identifiable Assets and Goodwill

The Company assesses its long-lived identifiable assets for impairment when events or circumstances indicate that their carrying value may not be recoverable from future cash flows. Any necessary impairment charges are recorded when the Company does not believe the carrying value of the long-lived asset(s) will be recoverable. Tredegar also reassesses the useful lives of its long-lived assets based on changes in the business and technologies.

The Company assesses goodwill for impairment when events or circumstances indicate that the carrying value may not be recoverable, or, at a minimum, on an annual basis (December 1st of each year). When assessing goodwill for impairment, accounting guidance allows the Company to first perform a qualitative assessment about the likelihood of the carrying value of a reporting unit exceeding its fair value, referred to as the "Step 0" assessment. The Step 0 assessment requires the evaluation of certain qualitative factors, including macroeconomic conditions, industry and market considerations, cost factors and overall financial performance, as well as company and reporting unit factors. If the Company's Step 0 analysis indicates that it is more likely than not that the fair value of a reporting unit is less than the carrying amount, then the Company would perform a quantitative impairment test.

As of December 31, 2018, the Company applied the Step 0 assessment to its PE Films' Surface Protection operating unit and Aluminum Extrusions' AACOA operating unit, which both had fair values significantly in excess of their carrying amounts when tested in 2017. The Company's Step 0 analysis in 2018 of the reporting units concluded that it is not more likely than not that the fair value of the reporting unit is less than its carrying amount. Therefore, the quantitative goodwill impairment test for these reporting units was not necessary in 2018.

Goodwill for Surface Protection and AACOA totaled \$57.3 million and \$13.7 million, respectively, at December 31, 2018. The goodwill of AACOA is associated with its October 2012 acquisition.

Goodwill in the amount of \$10.4 million from Aluminum Extrusions acquisition of Futura in February 2017, was tested for impairment at the annual testing date, with the estimated fair value of this reporting unit exceeding the carrying value of its net assets at December 1, 2018.

In assessing the recoverability of goodwill and long-lived identifiable assets, the Company primarily estimates fair value using discounted cash flow analysis and comparative enterprise value-to-EBITDA (earnings before interest, taxes, depreciation and amortization) multiples. These calculations require management to make assumptions regarding estimated future cash flows, discount rates and other factors to determine if an impairment exists. If these estimates or their related assumptions change in the future, the Company may be required to record additional impairment charges.

All goodwill associated with PE Films' Personal Care operating unit, in the amount of \$46.8 million (\$38.2 million after deferred income tax benefits), was impaired in the third quarter of 2018. The goodwill impairment charge was recognized upon the completion of an asset recoverability test and impairment analysis performed as of September 30, 2018. This non-operating, non-cash charge, as computed under GAAP, resulted from the expectation of a significant customer transition. The Company performed an asset recoverability test and impairment analysis using projections under various business planning scenarios and concluded that the fair value of the Personal Care reporting unit was less than its carrying value.

In 2017, Flexible Packaging Films recorded a charge for the impairment of assets in the amount of \$101 million. As part of this write-down, trade names, customer relationships and proprietary technology were impaired by \$4.0 million, \$9.4 million and \$4.1 million, respectively; the remaining part of the write-down was related to property, plant and equipment.

In addition to the impairment of Terphane's assets in 2017, based upon assessments performed as to the recoverability of other long-lived identifiable assets, the Company recorded an asset impairment loss for continuing operations of \$2.9 million, \$1.2 million and \$0.6 million in 2018, 2017 and 2016, respectively.

Investment Accounted for Under the Fair Value Method

In August 2007 and December 2008, Tredegar made an aggregate investment of \$7.5 million in kaléo (formerly Intelliject, Inc.), a privately held specialty pharmaceutical company. This investment is accounted for under the fair value method. At the time of the initial investment, the Company elected the fair value option of accounting since its investment objectives were similar to those of venture capitalists, which typically do not have controlling financial interests (venture capital funds generally use the fair value method to account for their investment portfolios). At December 31, 2018, Tredegar's ownership interest was approximately 20% on a fully diluted basis.

The Company considers its investment in kaléo to be a Level 3 investment under the hierarchy described in GAAP. The Company discloses the level of its investments within the fair value hierarchy in which fair value measurements for its investments, segregating fair value measurements using quoted prices in active markets for identical assets or liabilities (Level 1), significant other observable inputs (Level 2), and significant unobservable inputs (Level 3). The Company believes that its fair value estimates will continue to be based upon Level 3 inputs since there is no secondary market for Tredegar's ownership and a new round of equity financing that would establish a Level 1 fair value is not likely needed. See Note 4 for more information on valuation methods used. Adjustments to the estimated fair value of this investment will be made in the period upon which such changes can be quantified.

At December 31, 2018 and 2017, the fair value of the Company's investment in kaléo (also the carrying value, which is separately stated in the consolidated balance sheets) was estimated at \$84.6 million and \$54.0 million, respectively. The ultimate value of the Company's ownership interest in kaléo will be determined and realized only if and when a liquidity event occurs, and the ultimate value could be materially different from the \$84.6 million estimated fair value reflected in the Company's financial statements at December 31, 2018.

Pension Benefits

Tredegar sponsors noncontributory defined benefit (pension) plans in its continuing operations that have resulted in varying amounts of net pension income or expense, as developed from actuarial valuations. Inherent in these valuations are key assumptions including discount rates, expected return on plan assets and rate of future compensation increases. The Company is required to consider current market conditions, including changes in interest rates and plan asset investment returns, in determining these assumptions. Actuarial assumptions may differ materially from actual results due to changing market and economic conditions, higher or lower withdrawal rates or longer or shorter life spans of participants. These differences may result in a significant impact to the amount of net pension income or expense recorded in future periods.

The discount rate is used to determine the present value of future payments. The discount rate is the single rate that, when applied to expected benefit payments, provides a present value equal to the present value of expected benefit payments determined by using the AA-rated bond yield curve. In general, the pension liability increases as the discount rate decreases and vice versa. The weighted average discount rate utilized was 4.40%, 3.72% and 4.29% at the end of 2018, 2017 and 2016, respectively, with changes between periods due to changes in market interest rates. Pay for active participants of the plan was frozen as of December 31, 2007. As of January 31, 2018, the plan no longer accrued benefits associated with crediting employees for service, thereby freezing all future benefits under the plan.

A lower expected return on plan assets increases the amount of expense and vice versa. Decreases in the level of actual plan assets will also serve to increase the amount of pension expense. The total return on plan assets, which is primarily affected by the change in fair value of plan assets, current year contributions and current year payments to participants, was approximately negative 3.9% in 2018 and positive 11.6% and 7.9% in 2017 and 2016, respectively. The expected long-term return on plan assets relating to continuing operations, which is estimated by asset class and generally based on inflation-adjusted historical returns, volatilities, risk premiums and managed asset premiums, was 6.50%, 6.50% and 7.00% in 2018, 2017 and 2016, respectively. The Company anticipates that its expected long-term return on plan assets will be 6.00% for 2019. See Note 13 for more information on expected long-term return on plan assets and asset mix.

See the *Executive Summary* for further discussion regarding the financial impact of the Company's pension plans.

Income Taxes

On a quarterly basis, Tredegar reviews its judgments regarding uncertain tax positions and the likelihood that the benefits of a deferred income tax asset will be realized. As circumstances change, the Company reflects in earnings any adjustments to unrecognized benefits for uncertain tax positions and valuation allowances for deferred income tax assets.

For financial reporting purposes, unrecognized tax benefits on uncertain tax positions were \$3.4 million, \$2.0 million and \$3.3 million as of December 31, 2018, 2017 and 2016, respectively. Tax payments resulting from the successful challenge by the taxing authority on uncertain tax positions taken by Tredegar would possibly result in the payment of interest and penalties. Accordingly, the Company also accrues for possible interest and penalties on uncertain tax positions. The balance of accrued interest and penalties on deductions taken relating to uncertain tax positions was \$0.2 million, \$0.1 million and \$0.1 million at December 31, 2018, 2017 and 2016, respectively (\$0.2 million, \$0.1 million and \$0.1 million, respectively, net of corresponding U.S. federal and state income tax benefits). Accruals for possible interest and penalties on uncertain tax positions are reflected in income tax expense for financial reporting purposes.

Tredegar, or one of its subsidiaries, files income tax returns in the U.S. federal jurisdiction, various states and jurisdictions outside the U.S. With few exceptions, Tredegar is no longer subject to U.S. federal, state or non-U.S. income tax examinations by tax authorities for years before 2014.

As of December 31, 2018 and 2017, valuation allowances relating to deferred income tax assets were \$24.7 million and \$28.5 million, respectively. For more information on deferred income tax assets and liabilities, see Note 16.

Recently Issued Accounting Standards

Refer to the section *Recently Issued Accounting Standards* in Note 1 for information concerning the effect of recently issued accounting pronouncements.

Results of Continuing Operations

2018 versus 2017

Revenues. Sales in 2018 increased by 10.8% compared with 2017 due to higher sales in all segments, except PE Films. Net sales decreased 5.7% in PE Films primarily due to topsheet business lost from competitive pressures in Europe and Asia,

including at the Shanghai, China, facility that was recently shut down. Net sales increased in Flexible Packaging Films by 14.3% primarily due to higher sales volume, increased selling prices associated with the pass-through of higher resin costs and increased production capacity from an idle line that was restarted in June 2018. Net sales increased 22.8% in Aluminum Extrusions primarily due to a full year of sales by Futura (acquired February 15, 2017), higher volume and an increase in average selling prices from the pass-through of higher market-driven raw material costs. For more information on changes in net sales and volume, see the *Executive Summary*.

Operating Costs and Expenses. Consolidated gross profit margin (sales minus cost of goods sold and freight as a percentage of sales) was 16.9% in 2018 versus 16.7% in 2017. The gross profit margin in PE Films decreased due to lower volume, as discussed above, unfavorable product mix and increased operating costs, partially offset by the realized cost savings of a restructuring completed in 2017. The gross profit margin in Flexible Packaging Films increased due to significantly lower depreciation and amortization costs in 2018 compared to 2017, resulting from the \$101 million non-cash asset impairment charge recognized in the fourth quarter of 2017, higher production primarily from the restart of an idle line in June 2018, and higher overall demand. The gross profit margin in Aluminum Extrusions decreased primarily as a result of operating inefficiencies relating to the operation of its Niles, Michigan facility.

For more information on changes in operating costs and expenses, see the *Executive Summary*.

Selling, General and Administrative. As a percentage of sales, selling, general and administrative and R&D expenses were 9.8% in 2018, which decreased from 10.6% in 2017. The decrease in selling, general and administrative and R&D expenses as a percentage of sales can be primarily attributed to higher sales as a result of the acquisition of Futura and the restart of a production line by Flexible Packaging Films, overall higher demand at Aluminum Extrusions and higher selling prices primarily due to the pass-through to customers of higher market-driven raw material costs.

Please note that the 2017 and 2016 percentages in the *Operating Costs and Expenses* and *Selling, General and Administrative* sections (above and in **2017 versus 2016** below) have changed from the amounts disclosed in the prior year due to the retrospective adoption of FASB's Accounting Standards Update ("ASU") 2017-07, which resulted in the separate presentation of "Pension and postretirement benefits" expense in the consolidated statements of income. Historically the Company had reported a portion of its pension and postretirement benefit expenses in cost of goods sold and selling, general and administrative expenses.

Plant shutdowns, asset impairments, restructurings and other. Plant shutdowns, asset impairments, restructurings and other items in 2018 are shown in the segment operating profit table in Note 5 and are described in detail in Note 17. A discussion of unrealized gains and losses on investments can also be found in Note 4.

Interest Income and Expense. Interest income, which is included in "Other income (expense), net" in the consolidated statements of income, was \$0.4 million in 2018 and \$0.2 million in 2017.

Interest expense, which is net of amounts capitalized and included in property, plant and equipment (\$0.3 million and \$0.4 million capitalized in 2018 and 2017, respectively), was \$5.7 million in 2018, compared to \$6.2 million for 2017. Average debt outstanding and interest rates were as follows:

(In millions, except percentages)	2018	2017
Floating-rate debt with interest charged on a rollover basis at one-month LIBOR plus a credit spread:		
Average outstanding debt balance	\$ 121.3	\$ 175.0
Average interest rate	3.8%	3.0%
Fixed-rate and other debt:		
Average outstanding debt balance	\$ —	\$ —
Average interest rate	n/a	n/a
Total debt:		
Average outstanding debt balance	\$ 121.3	\$ 175.0
Average interest rate	3.8%	3.0%

Identifiable Assets. A summary of identifiable assets for the year ended December 31, 2018 versus 2017 is provided below:

(In thousands)	Year Ended December 31		
	2018	2017	Variance
PE Films	\$ 231,720	\$ 289,514	\$ (57,794)
Flexible Packaging Films	58,964	49,915	9,049
Aluminum Extrusions	281,372	268,127	13,245
Subtotal	572,056	607,556	(35,500)
General corporate	100,920	111,696	(10,776)
Cash and cash equivalents	34,397	36,491	(2,094)
Total	\$ 707,373	\$ 755,743	\$ (48,370)

Identifiable assets in PE Films decreased at December 31, 2018 from December 31, 2017 primarily due to the \$46.8 million write-off of goodwill in the Personal Care component of PE Films. For more information, see the **PE Films** section of the *Executive Summary*. Identifiable assets in Flexible Packaging Films increased at December 31, 2018 from December 31, 2017 primarily due to current year capital expenditures and higher inventory balances to support increased demand. Identifiable assets in Aluminum Extrusions increased at December 31, 2018 from December 31, 2017 primarily due to current year capital expenditures, higher accounts receivable balances due to the timing of collections and higher inventory balances. Identifiable assets in General corporate decreased at December 31, 2018 from December 31, 2017 due to a decrease in income taxes recoverable.

2017 versus 2016

Revenues. Sales in 2017 increased by 16.1% compared with 2016 due to higher sales in all segments and, in particular, from the acquisition of Futura by Aluminum Extrusions in February 2017. Net sales increased 6.4% in PE Films primarily due to increased volume and favorable sales mix for surface protection films, acquisition distribution layer materials and overwrap products. Net sales were relatively flat in Flexible Packaging Films (0.3% increase). Net sales increased 29.6% in Aluminum Extrusions primarily due to the acquisition of Futura, higher sales volume, improved product mix, and an increase in average selling prices primarily due to the pass-through to customers of higher market-driven raw material costs.

Operating Costs and Expenses. Consolidated gross profit margin (sales minus cost of goods sold and freight as a percentage of sales) was 16.7% in 2017 and 16.8% in 2016. The gross profit margin in PE Films increased due to higher revenue, as discussed above, the realized cost savings of a restructuring completed in 2017, productivity efficiencies in surface protection films and personal care, and a favorable LIFO inventory adjustment. The gross profit margin in Flexible Packaging Films decreased primarily as a result of lower production primarily due to numerous intermittent power outages at Terphane's Cabo, Brazil plant, during the third quarter, higher raw material and other costs related to adverse impact of high inflation in Brazil, partially offset by lower foreign currency transaction losses in 2017 versus 2016. The gross profit margin in Aluminum Extrusions increased slightly due to higher sales volume and improved product mix noted above, partially offset by increased operating costs, disruptions to normal plant production associated with the startup of a new press at the Niles, Michigan plant and an unfavorable LIFO adjustment.

Selling, General and Administrative. As a percentage of sales, selling, general and administrative and R&D expenses were 10.6% in 2017, which decreased from 11.2% in 2016. The decrease in selling, general and administrative and R&D expenses as a percentage of sales can be primarily attributed to higher sales as a result of the acquisition of Futura.

Plant shutdowns, asset impairments, restructurings and other. Plant shutdowns, asset impairments, restructurings and other items in 2017 are shown in the segment operating profit table in Note 5 and are described in detail in Note 17. A discussion of unrealized gains and losses on investments can also be found in Note 4.

Interest Income and Expense. Interest income, which is included in "Other income (expense), net" in the consolidated statements of income, was \$0.2 million in 2017 and \$0.3 million in 2016.

Interest expense, which is net of amounts capitalized and included in property, plant and equipment (\$0.4 million and \$0.3 million capitalized in 2017 and 2016, respectively), was \$6.2 million in 2017, compared to \$3.8 million for 2016. In February 2017, the Company borrowed \$87 million under its revolving credit agreement to fund the acquisition of Futura. Interest expense in 2016 included the write-off of \$0.2 million in unamortized loan fees from Tredegar's revolving credit facility that was refinanced in the first quarter of 2016. Average debt outstanding and interest rates were as follows:

(In millions, except percentages)	2017	2016
Floating-rate debt with interest charged on a rollover basis at one-month LIBOR plus a credit spread:		
Average outstanding debt balance	\$ 175.0	\$ 103.5
Average interest rate	3.0%	2.3%
Fixed-rate and other debt:		
Average outstanding debt balance	\$ —	\$ —
Average interest rate	n/a	n/a
Total debt:		
Average outstanding debt balance	\$ 175.0	\$ 103.5
Average interest rate	3.0%	2.3%

Identifiable Assets. A summary of identifiable assets for the year ended December 31, 2017 versus 2016 is provided below:

(In thousands)	Year Ended December 31		
	2017	2016	Variance
PE Films	\$ 289,514	\$ 278,558	\$ 10,956
Flexible Packaging Films	49,915	156,836	(106,921)
Aluminum Extrusions	268,127	147,639	120,488
Subtotal	607,556	583,033	24,523
General corporate	111,696	38,618	73,078
Cash and cash equivalents	36,491	29,511	6,980
Total	\$ 755,743	\$ 651,162	\$ 104,581

Identifiable assets in PE Films increased at December 31, 2017 from December 31, 2016 primarily due to higher property, plant and equipment balances as a result of higher current year capital expenditures. Identifiable assets in Flexible Packaging Films decreased at December 31, 2017 from December 31, 2016 due to the impairment of assets recognized during the fourth quarter of 2017. Identifiable assets in Aluminum Extrusions increased at December 31, 2017 from December 31, 2016 primarily due to the acquisition of Futura and higher property, plant and equipment balances as a result of current year capital expenditures, higher accounts receivable balances due to the timing of collections and higher inventory balances. Identifiable assets in General corporate increased at December 31, 2017 from December 31, 2016 due to an increase in income taxes recoverable and an increase in the value of the Company's investment in kaléo.

Segment Analysis. A summary of operating results for 2017 versus 2016 for each of the Company's reporting segments is shown below.

PE Films

A summary of operating results for PE Films is provided below:

(In thousands, except percentages)	Year Ended December 31		Favorable/ (Unfavorable)
	2017	2016	% Change
Sales volume (lbs)	138,999	139,020	— %
Net sales	\$ 352,459	\$ 331,146	6.4 %
Operating profit from ongoing operations	\$ 41,546	\$ 26,312	57.9 %

Net sales in 2017 increased by \$21.3 million versus 2016 primarily due to:

- Higher sales from surface protection films (\$15.1 million), primarily due to higher volume and a favorable sales mix; and
- Higher volume for acquisition distribution layer materials and overwrap products, and a favorable sales mix in personal care materials (\$12.0 million), partially offset by volume reductions from the winding down of known lost business in personal care that was substantially completed by the end of 2016 (\$6.2 million).

Operating profit from ongoing operations in 2017 increased by \$15.2 million versus 2016 primarily due to:

- Higher contribution to profits from surface protection films (\$12.3 million), primarily due to higher volume, a favorable sales mix, and production efficiencies;
- Higher contribution to profits from personal care materials, primarily due to improved volume, production efficiencies and favorable pricing (\$7.3 million), partially offset by known lost business (\$2.1 million);
- A benefit for inventories accounted for under the LIFO method of \$1.1 million in 2017 versus a charge of \$0.9 million in 2016; and
- Higher net general, selling and plant expenses (\$7.3 million), primarily associated with strategic hires and an increase in employee incentive costs, partially offset by realized cost savings of \$3.1 million associated with the North American facility consolidation.

Restructuring

In July 2015, the Company began a consolidation of its domestic production for PE Films by restructuring the operations in its manufacturing facility in Lake Zurich, Illinois. This restructuring was completed in the third quarter of 2017, with expected annualized savings excluding depreciation expenses of \$6.0 million. Total expenses associated with the restructuring were \$0.8 million in 2017 (included in "Cost of goods sold" in the consolidated statements of income) and the total expenses for the project since inception were \$7.3 million. Cash expenditures for the North American facility consolidation project were \$1.9 million in 2017, which includes capital expenditures of \$0.1 million. Total cash expenditures for the project since inception were \$16.0 million, which includes \$11.2 million for capital expenditures.

Capital Expenditures and Depreciation

Capital expenditures in PE Films were \$15.0 million in 2017 compared to \$25.8 million in 2016. Depreciation expense was \$14.5 million in 2017 and \$13.5 million in 2016.

Flexible Packaging Films

A summary of operating results for Flexible Packaging Films is provided below:

(In thousands, except percentages)	Year Ended December 31		Favorable/ (Unfavorable)
	2017	2016	% Change
Sales volume (lbs)	89,325	89,706	(0.4)%
Net sales	\$ 108,355	\$ 108,028	0.3 %
Operating profit (loss) from ongoing operations	\$ (2,626)	\$ 1,774	n/a

Net sales and sales volume in 2017 were relatively flat compared to 2016, and adversely impacted by production issues due to intermittent power outages at Terphane's Cabo de Santo Agostinho, Brazil plant during the third quarter.

Terphane had an operating loss from ongoing operations in 2017 of \$2.6 million versus an operating profit from ongoing operations in 2016 of \$1.8 million. The resulting unfavorable change of \$4.4 million for the period was primarily due to:

- Lower production, primarily due to numerous intermittent power outages during the third quarter (\$0.5 million), and lower average sales price (\$1.6 million), partially offset by a favorable sales mix (\$1.5 million);
- Higher raw material costs of \$1.8 million in 2017 that could not be passed through to customers due to competitive pressures versus a benefit from lower raw material costs of \$1.2 million in 2016;
- Foreign currency transaction losses primarily associated with U.S. Dollar denominated export sales in Brazil of \$0.2 million in 2017 versus foreign currency transaction losses of \$3.5 million in 2016;

- Higher costs and expenses of \$3.2 million primarily related to the adverse impact of high inflation in Brazil and the appreciation by approximately 9% of the average exchange rate for the Brazilian Real relative to the U.S. Dollar; and
- Higher depreciation and amortization costs (\$0.9 million).

Terphane Asset Impairment Loss and Worthless Stock Deduction

The Company acquired Terphane in October 2011, and since that time Terphane's selling prices, margins and overall performance have been adversely impacted by excess industry capacity, particularly in Latin America, and by a period of poor economic conditions in Brazil. Moreover, significant additional capacity came on-line late in the third quarter of 2017 from a competitor in Latin America. As a result, Terphane has struggled with profitability and incurred operating losses from ongoing operations in two of the last five years, including an operating loss of \$2.6 million in 2017. Terphane's quarterly financial results have been volatile, and the Company expects continued uncertainty and volatility until industry capacity utilization and the competitive dynamics in Latin America improve.

During the fourth quarter of 2017, in conjunction with annual business planning as well as valuation activities and other efforts, the Company determined that the carrying value of Terphane's remaining long-lived assets were impaired (Terphane's goodwill was written off in 2015). Accordingly, the Company wrote down these assets based on an enterprise valuation for all of Terphane of approximately \$30 million. This write-down resulted in a non-cash asset impairment loss recognized during the fourth quarter of 2017 of \$101 million (\$87 million after non-cash tax benefits).

Also during the fourth quarter of 2017, as a result of the valuation activities referred to above, the Company claimed an ordinary loss for U.S. federal and state income tax purposes of \$153 million for the write-off of the stock basis of Terphane Limitada (Terphane's Brazilian subsidiary). The Terphane Limitada worthless stock deduction resulted in an overall reduction of Tredegar's U.S. income tax liability of approximately \$49 million. The full net tax benefit expected from the Terphane Limitada worthless stock deduction was accrued during the fourth quarter of 2017 and reflected as a reduction to Tredegar's consolidated income tax expense. During the second quarter of 2017, the Company recognized a worthless stock deduction for Terphane, Inc. (Terphane's U.S. subsidiary), which resulted in an income tax benefit recognized of \$8.1 million.

Capital Expenditures, Depreciation & Amortization

Capital expenditures in Flexible Packaging were \$3.6 million in 2017 compared to \$3.4 million in 2016. Depreciation expense was \$7.5 million in 2017 and \$6.7 million in 2016. Amortization expense was \$3.0 million in 2017 and \$2.8 million in 2016.

Aluminum Extrusions

A summary of operating results for Aluminum Extrusions, including the results of Futura (except sales volume) since its date of acquisition, is provided below:

(In thousands, except percentages)	Year Ended December 31		Favorable/ (Unfavorable) % Change
	2017	2016	
Sales volume (lbs)*	176,269	172,986	1.9%
Net sales	\$ 466,833	\$ 360,098	29.6%
Operating profit from ongoing operations	\$ 43,454	\$ 37,794	15.0%

*Excludes sales volume for Futura, which was acquired on February 15, 2017.

Net sales in 2017 increased versus 2016 primarily due to the addition of Futura. Futura contributed net sales of \$71.0 million in 2017. Excluding the impact of Futura, net sales improved due to higher sales volume, improved product mix, and an increase in average selling prices primarily due to the pass-through to customers of higher market-driven raw material costs.

Volume on an organic basis (which excludes the impact of the Futura acquisition) in 2017 increased by 1.9% versus 2016. Higher volume in specialty and automotive & light truck markets were the primary drivers.

Operating profit in 2017 increased by \$5.7 million versus 2016. Excluding the favorable profit impact of Futura (\$8.2 million), operating profit decreased \$2.5 million, primarily due to:

- Higher volume and inflation-related sales prices (\$7.3 million benefit);

- Increased operating costs, including utilities and employee-related expenses and higher depreciation (\$3.9 million);
- Higher costs associated with the startup of the new press at the Niles, Michigan plant, resulting from disruptions to normal plant production (\$4.3 million); and
- A charge for inventories accounted for under the LIFO method of \$1.3 million in 2017 versus a benefit of \$0.5 million in 2016.

Cast House Explosion

On June 29, 2016, the Bonnell Aluminum plant in Newnan, Georgia suffered an explosion in the casting department, causing significant damage to the cast house and related equipment. The Company completed the process of replacing the damaged casting equipment, and the cast house resumed production in the third quarter of 2017.

During 2017, Bonnell incurred \$5.6 million of additional operational expenses as a result of the explosion; \$5.5 million of this amount was fully offset by insurance recoveries. Also, \$0.6 million of additional operational expenses incurred in 2016 that were previously considered not reasonably assured of being covered by insurance recoveries were recovered. Each of these amounts is recorded in “Plant shutdowns, asset impairments, restructurings and other” in the Operating Profit table in Note 5 and in “Cost of goods sold” in the Consolidated Statements of Income. In the fourth quarter of 2017, all remaining insurance claims associated with this matter were settled, and a gain on involuntary conversion of the old cast house of \$5.3 million was recorded in “Other income (expense), net” in the Consolidated Statements of Income and in “Plant shutdowns, asset impairments, restructurings and other” in the Operating Profit table in Note 5.

Capital Expenditures and Depreciation & Amortization

Capital expenditures for Aluminum Extrusions were \$25.7 million in 2017 compared to \$15.9 million in 2016. Depreciation expense was \$11.9 million in 2017, which included \$2.9 million from the addition of Futura, compared to \$8.1 million in 2016. Amortization expense was \$3.1 million in 2017, which included \$2.1 million from the addition of Futura, and \$1.0 million in 2016.

Financial Condition

Assets and Liabilities

Tredegar’s management continues to focus on improving working capital management. Measures such as days sales outstanding (“DSO”), days inventory outstanding (“DIO”) and days payables outstanding (“DPO”) are used by the Company to evaluate changes in working capital. Significant changes in assets and liabilities from December 31, 2017 to December 31, 2018 are summarized below:

- Accounts and other receivables increased \$4.6 million (3.8%).
 - Accounts and other receivables in PE Films decreased by \$5.0 million due mainly to lower net sales for certain Personal Care products, a focus on collection efforts, the use of supply chain financing arrangements and the timing of cash receipts. DSO (computed using trailing 12 months net sales and a rolling 12-month average of accounts and other receivables balances) was approximately 43.2 days in 2018 and 48.4 days in 2017.
 - Accounts and other receivables in Flexible Packaging Films decreased by \$2.9 million primarily due to the negotiation of shorter payments terms with certain customers, the use of supply chain financing arrangements and the timing of cash receipts. DSO was approximately 43.7 days in 2018 and 53.2 days in 2017.
 - Accounts and other receivables in Aluminum Extrusions increased by \$12.5 million primarily due to higher prices resulting from the pass-through of higher metal costs. DSO was approximately 44.6 days in 2018 and 43.3 days in 2017.
- Inventories increased \$6.9 million (7.9%).
 - Inventories in PE Films decreased by \$5.7 million primarily due to lower sales and the timing of raw material purchases. DIO (computed using trailing 12 months costs of goods sold calculated on a first-in, first-out basis and a rolling 12-month average of inventory balances calculated on the first-in, first-out basis) was approximately 54.9 days in 2018 and 55.0 days in 2017.
 - Inventories in Flexible Packaging Films increased by \$9.5 million primarily due to a higher production level leading to more finished goods on hand and higher levels of raw materials to support increased production, and the impact of

the change in the value of the U.S. Dollar relative to the Brazilian real. DIO was approximately 77.9 days in 2018 and 70.1 days in 2017.

- Inventories in Aluminum Extrusions increased by \$3.2 million primarily due to an increase in raw material prices and the timing of purchases. DIO was approximately 33.5 days in 2018 and 32.6 days in 2017.
- Net property, plant and equipment increased by \$5.3 million (2.4%) due primarily to capital expenditures of \$40.8 million, offset by depreciation of \$29.8 million and a change in the value of the U.S. dollar relative to foreign currencies (\$5.2 million decrease).
- Identifiable intangible assets decreased by \$4.3 million (10.5%) primarily due to amortization expense of \$4.0 million.
- Goodwill decreased by \$46.8 million (36.5%) due to the write-off of all of the goodwill related to the Personal Care component of PE Films.
- Accounts payable increased by \$4.4 million (4.0%).
 - Accounts payable in PE Films decreased by \$5.6 million primarily due to lower planned production and the normal volatility associated with the timing of payments. DPO (computed using trailing 12 months costs of goods sold calculated on a first-in, first-out basis and a rolling 12-month average of accounts payable balances) was approximately 43.7 days in 2018 and 40.6 days in 2017.
 - Accounts payable in Flexible Packaging Films increased by \$3.4 million, due to higher production levels and inventory levels to meet market demand and the normal volatility associated with the timing of payments. DPO was approximately 51.9 days in 2018 and 42.8 days in 2017.
 - Accounts payable in Aluminum Extrusions increased by \$5.5 million, primarily due to higher volume, an increase in metal prices, negotiation of longer payment terms and the normal volatility associated with the timing of payments. DPO was approximately 49.7 days in 2018 and 48.0 days in 2017.
- Accrued expenses increased by \$0.1 million (0.1%) from December 31, 2017 due to normal fluctuations in the accrual accounts.
- Net noncurrent deferred income tax assets in excess of noncurrent deferred income tax liabilities decreased by \$11.1 million primarily due to numerous changes between years in the balance of the components shown in the December 31, 2018 and 2017 schedule of deferred income tax assets and liabilities provided in Note 16. The Company had a current income tax receivable of \$6.8 million at December 31, 2018 compared to a current income tax receivable of \$32.1 million at December 31, 2017. The change is primarily due to timing of tax payments and refunds from net operating losses and tax credits carried back to prior years.

On March 1, 2016, the Company entered into a five-year, \$400 million secured revolving credit agreement that expires on March 1, 2021 (“revolving credit agreement”). Net capitalization and indebtedness as defined under the revolving credit agreement as of December 31, 2018 were as follows:

Net Capitalization and Indebtedness as of December 31, 2018	
(In thousands)	
Net capitalization:	
Cash and cash equivalents	\$ 34,397
Debt:	
\$400 million revolving credit agreement maturing March 1, 2021	101,500
Other debt	—
Total debt	101,500
Debt net of cash and cash equivalents	67,103
Shareholders' equity	354,857
Net capitalization	\$ 421,960
Indebtedness as defined in revolving credit agreement:	
Total debt	\$ 101,500
Face value of letters of credit	2,686
Capital lease	29
Other	—
Indebtedness	\$ 104,215

The credit spread and commitment fees charged on the unused amount under our revolving credit agreement at various indebtedness-to-adjusted EBITDA levels are as follows:

Pricing Under Revolving Credit Agreement (Basis Points)		
Indebtedness-to-Adjusted EBITDA Ratio	Credit Spread Over LIBOR	Commitment Fee
> 3.5x but <= 4.0x	250	45
> 3.0x but <= 3.5x	225	40
> 2.0x but <= 3.0x	200	35
> 1.0x but <= 2.0x	175	30
<= 1.0x	150	25

At December 31, 2018, the interest rate on debt under the revolving credit agreement existing at that date was priced at one-month LIBOR plus the applicable credit spread of 150 basis points. Under the revolving credit agreement, borrowings are permitted up to \$400 million, and approximately \$298 million was available to borrow at December 31, 2018, based upon the most restrictive covenant within the revolving credit agreement.

As of December 31, 2018, Tredegar was in compliance with all financial covenants outlined in its revolving credit agreement. Noncompliance with any of the debt covenants may have a material adverse effect on financial condition or liquidity in the event such noncompliance cannot be cured or should the Company be unable to obtain a waiver from the lenders. Renegotiation of the covenant(s) through an amendment to the revolving credit agreement may effectively cure the noncompliance, but may have an effect on financial condition or liquidity depending upon how the amended covenant is renegotiated.

The computations of adjusted EBITDA, adjusted EBIT, the leverage ratio and interest coverage ratio as defined in the revolving credit agreement are presented below along with the related most restrictive covenants. Adjusted EBITDA and adjusted EBIT as defined in the revolving credit agreement are not intended to represent net income or cash flow from operations as defined by GAAP and should not be considered as either an alternative to net income or to cash flow.

Computations of Adjusted EBITDA, Adjusted EBIT, Leverage Ratio and Interest Coverage Ratio as Defined in the Revolving Credit Agreement Along with Related Most Restrictive Covenants

As of and for the Twelve Months Ended December 31, 2018 (In thousands)

Computations of adjusted EBITDA and adjusted EBIT as defined in revolving credit agreement for the twelve months ended December 31, 2018	
Net income	\$ 24,842
Plus:	
After-tax losses related to discontinued operations	—
Total income tax expense for continuing operations	11,526
Interest expense	5,702
Depreciation and amortization expense for continuing operations	33,804
All non-cash losses and expenses, plus cash losses and expenses not to exceed \$10,000, for continuing operations that are classified as unusual, extraordinary or which are related to plant shutdowns, asset impairments and/or restructurings (cash-related of \$7,774)	55,160
Charges related to stock option grants and awards accounted for under the fair value-based method	1,221
Losses related to the application of the equity method of accounting	—
Losses related to adjustments in the estimated fair value of assets accounted for under the fair value method of accounting	—
Minus:	
After-tax income related to discontinued operations	—
Total income tax benefits for continuing operations	—
Interest income	(369)
All non-cash gains and income, plus cash gains and income in excess of \$10,000, for continuing operations that are classified as unusual, extraordinary or which are related to plant shutdowns, asset impairments and/or restructurings	(250)
Income related to changes in estimates for stock option grants and awards accounted for under the fair value-based method	—
Income related to the application of the equity method of accounting	—
Income related to adjustments in the estimated fair value of assets accounted for under the fair value method of accounting	(30,600)
Plus cash dividends declared on investments accounted for under the equity method of accounting	—
Plus or minus, as applicable, pro forma EBITDA adjustments associated with acquisitions and asset dispositions	—
Adjusted EBITDA as defined in revolving credit agreement	101,036
Less: Depreciation and amortization expense for continuing operations (including pro forma for acquisitions and asset dispositions)	(33,804)
Adjusted EBIT as defined in revolving credit agreement	\$ 67,232
Computations of leverage and interest coverage ratios as defined in revolving credit agreement at December 31, 2018:	
Leverage ratio (indebtedness-to-adjusted EBITDA)	1.03x
Interest coverage ratio (adjusted EBIT-to-interest expense)	11.79x
Most restrictive covenants as defined in revolving credit agreement:	
Maximum permitted aggregate amount of dividends that can be paid by Tredegar during the term of the revolving credit agreement (\$100,000 plus 50% of net income generated for each quarter beginning January 1, 2016)	\$ 169,844
Maximum leverage ratio permitted	4.00x
Minimum interest coverage ratio permitted	2.50x

Tredegar is obligated to make future payments under various contracts as set forth below:

(In millions)	Payments Due by Period						
	2019	2020	2021	2022	2023	Remainder	Total
Debt:							
Principal payments	\$ —	\$ —	\$ 101.5	\$ —	\$ —	\$ —	\$ 101.5
Estimated interest expense	4.2	4.2	0.7	—	—	—	9.1
Estimated contributions required: ⁽¹⁾							
Defined benefit plans	8.3	12.0	12.2	14.8	12.9	18.8	79.0
Other postretirement benefits	0.5	0.5	0.5	0.5	0.5	2.2	4.7
Capital expenditure commitments	14.1	—	—	—	—	—	14.1
Leases	4.5	4.0	3.6	2.4	1.2	2.6	18.3
Estimated obligations relating to uncertain tax positions ⁽²⁾	—	—	—	—	—	2.9	2.9
Other ⁽³⁾	1.1	—	—	—	—	—	1.1
Total	\$ 32.7	\$ 20.7	\$ 118.5	\$ 17.7	\$ 14.6	\$ 26.5	\$ 230.7

(1) Estimated minimum required contributions for defined benefit plans and benefit payments for other postretirement plans are based on actuarial estimates using current assumptions for discount rates, long-term rate of return on plan assets, rate of compensation increases and health care cost trends. The expected defined benefit plan contribution estimates for 2019 through 2028 were determined under provisions of the Pension Protection Act of 2006 using the preliminary assumptions chosen by Tredegar for the 2019 plan year. Tredegar has determined that it is not practicable to present defined benefit contributions and other postretirement benefit payments beyond 2028.

(2) Amounts for which reasonable estimates about the timing of payments cannot be made are included in the remainder column.

(3) Includes contractual severance and other miscellaneous contractual arrangements.

From time to time, the Company enters into transactions with third parties in connection with the sale of assets or businesses in which it agrees to indemnify the buyers or third parties involved in the transaction, or the sellers or third parties involved in the transaction agree to indemnify Tredegar, for certain liabilities or risks related to the assets or business. Also, in the ordinary course of business, the Company may enter into agreements with third parties for the sale of goods or services that may contain indemnification provisions. In the event that an indemnification claim is asserted, liability for indemnification would be subject to an assessment of the underlying facts and circumstances under the terms of the applicable agreement. Further, any indemnification payments may be limited or barred by a monetary cap, a time limitation, or a deductible or basket. For these reasons, the Company is unable to estimate the maximum potential amount of the potential future liability under the indemnity provisions of these agreements. Tredegar does, however, accrue for losses for any known contingent liability, including those that may arise from indemnification provisions, when future payment is probable and the amount is reasonably estimable. The Company discloses contingent liabilities if the probability of loss is reasonably possible and material.

At December 31, 2018, Tredegar had cash and cash equivalents of \$34.4 million, including funds held in locations outside the U.S. of \$31.1 million. Tredegar's policy is to accrue U.S. federal income taxes on unremitted earnings of all foreign subsidiaries where required. However, due to changes in the taxation of dividends under TCJA, Tredegar will only record U.S. federal income taxes on unremitted earnings of its foreign subsidiaries where Tredegar cannot take steps to eliminate any potential tax on future distributions from its foreign subsidiaries. Prior to the second quarter of 2016, deferred U.S. federal income taxes had not been recorded for the undistributed earnings for Terphane Limitada because the Company had intended to permanently reinvest these earnings. During 2016, Terphane Limitada paid dividends totaling \$13.3 million to the Company. Because of the accumulation of significant losses related to foreign currency translations at Terphane Limitada, there were no unrecorded deferred income tax liabilities associated with the U.S. federal income taxes and foreign withholding taxes on Terphane Limitada's undistributed earnings as of December 31, 2018 and December 31, 2017.

The Company believes that existing borrowing availability, current cash balances and cash flow from operations will be sufficient to satisfy working capital, capital expenditure and dividend requirements for at least the next twelve months.

Shareholders' Equity

At December 31, 2018, Tredegar had 33,176,024 shares of common stock outstanding and a total market capitalization of \$526.2 million, compared with 33,017,422 shares of common stock outstanding and a total market capitalization of \$633.9 million at December 31, 2017.

Tredegar did not repurchase any shares on the open market in 2018, 2017 or 2016 under its approved share repurchase program.

Cash Flows

The discussion in this section supplements the information presented in the *Consolidated Statements of Cash Flows*.

Cash provided by operating activities was \$97.8 million in 2018 compared with \$88.2 million in 2017. The increase is primarily due to higher operating profit before depreciation and amortization from ongoing operations (\$5.6 million) and the net of income tax refunds received in 2018 over income tax payments made in the same period in 2017 (\$33.2 million), primarily offset by higher working capital and larger pension contributions in 2018 versus 2017 (\$29.3 million).

Cash used in investing activities was \$34.1 million in 2018 compared with \$125.6 million in 2017. Cash used in investing activities primarily represents the acquisition of Futura in 2017 for \$87.1 million and capital expenditures, which were \$40.8 million and \$44.4 million in 2018 and 2017, respectively. Additionally, in the first quarter of 2018, the Company received \$5 million from escrowed funds related to an earnout from the acquisition of Futura, of which \$4.3 million was classified in cash flows for investing activities.

Net cash flow used in financing activities was \$64.1 million in 2018, primarily due to net repayments under the revolving credit agreement of \$50.5 million and the payment of regular quarterly dividends aggregating for the year to \$14.6 million (\$0.44 per share annually), partially offset by the proceeds from the exercise of stock options and other financing activities of \$1.0 million. Cash provided by financing activities was \$43.2 million in 2017, including net borrowings under the revolving credit agreement of \$57.0 million. These net borrowings plus cash provided by operating activities of \$88.2 million in 2017 were used to fund the acquisition of Futura for \$87.1 million and regular quarterly dividends aggregating for the year to \$14.5 million (\$0.44 per share annually).

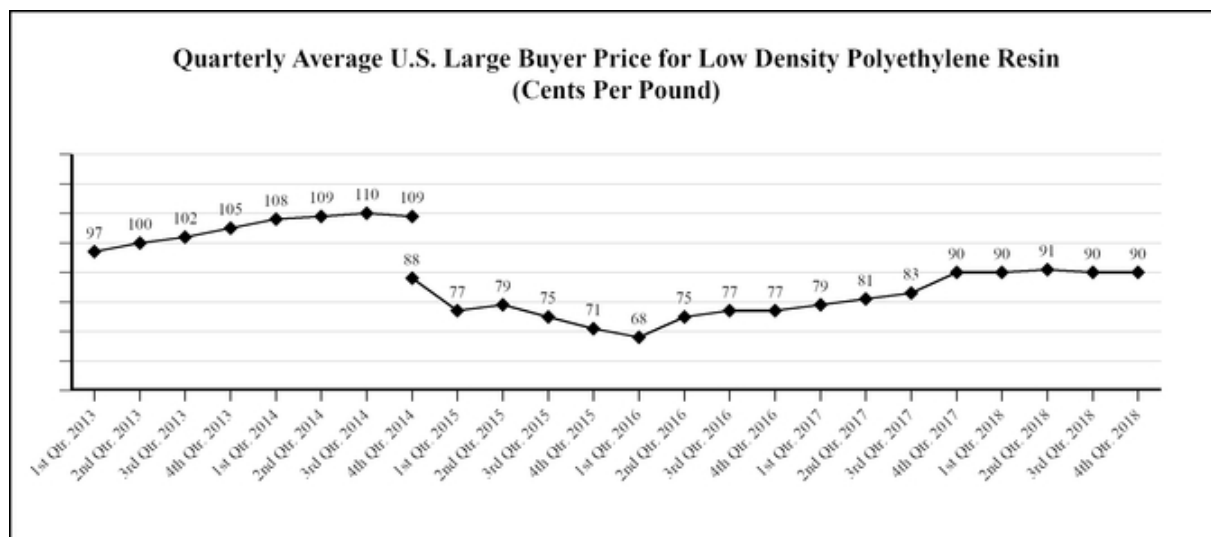
Quantitative and Qualitative Disclosures about Market Risk

Tredegar has exposure to the volatility of interest rates, polyethylene, polypropylene and polyester resin prices, PTA and MEG prices, aluminum ingot and scrap prices, energy prices, foreign currencies and emerging markets. See the *Assets and Liabilities* section regarding interest rate exposures related to borrowings under the revolving credit agreement.

Changes in polyethylene resin prices, and the timing of those changes, could have a significant impact on profit margins in PE Films. Changes in polyester resin, PTA and MEG prices, and the timing of those changes, could have a significant impact on profit margins in Flexible Packaging Films. Profit margins in Aluminum Extrusions are sensitive to fluctuations in aluminum ingot and scrap prices as well as natural gas prices (natural gas is the principal energy source used to operate its casting furnaces). There is no assurance of the Company's ability to pass through higher raw material and energy costs to its customers.

See the *Executive Summary* and the *Results of Continuing Operations* sections for discussion regarding the impact of the lag in the pass-through of resin price changes.

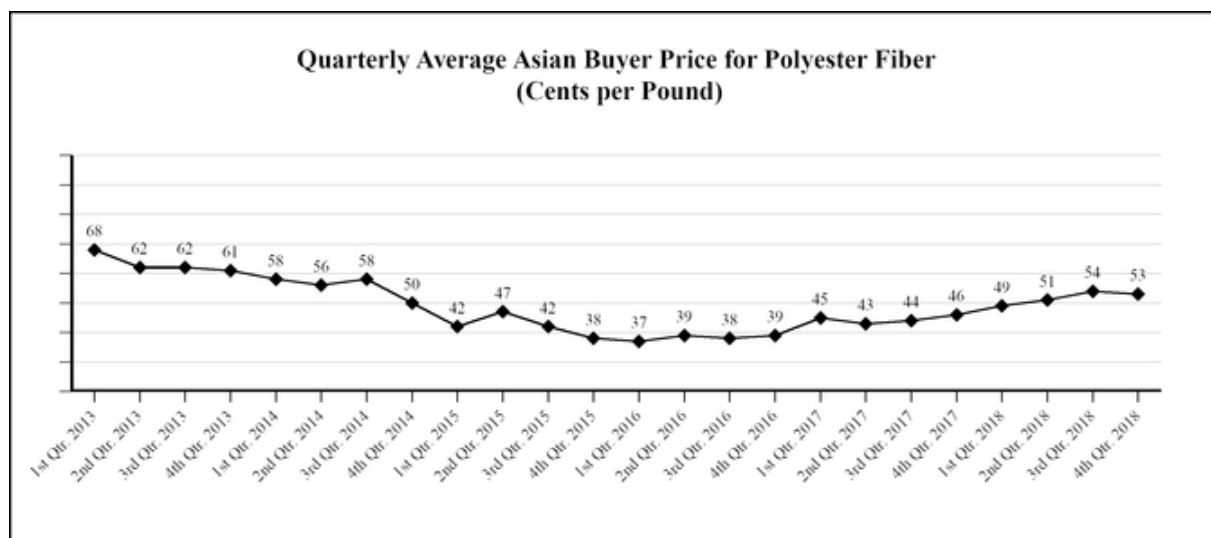
The volatility of average quarterly prices of low density polyethylene resin in the U.S. (a primary raw material for PE Films products) is shown in the chart below:



Source: Quarterly averages computed by Tredegar using monthly data provided by IHS, Inc. In January 2015, IHS reflected a 21 cents per pound non-market adjustment based on their estimate of the growth of discounts in prior periods. The 4th quarter 2014 average rate of \$1.09 per pound is shown on a pro forma basis as if the non-market adjustment was made in the fourth quarter of 2014.

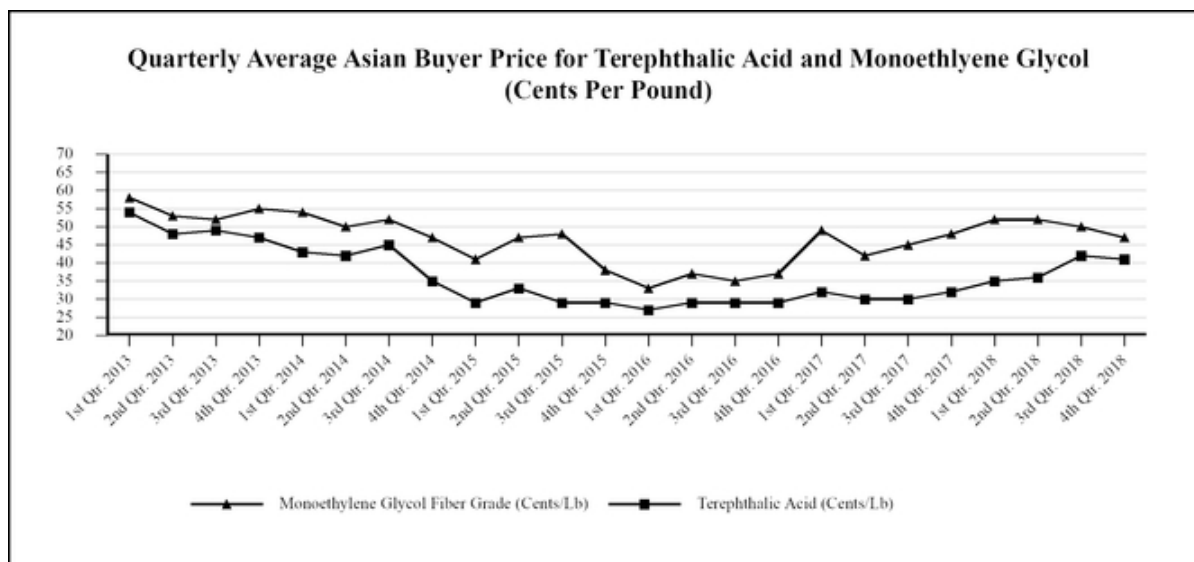
Polyethylene resin prices in Europe, Asia and South America have exhibited similar long-term trends. The price of resin is driven by several factors, including supply and demand and the price of oil, ethylene and natural gas. To address fluctuating resin prices, PE Films has index-based pass-through raw material cost agreements for the majority of its business. However, under certain agreements, changes in resin prices are not passed through for an average period of 90 days (see the *Executive Summary* and the *Results of Continuing Operations* sections for more information). Pricing on the remainder of the business is based upon raw material costs and supply/demand dynamics within the markets in which the Company operates.

Polyester resins, MEG and PTA used by Flexible Packaging Films in Brazil are primarily purchased domestically, with other sources available, mostly from Asia and the U.S. Given the nature of these products as commodities, pricing is derived from Asian pricing indexes. The volatility of the average quarterly prices for polyester fibers in Asia, which is representative of polyester resin (a primary raw material for polyester film products) prices, is shown in the chart below:



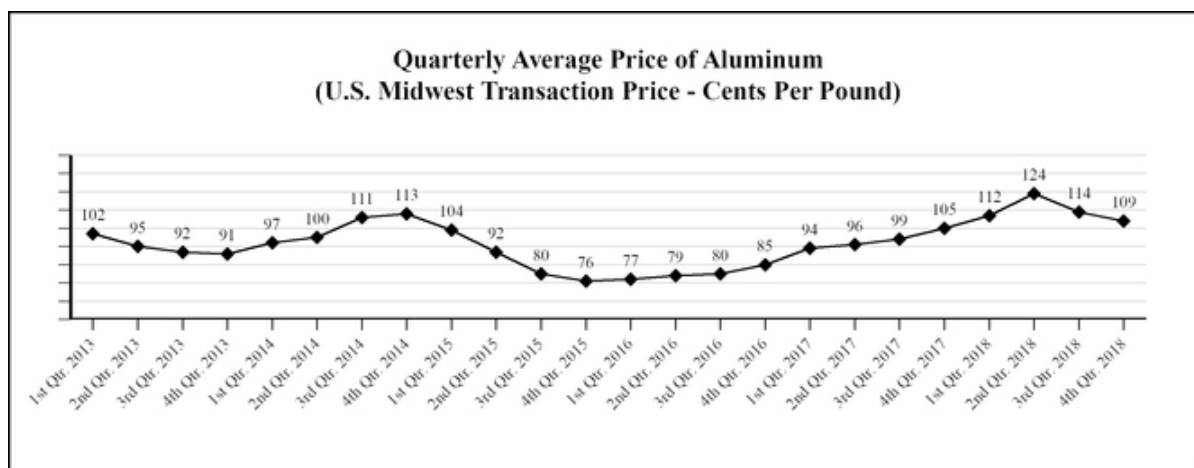
Source: Quarterly averages computed by Tredegar using monthly data from CMAI Global Index data.

The volatility of average quarterly prices of PTA and MEG in Asia (raw materials used in the production of polyester resins produced by Flexible Packaging Films) is shown in the chart below:



Source: Quarterly averages computed by Tredegar using monthly data from CMAI Global Index data.

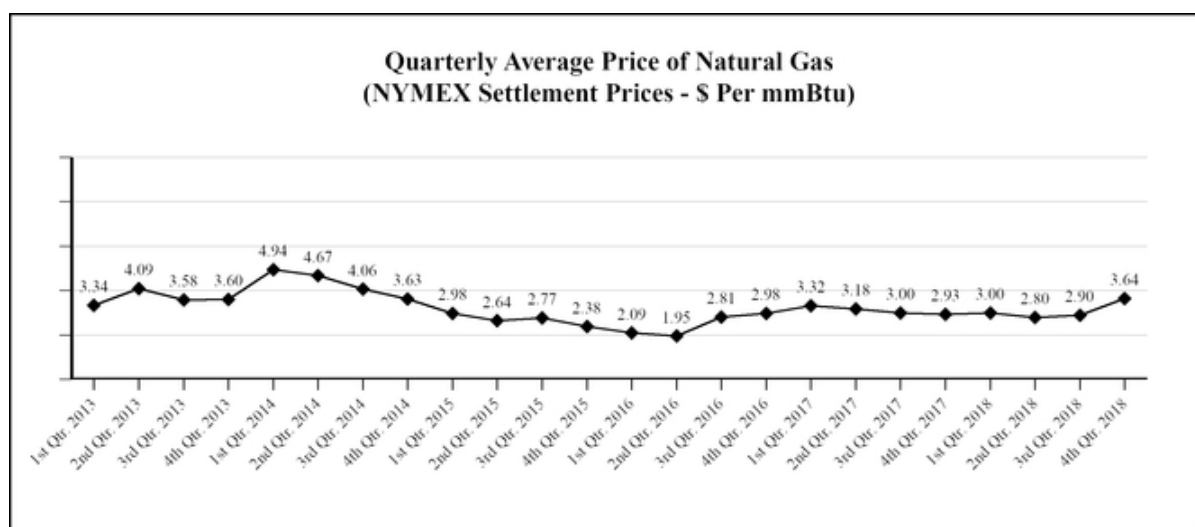
In the normal course of business, Aluminum Extrusions enters into fixed-price forward sales contracts with certain customers for the sale of fixed quantities of aluminum extrusions at scheduled intervals. In order to hedge its exposure to aluminum price volatility (see the chart below) under these fixed-price arrangements, which generally have a duration of not more than 12 months, the Company enters into a combination of forward purchase commitments and futures contracts to acquire or hedge aluminum, based on the scheduled deliveries. See Note 9 for more information. The volatility of quarterly average aluminum prices is shown in the chart below:



Source: Quarterly averages computed by Tredegar using daily Midwest average prices provided by Platts.

From time-to-time, Aluminum Extrusions hedges a portion of its exposure to natural gas price volatility by entering into fixed-price forward purchase contracts with its natural gas suppliers. The Company estimates that, in an unhedged situation, every \$1 per mmBtu per month change in the market price of natural gas has a \$102,000 impact on the continuing monthly operating profit for U.S. operations in Aluminum Extrusions. There is an energy surcharge for Aluminum Extrusions in the U.S. that is applied when the previous quarter's NYMEX natural gas average settlement price is in excess of \$8.85 per mmBtu.

The volatility of quarterly average natural gas prices is shown in the chart below:



Source: Quarterly averages computed by Tredegar using monthly NYMEX settlement prices.

Tredegar sells to customers in foreign markets through its foreign operations and through exports from U.S. plants. The percentage of sales and total assets for manufacturing operations related to foreign markets for 2018, 2017 and 2016 are as follows:

Tredegar Corporation—Continuing Operations
Percentage of Net Sales and Total Assets Related to Foreign Markets

	2018			2017			2016		
	% of Total Net Sales *		% Total Assets - Foreign Operations *	% of Total Net Sales *		% Total Assets - Foreign Operations *	% of Total Net Sales *		% Total Assets - Foreign Operations *
	Exports From U.S.	Foreign Operations		Exports From U.S.	Foreign Operations		Exports From U.S.	Foreign Operations	
Canada	5	—	—	5	—	—	6	—	—
Europe	1	8	6	1	9	6	1	10	6
Latin America**	1	10	8	2	9	7	—	11	21
Asia	7	1	4	9	2	5	9	3	6
Total % exposure to foreign markets	14	19	18	17	20	18	16	24	33

* The percentages for foreign markets are relative to Tredegar's consolidated net sales and total assets from continuing operations.

** In 2017, Flexible Packaging Films' recorded a charge for the impairment of assets in the amount of \$101 million. See *Terphane Asset Impairment Loss and Worthless Stock Deduction in Flexible Packaging Films* in the *Executive Summary* section for more details.

Tredegar attempts to match the pricing and cost of its products in the same currency and generally views the volatility of foreign currencies and emerging markets, and the corresponding impact on earnings and cash flow, as part of the overall risk of operating in a global environment (for additional information, see trends for the Euro, Brazilian Real and Chinese Yuan in the charts on the following page). Exports from the U.S. are generally denominated in U.S. Dollars. The Company's foreign currency exposure on income from continuing foreign operations relates to the Euro, the Chinese Yuan, the Hungarian Forint, the Brazilian Real and the Indian Rupee.

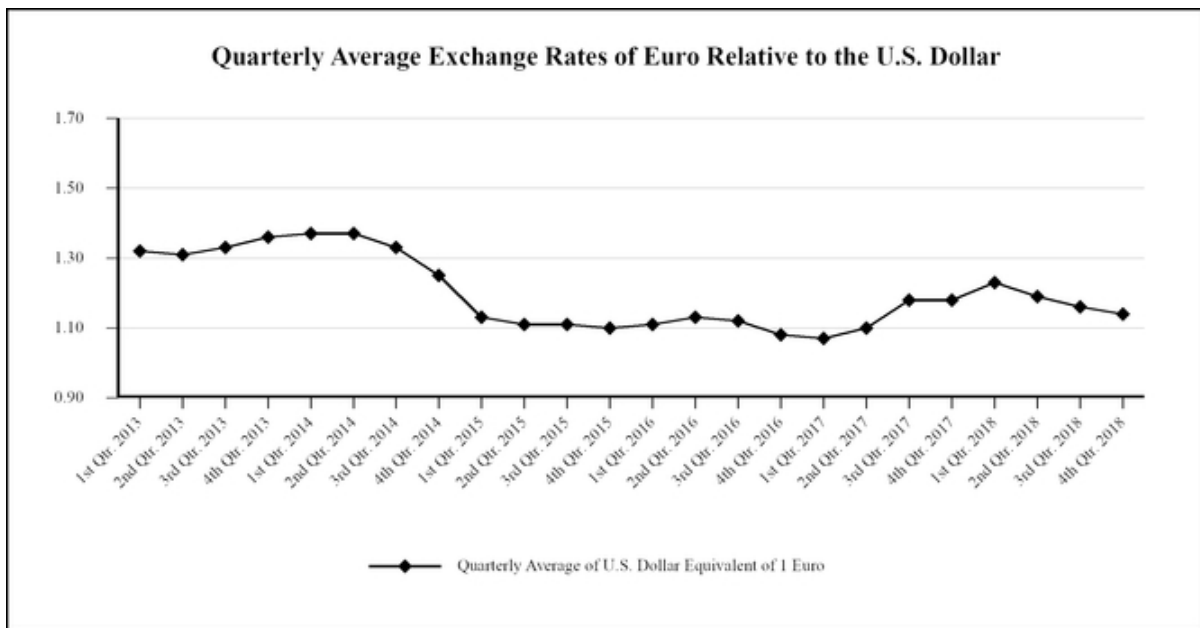
PE Films is generally able to match the currency of its sales and costs for its product lines. For flexible packaging films produced in Brazil, selling prices and key raw material costs are principally determined in U.S. Dollars and are impacted by local economic conditions. Competition in Brazil, Terphane's primary market, has been exacerbated by global overcapacity in the polyester industry generally, and by particularly acute overcapacity in Latin America. Additional PET capacity from a competitor in Latin America came on line in September 2017. These factors have resulted in significant competitive pricing

pressures and U.S. Dollar equivalent margin compression. Moreover, variable conversion, fixed conversion and sales, general and administrative costs for operations in Brazil have been adversely impacted by inflation in Brazil that is higher than in the U.S. Flexible Packaging Films is exposed to additional foreign exchange translation risk (its functional currency is the Brazilian Real) because almost 90% of Flexible Packaging Films business unit in Brazil, Terphane Limitada's ("Terphane Ltda.") sales are quoted or priced in U.S. Dollars, while a large majority of its Brazilian costs are quoted or priced in Brazilian Real. This mismatch, together with a variety of economic variables impacting currency exchange rates, causes volatility that could negatively or positively impact operating profit for Flexible Packaging Films.

The Company's earnings are exposed to foreign currency exchange risk primarily through the translation of the financial statements of subsidiaries that have a functional currency other than the U.S. Dollar. The Company estimates that the net mismatch translation exposure between Terphane Ltda.'s U.S. Dollar quoted or priced sales and underlying Brazilian Real quoted or priced operating costs (excluding depreciation and amortization) is annual net costs of R\$125 million. Terphane Ltda. has outstanding foreign exchange average forward rate contracts to purchase Brazilian Real and sell U.S. Dollars to hedge its exposure. See Note 8 for more information on outstanding hedging contracts and this hedging program.

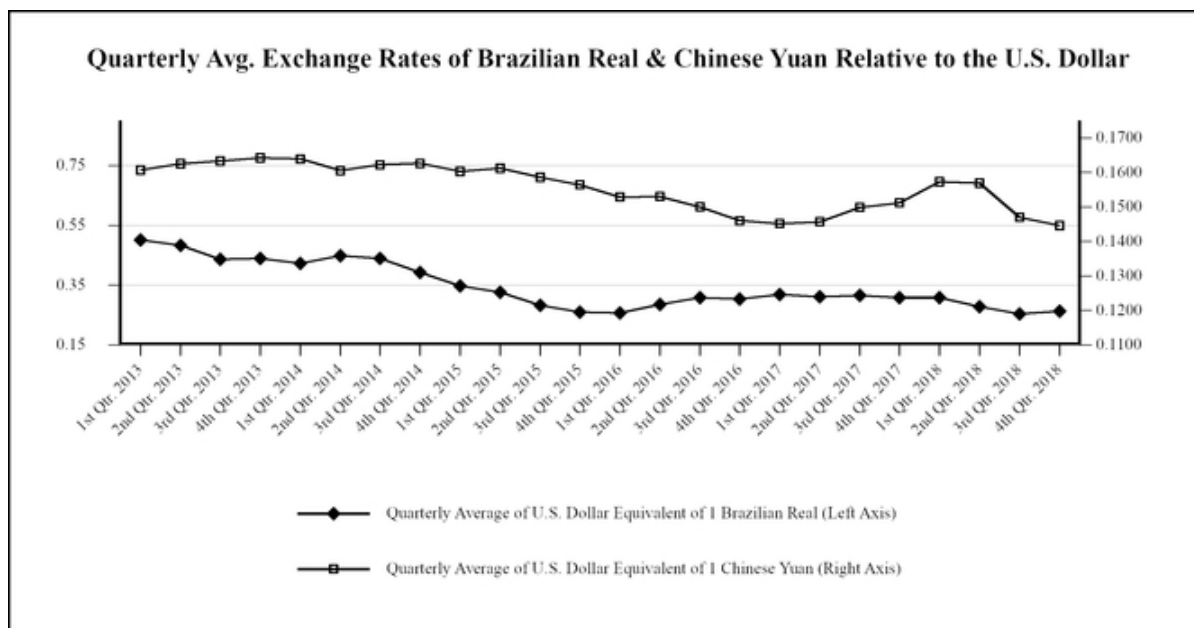
Tredegar estimates that the change in the value of foreign currencies relative to the U.S. Dollar on PE Films had a favorable impact on operating profit from ongoing operations in PE Films of \$0.8 million in 2018 compared to 2017 and an unfavorable impact on operating profit from ongoing operations of \$0.3 million in 2017 compared with 2016.

Trends for the Euro are shown in the chart below:



Source: Quarterly averages computed by Tredegar using daily closing data provided by Bloomberg.

Trends for the Brazilian Real and Chinese Yuan are shown in the chart below:



Source: Quarterly averages computed by Tredegar using daily closing data provided by Bloomberg.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

See discussion of *Quantitative and Qualitative Disclosures about Market Risk* in Management’s Discussion and Analysis of Financial Condition and Results of Operations.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

See the *Index to Financial Statements and Supplementary Data* for references to the report of the independent registered public accounting firm, the consolidated financial statements and selected quarterly financial data.

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

Item 9A. CONTROLS AND PROCEDURES

Update on Prior Period Disclosure Controls and Procedures and Internal Control Over Financial Reporting

On November 1, 2018, the Company filed a Current Report on Form 8-K (the “November Form 8-K”) to disclose that, on October 26, 2018, its former independent registered public accounting firm, PricewaterhouseCoopers LLP (“PwC”), and the Company concluded that the control deficiencies listed in the November Form 8-K constituted material weaknesses in the Company’s internal control over financial reporting. As a result of the material weaknesses disclosed therein, the November Form 8-K also indicated that Management’s Report on Internal Control Over Financial Reporting and the Evaluation of Disclosure Controls and Procedures included in Item 9A. “Controls and Procedures” of the Company’s Annual Report on Form 10-K for the fiscal year ended December 31, 2017 and PwC’s opinion relating to the effectiveness of the Company’s internal control over financial reporting as of December 31, 2017 should no longer be relied upon, and that the items pertaining to controls and procedures in certain previous filings should no longer be relied upon. Management determined that deficiencies in internal control over financial reporting, including those described in the November Form 8-K, were pervasive throughout

the Company's internal control over financial reporting. For further information on matters referred to in this paragraph, see the November Form 8-K and Item 4. "Controls and Procedures" of the Company's Quarterly Report on Form 10-Q for the quarterly period ended September 30, 2018.

The material weaknesses identified did not result in a material misstatement of the Company's financial statements for the year ended December 31, 2017 or any interim period during 2017.

Evaluation of Disclosure Controls and Procedures as of December 31, 2018

In connection with the preparation of this Form 10-K, pursuant to Rule 13a-15(b) under the Exchange Act, the Company carried out an evaluation, with the participation of its management, including its Chief Executive Officer (principal executive officer) and Chief Financial Officer (principal financial officer), of the effectiveness of disclosure controls and procedures (as defined under Rule 13a-15(e) or 15d-15(e) under the Exchange Act) as of December 31, 2018.

Based on this evaluation, the Company's Chief Executive Officer and Chief Financial Officer concluded that, because of the material weaknesses in internal control over financial reporting discussed below, the Company's disclosure controls and procedures were not effective as of December 31, 2018, to ensure: (i) that information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act, is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, and (ii) that such information is accumulated and communicated to management, including the Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management's Report on Internal Control Over Financial Reporting as of December 31, 2018

The Company's 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 Exchange Act. The Company's internal control over financial reporting is a process designed by or under the supervision of the Company's Chief Executive Officer and Chief Financial Officer, and overseen by the Board of Directors, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of published financial statements for external purposes in accordance with U.S. GAAP and includes policies and procedures that:

- Pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the Company's assets;
- Provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that the Company's receipts and expenditures are being made only in accordance with the authorization of its management and directors; and
- 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 consolidated financial statements.

Because of its inherent limitations, internal control over financial reporting is not intended to provide absolute assurance that a misstatement of the Company's consolidated financial statements would be prevented or detected. 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.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis.

Management conducted an evaluation of the effectiveness of the Company's internal control over financial reporting using the criteria in *Internal Control - Integrated Framework 2013* issued by the Committee of Sponsoring Organizations of the Treadway Commission (the "2013 COSO Framework"). As a result of this evaluation, management concluded that the Company's internal control over financial reporting was not effective as of December 31, 2018, because of the material weaknesses in internal control over financial reporting discussed below.

- **Control Environment:** The Company did not have a sufficient number of trained resources with assigned responsibility and accountability for the design, operation and documentation of internal control over financial reporting in accordance with the 2013 COSO Framework.

- **Risk Assessment:** The Company did not have an effective risk assessment process that defined clear financial reporting objectives and evaluated risks, including fraud risks, and risks resulting from changes in the external environment and business operations, at a sufficient level of detail to identify all relevant risks of material misstatement across the entity.
- **Information and Communication:** The Company did not have an effective information and communication process that identified and assessed the source of and controls necessary to ensure the reliability of information used in financial reporting and that communicates relevant information about roles and responsibilities for internal control over financial reporting.
- **Monitoring Activities:** The Company did not have effective monitoring activities to assess the operation of internal control over financial reporting, including the continued appropriateness of control design and level of documentation maintained to support control effectiveness.
- **Control Activities:** As a consequence of the material weaknesses described above, internal control deficiencies related to the design and operation of process-level controls and general information technology controls were determined to be pervasive throughout the Company's financial reporting processes.

While these material weaknesses did not result in material misstatements of the Company's financial statements as of and for the year ended December 31, 2018, these material weaknesses create a reasonable possibility that a material misstatement of account balances or disclosures in annual or interim consolidated financial statements may not be prevented or detected in a timely manner. Accordingly, the Company concluded that the deficiencies represent material weaknesses in its internal control over financial reporting and its internal control over financial reporting was not effective as of December 31, 2018.

The Company's independent registered public accounting firm, KPMG LLP, which audited the 2018 consolidated financial statements included in this Form 10-K, has expressed an adverse opinion on the operating effectiveness of the Company's internal control over financial reporting. KPMG LLP's report appears on pages 50-51 of this Form 10-K.

Remediation Plan

The Company's remediation efforts are ongoing and it will continue its initiatives to implement and document policies and procedures, and strengthen the Company's internal control environment. Remediation of the identified material weaknesses and strengthening the Company's internal control environment will require a substantial effort throughout 2019, and those efforts may extend beyond 2019. The Company will test the design, implementation and operating effectiveness of its internal control over financial reporting, including any new controls implemented and remediation of existing controls, in future periods. The material weaknesses cannot be considered completely remediated until the applicable controls have operated for a sufficient period of time and management has concluded, through testing, that these controls are operating effectively.

To remediate the material weaknesses described above, the Company plans to pursue the following remediation steps:

1. Perform a comprehensive financial risk assessment and internal control gap analysis to ensure that all relevant risks of material misstatement to the Company's financial statements are identified and that the Company's internal controls are sufficient to address those risks.
2. Review and update, as necessary, documentation of relevant processes, policies and procedures, and design of relevant controls, with respect to the Company's internal control over financial reporting. The Company intends to implement any necessary changes as a result of deficiencies identified in its relevant processes, policies and procedures as promptly as practical and to satisfy documentation requirements under Section 404 of the Sarbanes-Oxley Act.
3. Seek to ensure that the Company's internal control over financial reporting is properly designed, implemented, operating effectively, and appropriately documented by (i) enhancing the design of existing control activities and/or implementing additional control activities, as needed, (ii) monitoring the operating effectiveness of those controls, and (iii) ensuring that sufficient documentation exists to evidence the design, implementation, and operation of those controls.
4. Evaluate and enhance the Company's monitoring activities to ensure the components of internal control under the 2013 COSO Framework are present, functioning, and able to be appropriately evidenced.
5. Design, execute and monitor a plan, with appropriate executive sponsorship, and with the assistance of outside consultants, to enhance the Company's internal control over financial reporting and accomplish the goals of the remediation plan as set forth above.

6. Continue to seek, train and retain individuals that have the appropriate skills and experience related to designing, operating and documenting internal controls.

The Company has hired an internationally recognized accounting firm as its outside consultant, to assist in achieving the objectives described above. The Company believes that its remediation plan will be sufficient to remediate the identified material weaknesses and strengthen its internal control over financial reporting. As the Company continues to evaluate, and works to improve, its internal control over financial reporting, management may determine that additional measures to address control deficiencies or modifications to the remediation plan are necessary. The Company cannot assure you, however, when it will remediate such weaknesses, nor can it be certain whether additional actions will be required or the costs of any such actions. Moreover, the Company cannot assure you that additional material weaknesses will not arise in the future.

Changes in Internal Control Over Financial Reporting

The Company is in the process of implementing certain changes in its internal controls to remediate the material weaknesses described above. The implementation of the material aspects of this plan will begin in the second quarter of 2019. Except for the identification of the material weaknesses described above, which originated in prior periods, there has been no change in the Company's internal control over financial reporting during the quarter ended December 31, 2018, that has materially affected, or is reasonably likely to materially affect, its internal control over financial reporting.

Item 9B. OTHER INFORMATION

None.

PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information concerning directors and persons nominated to become directors of Tredegar to be included in the Proxy Statement under the headings “Proposal 1: Election of Directors” and “Tredegar’s Board of Directors” is incorporated herein by reference.

The information concerning corporate governance to be included in the Proxy Statement under the headings “Board Meetings, Meetings of Non-Management Directors and the Board Committees” and “Corporate Governance” is incorporated herein by reference.

The information to be included in the Proxy Statement under the heading “Section 16(a) Beneficial Ownership Reporting Compliance” is incorporated herein by reference.

Set forth below are the names, ages and titles of the Company’s executive officers:

<u>Name</u>	<u>Age</u>	<u>Title</u>
John D. Gottwald	64	President and Chief Executive Officer
D. Andrew Edwards	60	Vice President and Chief Financial Officer
Michael J. Schewel	65	Vice President, General Counsel and Corporate Secretary

John D. Gottwald. Mr. Gottwald was elected President and Chief Executive Officer on August 18, 2015. From June 26, 2015 until August 17, 2015, he served as interim President and Chief Executive Officer. He previously served as the Company’s President and Chief Executive Officer from March 1, 2006 until January 31, 2010, and as the Company’s Chairman of the Board from September 2001 until February 2008. Mr. Gottwald also served as the Company’s President and Chief Executive Officer from July 1989 until September 2001.

D. Andrew Edwards. Mr. Edwards was elected Vice President and Chief Financial Officer effective July 20, 2015. He previously served as the Chief Financial Officer of United Sporting Companies, Inc., a wholesale distributor of outdoor sporting goods, from February 2013 until July 2015 and as Vice President, Controller and Chief Accounting Officer of Owens & Minor, Inc., a distributor of acute medical products, from April 2010 to February 2013 and as Acting Chief Financial Officer of Owens & Minor, Inc. from March 2012 to February 2013. Mr. Edwards also served as Vice President, Finance, of Owens & Minor, Inc. from December 2009 until April 2010. Mr. Edwards previously served as the Company’s Vice President, Chief Financial Officer and Treasurer from August 2003 to December 2009 and as the Company’s Vice President, Finance from November 1998 to August 2003. Mr. Edwards also served as the Company’s Treasurer from May 1997 to December 2009 and as the Company’s Controller from October 1992 until July 2000.

Michael J. Schewel. Mr. Schewel was elected Vice President, General Counsel and Corporate Secretary effective May 9, 2016. He was previously a partner with the law firm of McGuire Woods, LLP from 1986 until May 2016, except for four years from 2002 until 2006 when he served as Secretary of Commerce and Trade for the Commonwealth of Virginia.

On February 28, 2019, the Company announced that John D. Gottwald was retiring as its president and chief executive officer effective immediately after the filing of this Annual Report on Form 10-K. He will continue to be a member of Tredegar’s board of directors. Tredegar’s board of directors elected John M. Steitz to succeed Mr. Gottwald as president and chief executive officer effective upon Mr. Gottwald’s retirement. Mr. Steitz has been a director of Tredegar since 2017.

Tredegar has adopted a Code of Conduct that applies to all of its directors, officers and employees (including its chief executive officer, chief financial officer and principal accounting officer) and has posted the Code of Conduct on its website. All amendments to or waivers from any provision of the Company’s Code of Conduct applicable to the chief executive officer, chief financial officer and principal accounting officer will be disclosed on the Company’s website. The Company’s internet address is www.tredegar.com.

Item 11. EXECUTIVE COMPENSATION

The information to be included in the Proxy Statement under the headings “Compensation of Directors,” “Board Meetings, Meetings of Non-Management Directors and Board Committees—Executive Compensation Committee Interlocks and Insider Participation,” “Compensation Discussion and Analysis,” “Executive Compensation Committee Report” and “Compensation of Executive Officers” is incorporated herein by reference.

Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information to be included in the Proxy Statement under the heading “Stock Ownership” is incorporated herein by reference. The following table summarizes information with respect to equity compensation plans under which securities are authorized for issuance as of December 31, 2018.

Plan Category	Column (a) Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights*	Column (b) Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	Column (c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans, Excluding Securities Reflected in Column (a)
Equity compensation plans approved by security holders	1,319,561	\$ 19.69	1,548,917
Equity compensation plans not approved by security holders	—	—	—
Total	1,319,561	\$ 19.69	1,548,917

* Includes performance stock units that give the holder the right to receive shares of Tredgar common stock upon the satisfaction of certain performance criteria.

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

The information to be included in the Proxy Statement under the headings “Certain Relationships and Related Transactions”, “Tredgar’s Board of Directors” and “Board Meetings, Meetings of Non-Management Directors and Board Committees” is incorporated herein by reference.

Item 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The following is incorporated herein by reference:

- Information on accounting fees and services to be included in the Proxy Statement under the heading “Audit and Non-Audit Fees;” and
- Information on the Audit Committee’s procedures for pre-approving certain audit and non-audit services to be included in the Proxy Statement under the heading “Board Meetings, Meetings of Non-Management Directors and Board Committees—Audit Committee Matters.”

PART IV

Item 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) List of documents filed as a part of the report:

(1) Financial statements:

Tredegar Corporation
Index to Financial Statements and Supplementary Data

	Page
Auditors' Opinions:	
Reports of Independent Registered Public Accounting Firm - KPMG LLP	49
Report of Independent Registered Public Accounting Firm - PricewaterhouseCoopers LLP	52
Financial Statements:	
Consolidated Balance Sheets as of December 31, 2018 and 2017	53
Consolidated Statements of Income for the Years Ended December 31, 2018, 2017 and 2016	54
Consolidated Statements of Comprehensive Income (Loss) for the Years Ended December 31, 2018, 2017 and 2016	55
Consolidated Statements of Cash Flows for the Years Ended December 31, 2018, 2017 and 2016	56
Consolidated Statements of Shareholders' Equity for the Years Ended December 31, 2018, 2017 and 2016	57
Notes to Financial Statements	58-98

(2) Financial statement schedules:

None

(3) Exhibits:

See Exhibit Index on pages: 99-101

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Tredegar Corporation:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheet of Tredegar Corporation and subsidiaries (the Company) as of December 31, 2018, the related consolidated statements of income, comprehensive income (loss), cash flows, and shareholders' equity for the year ended December 31, 2018, and the related notes (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, 2018, and the results of its operations and its cash flows for the year ended December 31, 2018, 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, 2018, 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 March 18, 2019 expressed an adverse opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company has changed its method of accounting for revenue in 2018 due to the adoption of Financial Accounting Standards Board Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers*.

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 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 the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audit 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 audit 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 audit provides a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company's auditor since 2018.

Richmond, Virginia
March 18, 2019

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Tredegar Corporation:

Opinion on Internal Control Over Financial Reporting

We have audited Tredegar Corporation and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2018, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, because of the effect of the material weaknesses, described below, on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of December 31, 2018, 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 sheet of the Company as of December 31, 2018, the related consolidated statements of income, comprehensive income (loss), cash flows, and shareholders' equity for the year ended December 31, 2018, and the related notes (collectively, the consolidated financial statements), and our report dated March 18, 2019 expressed an unqualified opinion on those consolidated financial statements.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. Material weaknesses related to an ineffective control environment resulting from an insufficient number of trained resources, ineffective risk assessment, ineffective information and communication, and ineffective monitoring activities resulting in ineffective control activities related to the design and operation of process-level controls and general information technology controls across all financial reporting processes have been identified and included in management's assessment. The material weaknesses were considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2018 consolidated financial statements, and this report does not affect our report 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 as of December 31, 2018*. 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

Richmond, Virginia
March 18, 2019

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Tredegar Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheet of Tredegar Corporation and its subsidiaries (the “Company”) as of December 31, 2017, and the related consolidated statements of income, of comprehensive income (loss), of shareholders’ equity, and of cash flows for each of the two years in the period ended December 31, 2017, including the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2017, and the results of its operations and its cash flows for each of the two years in the period ended December 31, 2017 in conformity with accounting principles generally accepted in the United States of America.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for pension and postretirement benefits in 2018.

Basis for Opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's consolidated financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 of these consolidated financial statements in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP

Richmond, Virginia

February 21, 2018, except for the change in the manner in which the Company accounts for pension and postretirement benefits discussed in Note 1 to the consolidated financial statements, as to which the date is March 18, 2019

We served as the Company's auditor from 1989 to 2018.

CONSOLIDATED BALANCE SHEETS
Tredegar Corporation and Subsidiaries

December 31	2018	2017
(In thousands, except share data)		
Assets		
Current assets:		
Cash and cash equivalents	\$ 34,397	\$ 36,491
Accounts and other receivables, net of allowance for doubtful accounts and sales returns of \$2,937 in 2018 and \$3,304 in 2017	124,727	120,135
Income taxes recoverable	6,783	32,080
Inventories	93,810	86,907
Prepaid expenses and other	9,564	8,224
Total current assets	269,281	283,837
Property, plant and equipment, at cost:		
Land and land improvements	8,772	8,723
Buildings	101,332	101,271
Machinery and equipment	682,968	660,898
Total property, plant and equipment	793,072	770,892
Less accumulated depreciation	(564,703)	(547,801)
Net property, plant and equipment	228,369	223,091
Investment in kaléo (cost basis of \$7,500)	84,600	54,000
Identifiable intangible assets, net	36,295	40,552
Goodwill	81,404	128,208
Deferred income tax assets	3,412	16,636
Other assets	4,012	9,419
Total assets	\$ 707,373	\$ 755,743
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable	\$ 112,758	\$ 108,391
Accrued expenses	42,495	42,433
Total current liabilities	155,253	150,824
Long-term debt	101,500	152,000
Pension and other postretirement benefit obligations, net	88,124	98,837
Deferred income tax liabilities	—	2,123
Other noncurrent liabilities	7,639	8,179
Total liabilities	352,516	411,963
Commitments and contingencies (Notes 15 and 18)		
Shareholders' equity:		
Common stock (no par value):		
Authorized 150,000,000 shares;		
Issued and outstanding—33,176,024 shares in 2018 and 33,017,422 in 2017 (including restricted stock)	38,892	34,747
Common stock held in trust for savings restoration plan (72,883 shares in 2018 and 71,309 in 2017)	(1,559)	(1,528)
Accumulated other comprehensive income (loss):		
Foreign currency translation adjustment	(96,940)	(86,178)
Gain (loss) on derivative financial instruments	(1,601)	459
Pension and other postretirement benefit adjustments	(81,446)	(90,950)
Retained earnings	497,511	487,230
Total shareholders' equity	354,857	343,780
Total liabilities and shareholders' equity	\$ 707,373	\$ 755,743

See accompanying notes to financial statements.

CONSOLIDATED STATEMENTS OF INCOME

Tredegar Corporation and Subsidiaries

Years Ended December 31	2018	2017	2016
(In thousands, except per-share data)			
Revenues and other:			
Sales	\$ 1,065,471	\$ 961,330	\$ 828,341
Other income (expense), net	30,459	51,713	2,381
	1,095,930	1,013,043	830,722
Costs and expenses:			
Cost of goods sold	849,756	767,550	659,867
Freight	36,027	33,683	29,069
Selling, general and administrative	85,283	83,386	73,466
Research and development	18,707	18,287	19,122
Amortization of identifiable intangibles	3,976	6,198	3,978
Pension and postretirement benefits	10,406	10,193	11,047
Interest expense	5,702	6,170	3,806
Asset impairments and costs associated with exit and disposal activities	2,913	102,488	2,684
Goodwill impairment charge	46,792	—	—
Total	1,059,562	1,027,955	803,039
Income (loss) before income taxes	36,368	(14,912)	27,683
Income tax expense (benefit)	11,526	(53,163)	3,217
Net income	\$ 24,842	\$ 38,251	\$ 24,466
Earnings per share:			
Basic	\$ 0.75	\$ 1.16	\$ 0.75
Diluted	\$ 0.75	\$ 1.16	\$ 0.75

See accompanying notes to financial statements.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)

Tredegar Corporation and Subsidiaries

Years Ended December 31	2018	2017	2016
(In thousands, except per-share data)			
Net income	\$ 24,842	\$ 38,251	\$ 24,466
Other comprehensive income (loss):			
Unrealized foreign currency translation adjustment (net of tax of \$281 in 2018, tax benefit of \$371 in 2017 and tax benefit of \$729 in 2016)	(10,762)	7,792	18,837
Derivative financial instruments adjustment (net of tax benefit of \$503 in 2018, net of tax of \$111 in 2017 and tax of \$727 in 2016)	(2,060)	(404)	1,236
Pension & other postretirement benefit adjustments:			
Net gains (losses) and prior service costs (net of tax benefit of \$319 in 2018, tax benefit of \$2,518 in 2017 and tax benefit of \$1,874 in 2016)	(1,118)	(8,634)	(3,288)
Amortization of prior service costs and net gains or losses (net of tax of \$3,028 in 2018, tax of \$4,234 in 2017 and tax of \$4,398 in 2016)	10,622	7,811	8,700
Other comprehensive income (loss)	(3,318)	6,565	25,485
Comprehensive income (loss)	\$ 21,524	\$ 44,816	\$ 49,951

See accompanying notes to financial statements.

CONSOLIDATED STATEMENTS OF CASH FLOWS

Tredegar Corporation and Subsidiaries

Years Ended December 31	2018	2017	2016
(In thousands)			
Cash flows from operating activities:			
Net income	\$ 24,842	\$ 38,251	\$ 24,466
Adjustments for noncash items:			
Depreciation	29,828	34,079	28,494
Amortization of identifiable intangibles	3,976	6,198	3,978
Goodwill impairment charge	46,792	—	—
Deferred income taxes	8,626	(36,414)	(3,689)
Accrued pension and postretirement benefits	10,406	10,193	11,047
(Gain) loss on investment in kaléo accounted for under the fair value method	(30,600)	(33,800)	(1,600)
Loss on asset impairments	223	101,282	1,436
(Gain) loss on sale of assets	(46)	553	(220)
Gain from insurance recoveries	—	(5,261)	(1,634)
Changes in assets and liabilities:			
Accounts and other receivables	(11,883)	(10,566)	92
Inventories	(9,577)	(9,128)	1,127
Income taxes recoverable/payable	25,018	(24,449)	(7,061)
Prepaid expenses and other	(1,924)	(784)	(1,914)
Accounts payable and accrued expenses	5,571	21,123	161
Pension and postretirement benefit plan contributions	(8,907)	(5,829)	(8,061)
Other, net	5,449	2,767	2,250
Net cash provided by operating activities	97,794	88,215	48,872
Cash flows from investing activities:			
Capital expenditures	(40,814)	(44,362)	(45,457)
Acquisitions, net of cash acquired	—	(87,110)	—
Return of escrowed funds relating to acquisition earn-out	4,250	—	—
Net proceeds from the sale of investment property	1,384	—	—
Insurance proceeds from cast house explosion	—	5,739	1,156
Proceeds from the sale of assets and other	1,098	129	2,308
Net cash used in investing activities	(34,082)	(125,604)	(41,993)
Cash flows from financing activities:			
Borrowings	76,750	190,750	96,750
Debt principal payments	(127,250)	(133,750)	(105,750)
Dividends paid	(14,592)	(14,532)	(14,456)
Debt financing costs	—	—	(2,606)
Proceeds from exercise of stock options and other	1,004	695	2,313
Net cash provided by (used in) financing activities:	(64,088)	43,163	(23,749)
Effect of exchange rate changes on cash	(1,718)	1,206	2,225
Increase (decrease) in cash and cash equivalents	(2,094)	6,980	(14,645)
Cash and cash equivalents at beginning of period	36,491	29,511	44,156
Cash and cash equivalents at end of period	\$ 34,397	\$ 36,491	\$ 29,511
Supplemental cash flow information:			
Interest payments	\$ 5,421	\$ 5,808	\$ 3,074
Income tax payments (refunds), net	\$ (24,020)	\$ 9,193	\$ 15,406

See accompanying notes to financial statements.

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

Tredegar Corporation and Subsidiaries

(In thousands, except share and per-share data)	Common Stock		Retained Earnings	Trust for Savings Restoration Plan	Accumulated Other Comprehensive Income (Loss)			Total Shareholders' Equity
	Shares	Amount			Foreign Currency Translation	Gain (Loss) on Derivative Financial Instruments	Pension & Other Post-retirement Benefit Adjust.	
Balance at January 1, 2016	32,682,162	\$ 29,467	\$ 453,467	\$ (1,467)	\$ (112,807)	\$ (373)	\$ (95,539)	\$ 272,748
Net loss	—	—	24,466	—	—	—	—	24,466
Foreign currency translation adjustment (net of tax benefit of \$729)	—	—	—	—	18,837	—	—	18,837
Derivative financial instruments adjustment (net of tax of \$727)	—	—	—	—	—	1,236	—	1,236
Net gains or losses and prior service costs (net of tax benefit of \$1,874)	—	—	—	—	—	—	(3,288)	(3,288)
Amortization of prior service costs and net gains or losses (net of tax of \$4,398)	—	—	—	—	—	—	8,700	8,700
Cash dividends declared (\$0.44 per share)	—	—	(14,456)	—	—	—	—	(14,456)
Stock-based compensation expense	127,169	1,461	—	—	—	—	—	1,461
Issued upon exercise of stock options (including related income tax of \$1,109) & other	124,476	1,079	—	—	—	—	—	1,079
Tredegar common stock purchased by trust for savings restoration plan	—	—	30	(30)	—	—	—	—
Balance at December 31, 2016	32,933,807	32,007	463,507	(1,497)	(93,970)	863	(90,127)	310,783
Net income	—	—	38,251	—	—	—	—	38,251
Foreign currency translation adjustment (net of tax benefit of \$371)	—	—	—	—	7,792	—	—	7,792
Derivative financial instruments adjustment (net of tax of \$111)	—	—	—	—	—	(404)	—	(404)
Net gains or losses and prior service costs (net of tax benefit of \$2,518)	—	—	—	—	—	—	(8,634)	(8,634)
Amortization of prior service costs and net gains or losses (net of tax of \$4,234)	—	—	—	—	—	—	7,811	7,811
Cash dividends declared (\$0.44 per share)	—	—	(14,532)	—	—	—	—	(14,532)
Stock-based compensation expense	49,475	2,018	—	—	—	—	—	2,018
Issued upon exercise of stock options & other	34,140	695	—	—	—	—	—	695
Cumulative effect adjustment for adoption of stock-based compensation accounting guidance	—	27	(27)	—	—	—	—	—
Tredegar common stock purchased by trust for savings restoration plan	—	—	31	(31)	—	—	—	—
Balance at December 31, 2017	33,017,422	34,747	487,230	(1,528)	(86,178)	459	(90,950)	343,780
Net income	—	—	24,842	—	—	—	—	24,842
Foreign currency translation adjustment (net of tax of \$281)	—	—	—	—	(10,762)	—	—	(10,762)
Derivative financial instruments adjustment (net of tax benefit of \$503)	—	—	—	—	—	(2,060)	—	(2,060)
Net gains or losses and prior service costs (net of tax benefit of \$319)	—	—	—	—	—	—	(1,118)	(1,118)
Amortization of prior service costs and net gains or losses (net of tax of \$3,028)	—	—	—	—	—	—	10,622	10,622
Cash dividends declared (\$0.44 per share)	—	—	(14,592)	—	—	—	—	(14,592)
Stock-based compensation expense	102,762	3,141	—	—	—	—	—	3,141
Issued upon exercise of stock options & other	55,840	1,004	—	—	—	—	—	1,004
Tredegar common stock purchased by trust for savings restoration plan	—	—	31	(31)	—	—	—	—
Balance at December 31, 2018	33,176,024	\$ 38,892	\$ 497,511	\$ (1,559)	\$ (96,940)	\$ (1,601)	\$ (81,446)	\$ 354,857

See accompanying notes to financial statements.

NOTES TO FINANCIAL STATEMENTS

Tredegar Corporation and Subsidiaries

1 SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Organization and Nature of Operations. Tredegar Corporation and subsidiaries (collectively “Tredegar,” “the Company,” “we,” “us” or “our”) are primarily engaged in the manufacture of polyethylene films, polyester films and aluminum extrusions, which are reported for business segment purposes under PE Films, Flexible Packaging Films (also referred to as Terphane) and Aluminum Extrusions (also referred to as Bonnell Aluminum), respectively. More information on the Company’s business segments is provided in Note 5. See Notes 10 and 17 regarding restructurings.

Basis of Presentation. The consolidated financial statements include the accounts and operations of Tredegar and all of its majority-owned subsidiaries. Intercompany accounts and transactions have been eliminated in consolidation.

The preparation of financial statements in conformity with United States (“U.S.”) generally accepted accounting principles (“GAAP”) requires Tredegar to make estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements. Actual results could differ from those estimates.

Certain amounts for the prior years have been reclassified to conform to current year presentation. For the years ended December 31, 2017 and 2016, the pension and postretirement benefit expenses recorded in Cost of goods sold and Selling, general and administrative have been reclassified to a new line item, Pension and postretirement benefits, on the consolidated statements of income, due to the retrospective adoption of ASU 2017-07.

Fiscal Year End. The Company operates on a calendar fiscal year except the Aluminum Extrusions segment, which operates on a 52/53-week fiscal year basis. References to Aluminum Extrusions for 2018, 2017 and 2016 relate to the 53-week fiscal year ended December 30, 2018 and the 52-week fiscal years ended December 24, 2017 and December 26, 2016, respectively. The Company does not believe the impact of reporting the results of this segment as stated above is material to the consolidated financial results.

Foreign Currency Translation. The financial statements of subsidiaries located outside the U.S., where the local currency is the functional currency, are translated into U.S. Dollars using exchange rates in effect at the period end for assets and liabilities and average exchange rates during each reporting period for results of operations. Adjustments resulting from the translation of these financial statements are reflected as a separate component of shareholders’ equity. There are no operating subsidiaries located outside the U.S. where the U.S. Dollar is the functional currency.

Transaction and remeasurement gains or losses included in income were losses of \$0.5 million, \$0.8 million and \$3.6 million in 2018, 2017 and 2016, respectively. These amounts do not include the effects between reporting periods that exchange rate changes have on income of the locations outside the U.S. that result from translation into U.S. Dollars.

Cash and Cash Equivalents. Cash and cash equivalents consist of cash on hand in excess of daily operating requirements and highly liquid investments with original maturities of three months or less. At December 31, 2018 and 2017, Tredegar had cash and cash equivalents of \$34.4 million and \$36.5 million, respectively, including funds held in locations outside the U.S. of \$31.1 million and \$32.7 million, respectively.

The Company’s policy permits investment of excess cash in marketable securities that have the highest credit ratings and maturities of less than one year. The primary objectives of the policy are safety of principal and liquidity.

Accounts and Other Receivables. Accounts receivable are stated at the amount invoiced to customers less allowances for doubtful accounts and sales returns. Accounts receivable are non-interest bearing and arise from the sale of product to customers under typical industry trade terms. Notes receivable are not significant. Past due amounts are determined based on established terms and charged-off when deemed uncollectible. The allowance for doubtful accounts is determined based on an assessment of probable losses taking into account past due amounts, customer credit profile, historical experience and current economic conditions. Other receivables include value-added taxes related to certain foreign subsidiaries and other miscellaneous receivables due within one year. For certain customers, the Company has arrangements in place with financial institutions whereby certain customer receivables are sold to the financial institution at a discount and without recourse. Upon sale, the associated receivable is derecognized and the discount is recognized.

Inventories. Inventories are stated at the lower of cost or market, with cost determined using the last-in, first-out (“LIFO”), the weighted average cost or the first-in, first-out method. Cost elements included in work-in-process and finished goods inventories are raw materials, direct labor and manufacturing overhead. Finished goods, work-in-process, raw materials and

supplies, stores and other inventory are reviewed to determine if inventory quantities are in excess of forecasted usage or if they have become obsolete.

Property, Plant and Equipment. Accounts include costs of assets constructed or purchased, related delivery and installation costs and interest incurred on significant capital projects during their construction periods. Expenditures for renewals and betterments also are capitalized, but expenditures for repairs and maintenance are expensed as incurred. The cost and accumulated depreciation applicable to assets retired or sold are removed from the respective accounts, and gains or losses thereon are included in income.

Capital expenditures for property, plant and equipment include capitalized interest. Capitalized interest included in capital expenditures for property, plant and equipment was \$0.3 million, \$0.4 million and \$0.3 million in 2018, 2017 and 2016, respectively.

Depreciation is computed primarily by the straight-line method based on the estimated useful lives of the assets that, except for isolated exceptions, range from 5 to 40 years for buildings and land improvements and 2 to 20 years for machinery and equipment.

Investments in Private Entities with Less Than or Equal to 50% Voting Ownership Interest. The Company accounts for its investments in private entities where its voting ownership is less than or equal to 50% based on the facts and circumstances surrounding the investment.

For those investments measured at fair value, GAAP requires disclosure of the level within the fair value hierarchy in which fair value measurements in their entirety fall, segregating fair value measurements using quoted prices in active markets for identical assets or liabilities (Level 1), significant other observable inputs (Level 2), and significant unobservable inputs (Level 3).

Goodwill and Identifiable Intangibles. The excess of the purchase price over the fair value of identifiable net assets of acquired companies is allocated to goodwill. The Company assesses goodwill for impairment when events or circumstances indicate that the carrying value may not be recoverable or, at a minimum, on an annual basis (December 1st of each year). When assessing goodwill for impairment, accounting guidance allows the Company to first perform a qualitative assessment about the likelihood of the carrying value of a reporting unit exceeding its fair value, referred to as the "Step 0" assessment. The Step 0 assessment requires the evaluation of certain qualitative factors, including macroeconomic conditions, industry and market considerations, cost factors and overall financial performance, as well as company and reporting unit factors. If the Company's Step 0 analysis indicates that it is more likely than not that the fair value of a reporting unit is less than the carrying amount, then the Company would perform a quantitative impairment test.

The Company's significant operating units in PE Films include Personal Care and Surface Protection. There are three operating units in Aluminum Extrusions: Bonnell Aluminum, AACOA and Futura. Each of these reporting units has separately identifiable operating net assets (operating assets including goodwill and identifiable intangible assets net of operating liabilities).

The Company recorded a goodwill impairment charge of \$46.8 million (\$38.2 million after taxes) to write off the goodwill associated with the Personal Care reporting unit of PE Films in the third quarter of 2018. See Note 8 for additional details.

The Company estimates the fair value of its reporting units using discounted cash flow analysis and comparative enterprise value-to-EBITDA (earnings before interest, taxes, depreciation and amortization) multiples. Goodwill of Aluminum Extrusions operating unit, Futura, in the amount of \$10.4 million was tested for impairment at the annual testing date, with the estimated fair value of this reporting unit exceeding the carrying value of its net assets at December 1, 2018. The Surface Protection reporting unit of PE Films and the AACOA, Inc. ("AACOA") reporting unit of Aluminum Extrusions had goodwill in the amounts of \$57.3 million and \$13.7 million, respectively, at December 1, 2018. The goodwill in Aluminum Extrusions is associated with the October 2012 acquisition of AACOA and the February 2017 acquisition of Futura Industries Corporation ("Futura").

As of December 31, 2018, the Company applied the Step 0 assessment to Surface Protection and AACOA, which both had fair values significantly in excess of their carrying amounts when tested in 2017. The Company's Step 0 analysis in 2018 of the reporting units concluded that it is not more likely than not that the fair values of the reporting units are less than their carrying amounts. Therefore, the quantitative goodwill impairment test for these reporting units was not necessary in 2018.

Indefinite-lived identifiable intangible assets are assessed for impairment when events or circumstances indicate that the carrying value may not be recoverable. The Company estimates the fair value of its trade names using a relief-from-royalty method that relies upon a corresponding discounted cash flow analysis.

For AACOA and Futura, the indefinite-lived identifiable intangible assets for each were assessed for indicators of impairment at the annual testing date. No indicators of impairment were identified.

Based on a valuation analysis conducted in the fourth quarter of 2017, Terphane recorded an impairment of its assets. Indefinite-lived trade names for Terphane were written down by \$4.0 million to \$2.4 million and were assigned estimated useful lives of 5 to 13 years. Also, Terphane recorded a reduction of the carrying value of definite-lived identifiable intangible assets in the amount of \$14.0 million.

Additional disclosure of Tredegar goodwill and identifiable intangible assets and the impairments recorded in 2017 are included in Note 8.

Impairment of Long-Lived Assets. The Company reviews long-lived assets for possible impairment when events indicate that an impairment may exist. For assets that are held and used in operations, if events indicate that an asset may be impaired, the Company estimates the future unlevered pre-tax cash flows expected to result from the use of the asset and its eventual disposition. Assets are grouped for this purpose at the lowest level for which there are identifiable and independent cash flows. If the sum of these undiscounted pre-tax cash flows is less than the carrying amount of the asset group, an impairment loss is calculated. Measurement of the impairment loss is the amount by which the carrying amount exceeds the estimated fair value of the asset group.

During the fourth quarter of 2017, in conjunction with annual business planning as well as valuation activities (including the use of discounted cash flow and comparative enterprise value-to-EBITDA multiple methods) and other efforts, the Company determined that the carrying value of Terphane's remaining long-lived assets were impaired. Accordingly, the Company wrote down these assets based on an enterprise valuation for all of Terphane of approximately \$30 million. This write-down resulted in a non-cash asset impairment loss recognized during the fourth quarter of 2017 of \$101 million (\$87 million after non-cash tax benefits). See Note 17 for more information on this impairment.

Assets that are held for sale are reported at the lower of their carrying amount or estimated fair value less cost to sell, with an impairment loss recognized for any write-down required.

Pension Costs and Postretirement Benefit Costs Other than Pensions. Pension costs and postretirement benefit costs other than pensions have been accrued over the period employees provided service to Tredegar. Liabilities and expenses for pension plans and other postretirement benefits are determined using actuarial methodologies and incorporate significant assumptions, including the rate used to discount the future estimated liability, the long-term rate of return on plan assets, and several assumptions relating to the employee workforce. The Company recognizes the funded status of its pension and other postretirement plans in the accompanying consolidated balance sheets. Tredegar's policy is to fund its pension plans at amounts not less than the minimum requirements of the Employee Retirement Income Security Act ("ERISA") of 1974 and to fund postretirement benefits other than pensions when claims are incurred.

Revenue Recognition. Revenue from the sale of products, which is shown net of estimated sales returns and allowances, is recognized at a point in time when control has passed to the customer. Control passes to the customer generally when the customer takes physical possession or when title passes if defined separately in the sales agreement. Amounts billed to customers related to freight are classified as sales in the accompanying consolidated statements of income. The cost of freight is classified as a separate line in the accompanying consolidated statements of income. Taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction between Tredegar and its customers (such as value-added taxes) are accounted for on a net basis and therefore excluded from revenues. See Note 5 for disaggregation of revenue by segment and type. See Note 6 for a table showing accounts and other receivables, net of allowance for bad debts and sales returns.

For the year ended December 31, 2018, the Company had no material bad-debt expense and there were no material contract assets, contract liabilities or deferred contract costs recorded on the Consolidated Balance Sheet as of December 31, 2018. Payment terms start from the date of satisfaction of the performance obligation and vary from COD (cash on delivery) to 120 days. The Company's contracts generally include one performance obligation, which is satisfied at a point in time.

For the year ended December 31, 2018, revenue recognized from performance obligations related to prior periods (for example, changes in transaction price), was not material.

Revenue expected to be recognized in any future period related to remaining performance obligations, excluding i) revenue pertaining to contracts that have an original expected duration of one year or less, ii) contracts where revenue is recognized as invoiced and iii) variable consideration related to unsatisfied performance obligations, is not expected to materially impact the Company's financial results.

Research & Development ("R&D") Costs. R&D costs are expensed as incurred and include primarily salaries, wages, employee benefits, equipment depreciation, facility costs and the cost of materials consumed relating to R&D efforts. R&D costs include a reasonable allocation of indirect costs.

Income Taxes. Income taxes are recognized during the period in which transactions enter into the determination of income for financial reporting purposes, with deferred income taxes being provided at enacted statutory tax rates on the differences between the financial reporting and tax bases of assets and liabilities (see Note 16). Tredegar's policy is to accrue U.S. federal income taxes to the extent required under GAAP on unremitted earnings of all foreign subsidiaries where required. However, due to changes in the taxation of dividends under the Tax Cuts and Jobs Act (the "TCJA") enacted by the U.S. government in December 2017, Tredegar only records U.S. federal income taxes on unremitted earnings of its foreign subsidiaries where Tredegar cannot take steps to eliminate any potential tax on future distributions from its foreign subsidiaries. Prior to the second quarter of 2016, deferred U.S. federal income taxes had not been recorded for the undistributed earnings for Terphane Limitada because the Company had intended to permanently reinvest these earnings. Due to concerns about the political and economic conditions in Brazil, Terphane Limitada began making cash distributions to the Company. During 2016, Terphane Limitada paid dividends totaling \$13.3 million to the Company. Because of the accumulation of significant losses related to foreign currency translations at Terphane Limitada, there were no unrecorded deferred income tax liabilities associated with the U.S. federal income taxes and foreign withholding taxes on Terphane Limitada's undistributed earnings as of December 31, 2018 and December 31, 2017.

A valuation allowance is recorded in the period when the Company determines that it is more likely than not that all or a portion of deferred income tax assets may not be realized. The establishment and removal of a valuation allowance requires the Company to consider all positive and negative evidence and make a judgmental decision regarding the amount of valuation allowance required as of a reporting date. The benefit of an uncertain tax position is included in the accompanying financial statements when the Company determines that it is more likely than not that the position will be sustained, based on the technical merits of the position, if the taxing authority examines the position and the dispute is litigated. This determination is made on the basis of all the facts, circumstances and information available as of the reporting date.

Earnings Per Share. Basic earnings per share is computed using the weighted average number of shares of common stock outstanding. Diluted earnings per share is computed using the weighted average common and potentially dilutive common equivalent shares outstanding, determined as follows:

	2018	2017	2016
Weighted average shares outstanding used to compute basic earnings per share	33,067,800	32,945,961	32,761,793
Incremental shares attributable to stock options and restricted stock	24,674	5,327	13,279
Shares used to compute diluted earnings per share	33,092,474	32,951,288	32,775,072

Incremental shares attributable to stock options and restricted stock are computed using the average market price during the related period. The average out-of-the-money options to purchase shares that were excluded from the calculation of incremental shares attributable to stock options and restricted stock were 726,475 in 2018 and 397,669 in 2017 and 128,200 in 2016.

Stock-Based Employee Compensation Plans. Compensation expense is recorded on all share-based awards using its calculated fair value over the requisite service period under the graded-vesting method. The fair value of stock option awards was estimated as of the grant date using the Black-Scholes options-pricing model. The fair value of restricted stock awards was estimated as of the grant date using the closing stock price on that date.

The assumptions used in this model for valuing Tredegar stock options granted in 2018 and 2017 (no grants in 2016) were as follows:

	2018	2017
Dividend yield	2.3%	1.9%
Weighted average volatility percentage	38.3%	38.3%
Weighted average risk-free interest rate	2.8%	1.8%
Holding period (years):		
Officers	5	5
Management	5	5
Weighted average exercise price at date of grant (also weighted average market price at date of grant):		
Officers	\$ 19.35	\$ 15.65
Management	\$ 19.35	\$ 15.65

The dividend yield is the actual dividend yield on Tredegar's common stock at the date of grant, which the Company believes is a reasonable estimate of the expected yield during the holding period. The expected volatility is based on the historical volatility of Tredegar's common stock using a sequential period of historical data equal to the expected holding period of the option. The Company has no reason to believe that future volatility for this period is likely to differ from the past. The assumed risk-free interest rate is based on observed interest rates (zero coupon U.S. Treasury debt securities) appropriate for the expected holding period.

In March 2016, the Financial Accounting Standards Board ("FASB") issued Account Standards Update ("ASU") 2016-09, which amended guidance to simplify several aspects of the accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. The Company adopted the new guidance in the first quarter of 2017. Under the new guidance, excess tax benefits related to equity compensation were recognized in income tax expense (benefit) in the consolidated statements of income rather than in accumulated other comprehensive income in the consolidated balance sheets and were applied on a prospective basis. If these amounts had been included in the consolidated statements of income in previous years, net income would have been reduced by \$1.1 million in 2016. Changes to the statements of cash flows related to the classification of excess tax benefits and employee taxes paid for share-based payment arrangements were implemented on a retrospective basis. In addition, the updated guidance allows the Company to make an accounting policy election to account for forfeitures as they occur. Previously, the Company was required to estimate forfeitures at the grant date, accounting for estimated forfeitures over the requisite service period.

Tredegar stock options granted during 2018 and 2017 (no grants in 2016), and related estimated fair value at the date of grant, are as follows:

	2018	2017
Stock options granted (number of shares):		
Officers	425,228	151,992
Management	25,855	57,559
Total	451,083	209,551
Estimated weighted average fair value of options per share at date of grant:		
Officers	\$ 5.87	\$ 4.69
Management	\$ 5.87	\$ 4.69
Total estimated fair value of stock options granted (in thousands)	\$ 2,648	\$ 983

Additional disclosure of Tredegar stock options is included in Note 12.

Financial Instruments. Tredegar uses derivative financial instruments for the purpose of hedging aluminum price volatility and currency exchange rate exposures that exist as part of transactions associated with ongoing business operations. The Company's derivative financial instruments are designated as and qualify as cash flow hedges and are recognized in the accompanying balance sheet at fair value. A change in the fair value of the derivative that is highly effective and that is designated and qualifies as a cash flow hedge is recorded in other comprehensive income. Gains and losses reported in other

comprehensive income (loss) are reclassified to earnings in the periods in which earnings are affected by the variability of cash flows of the hedged transaction. Such gains and losses are reported on the same line as the underlying hedged item, and the cash flows related to financial instruments are classified in the consolidated statements of cash flows in a manner consistent with those of the transactions being hedged. Any hedge ineffectiveness (which represents the amount by which the changes in the fair value of the derivative exceed the variability in the cash flows of the forecasted transaction) is recorded in current period earnings. The amount of gains and losses recognized for hedge ineffectiveness were not material in 2018, 2017 and 2016.

The Company's policy requires that it formally document all relationships between hedging instruments and hedged items, as well as its risk management objective and strategy for undertaking various hedge transactions. The Company also formally assesses (both at the hedge's inception and on an ongoing basis) whether the derivatives that are used in hedging transactions have been highly effective in offsetting changes in the fair value or cash flows of hedged items and whether those derivatives may be expected to remain highly effective in future periods. When it is determined that a derivative is not (or has ceased to be) highly effective as a hedge, the Company discontinues hedge accounting prospectively.

As a policy, Tredegar does not engage in speculative or leveraged transactions, nor does it hold or issue financial instruments for trading purposes. Additional disclosure of the utilization of derivative hedging instruments is included in Note 9.

Comprehensive Income (Loss). Comprehensive income (loss) is defined as net income or loss as adjusted by other comprehensive income or loss items. Other comprehensive income (loss) includes changes in foreign currency translation adjustments, unrealized gains and losses on derivative financial instruments, prior service costs and net gains or losses from pension and other postretirement benefit plans arising during the period and amortization of these prior service costs and net gain or loss adjustments, all recorded net of deferred income taxes.

The following table summarizes the after-tax changes in accumulated other comprehensive income (loss) for the year ended December 31, 2018:

(In thousands)	Foreign currency translation adjustment	Gain (loss) on derivative financial instruments	Pension and other post- retirement benefit adjustments	Total
Beginning balance, January 1, 2018	\$ (86,178)	\$ 459	\$ (90,950)	\$ (176,669)
Other comprehensive income (loss) before reclassifications	(10,762)	(2,978)	(1,118)	(14,858)
Amounts reclassified from accumulated other comprehensive income (loss)	—	918	10,622	11,540
Net other comprehensive income (loss) - current period	(10,762)	(2,060)	9,504	(3,318)
Ending balance, December 31, 2018	\$ (96,940)	\$ (1,601)	\$ (81,446)	\$ (179,987)

The following table summarizes the after-tax changes in accumulated other comprehensive income (loss) for the year ended December 31, 2017:

(In thousands)	Foreign currency translation adjustment	Gain (loss) on derivative financial instruments	Pension and other post- retirement benefit adjustments	Total
Beginning balance, January 1, 2017	\$ (93,970)	\$ 863	\$ (90,127)	\$ (183,234)
Other comprehensive income (loss) before reclassifications	7,792	538	(8,634)	(304)
Amounts reclassified from accumulated other comprehensive income (loss)	—	(942)	7,811	6,869
Net other comprehensive income (loss) - current period	7,792	(404)	(823)	6,565
Ending balance, December 31, 2017	\$ (86,178)	\$ 459	\$ (90,950)	\$ (176,669)

Reclassifications of balances out of accumulated other comprehensive income (loss) into net income during 2018 are summarized as follows:

(In thousands)	Amount reclassified from other comprehensive income (loss)	Location of gain (loss) reclassified from accumulated other comprehensive income (loss) to net income (loss)
Gain (loss) on derivative financial instruments:		
Aluminum future contracts, before taxes	\$ 1,069	Cost of goods sold
Foreign currency forward contracts, before taxes	62	Cost of goods sold
Foreign currency forward contracts, before taxes	(1,796)	Selling, general and administrative
Total, before taxes	(665)	
Income tax expense (benefit)	253	Income taxes
Total, net of tax	\$ (918)	
Amortization of pension and other post-retirement benefits:		
Actuarial gain (loss) and prior service costs, before taxes	\$ (13,650)	(a)
Income tax expense (benefit)	(3,028)	Income taxes
Total, net of tax	\$ (10,622)	

(a) This component of accumulated other comprehensive income is included in the computation of net periodic pension cost (see Note 13 for additional detail).

Reclassifications of balances out of accumulated other comprehensive income (loss) into net income during 2017 are summarized as follows:

(In thousands)	Amount reclassified from other comprehensive income (loss)	Location of gain (loss) reclassified from accumulated other comprehensive income (loss) to net income
Gain (loss) on derivative financial instruments:		
Aluminum future contracts, before taxes	\$ 1,210	Cost of goods sold
Foreign currency forward contracts, before taxes	62	Cost of goods sold
Foreign currency forward contracts, before taxes	(43)	Selling, general and administrative
Total, before taxes	1,229	
Income tax expense (benefit)	287	Income taxes
Total, net of tax	\$ 942	
Amortization of pension and other post-retirement benefits:		
Actuarial gain (loss) and prior service costs, before taxes	\$ (12,045)	(a)
Income tax expense (benefit)	(4,234)	Income taxes
Total, net of tax	\$ (7,811)	

(a) This component of accumulated other comprehensive income is included in the computation of net periodic pension cost (see Note 13 for additional detail).

Reclassifications of balances out of accumulated other comprehensive income (loss) into net income during 2016 are summarized as follows:

(In thousands)	Amount reclassified from other comprehensive income (loss)	Location of gain (loss) reclassified from accumulated other comprehensive income (loss) to net income
Gain (loss) on derivative financial instruments:		
Aluminum future contracts, before taxes	\$ (1,630)	Cost of goods sold
Foreign currency forward contracts, before taxes	62	Cost of goods sold
Total, before taxes	(1,568)	
Income tax expense (benefit)	(579)	Income taxes
Total, net of tax	\$ (989)	
Amortization of pension and other post-retirement benefits:		
Actuarial gain (loss) and prior service costs, before taxes	\$ (13,098)	(a)
Income tax expense (benefit)	(4,398)	Income taxes
Total, net of tax	\$ (8,700)	

(a) This component of accumulated other comprehensive income is included in the computation of net periodic pension cost (see Note 13 for additional detail).

Recently Issued Accounting Standards.

ASU 2014-09, REVENUE FROM CONTRACTS WITH CUSTOMERS (TOPIC 606)

In May 2014, the FASB and International Accounting Standards Board issued their converged standard on revenue recognition. The revised revenue standard contains principles that an entity will apply to direct the measurement of revenue and timing of when it is recognized. The core principle of the guidance is that the recognition of revenue should depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which an entity expects to be entitled in exchange for those goods and services. To achieve that core principle, an entity will utilize a principle-based five-step approach model. The converged standard also includes more robust disclosure requirements which requires entities to provide sufficient information to enable users of financial statements to understand the nature, amount, timing and uncertainty of revenue and cash flows arising from contracts with customers. In March 2016, amended guidance was issued regarding clarifying the implementation guidance on principal versus agent considerations and in April 2016, clarifying guidance was issued relating to identifying performance obligations and licensing implementation. The Company adopted the new standard effective January 1, 2018, using the modified retrospective approach applied to all contracts as of the date of adoption. Comparative periods have not been adjusted and continue to be reported under the accounting standards in effect for those periods. The adoption of ASU 2014-09, as amended, had no material impact on the Company's consolidated financial position, results of operations, equity or cash flows upon adoption. The Company has included the disclosures required by ASU 2014-09.

ASU 2016-01, FINANCIAL INSTRUMENTS (SUBTOPIC 825-10)

In January 2016, the FASB issued amended guidance associated with accounting for equity investments measured at fair value. The amended guidance requires all equity investments to be measured at fair value with changes in the fair value recognized through net income (other than those accounted for under equity method of accounting or those that result in consolidation of the investee or those without a readily determinable fair value). The amended guidance also requires an entity to present separately in other comprehensive income the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the entity has elected to measure the liability at fair value in accordance with the fair value option for financial instruments. In addition, the amendments in this update eliminate the requirement to disclose the fair value of financial instruments measured at amortized cost for entities that are not public business entities and the requirement to disclose the method(s) and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost on the balance sheet for public business entities. The Company adopted this amended guidance in the first quarter of 2018 and the adoption did not have a material impact on the Company's consolidated financial statements.

ASU 2016-02, LEASES (TOPIC 842)

In February 2016, the FASB issued a revised standard on lease accounting. Lessees will need to recognize virtually all of their leases with a term longer than 12 months on the balance sheet, by recording a right-of-use (“ROU”) asset and lease liability. The revised standard requires additional analysis of the components of a transaction to determine if a right-of-use asset is embedded in the transaction that needs to be treated as a lease. Substantial additional disclosures are also required by the revised standard. The revised standard is effective for the Company for fiscal years beginning after December 31, 2018, including the interim periods within those fiscal years. A modified retrospective transition approach which requires a cumulative-effect adjustment to the opening balance of retained earnings on the effective date is required for leases existing at, or entered into after, the effective date, with certain practical expedients available. The Company expects to use certain transition practical expedients that will allow it to elect to not reassess: i) whether expired or existing contracts contain leases under the new definition of a lease; ii) lease classification for expired or existing leases; and iii) whether previously capitalized initial direct costs would qualify for capitalization under Topic 842. The Company has substantially completed its evaluations of the impacts of the accounting and disclosure requirements on its business processes, controls and systems and does not expect that this standard will have a material effect on its consolidated financial statements. The Company has a process in place to analyze the impact of the standard, and the related guidance issued, on all leases throughout the Company. This process includes reviewing all active leases, which have been identified. The most significant impact of the new standard will be the recognition of new ROU assets and lease liabilities for real estate, office equipment and vehicle operating leases. Upon adoption, the Company will recognize operating lease liabilities with corresponding ROU assets calculated based on the present value of the remaining minimum rental payments for existing operating leases.

ASU 2016-16, INCOME TAXES (TOPIC 740)

In October 2016, the FASB issued guidance that requires an entity to recognize the income tax consequences of an intra-entity transfer of an asset other than inventory when the transfer occurs. The amendments are effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2017, and should be applied on a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings at the beginning of the period of adoption. The Company adopted this guidance in the first quarter of 2018 and the adoption did not have a material impact on the Company’s consolidated financial statements.

ASU 2017-04, INTANGIBLES - GOODWILL AND OTHER (TOPIC 350)

In January 2017, the FASB issued amended guidance that eliminates the requirement to determine the fair value of individual assets and liabilities of a reporting unit to measure goodwill impairment. Under the amendments in the new guidance, goodwill impairment testing will be performed by comparing the fair value of the reporting unit with its carrying amount and recognizing an impairment charge for the amount by which the carrying amount exceeds the reporting unit’s fair value. The new standard is effective for annual and interim goodwill impairment tests in fiscal years beginning after December 15, 2019, and should be applied on a prospective basis. Early adoption is permitted for annual or interim goodwill impairment testing performed after January 1, 2017. The Company elected to early adopt for goodwill impairment testing starting in the third quarter of 2018.

ASU 2017-07, COMPENSATION - RETIREMENT BENEFITS (TOPIC 715)

In March 2017, the FASB issued final guidance on the presentation of net periodic pension and postretirement benefit cost (net benefit cost). Previously, net benefit cost was reported as an employee cost within operating income. This new guidance requires the bifurcation of net periodic pension and postretirement benefit costs. Service cost will be part of operating income (and is the only piece eligible to be capitalized). All other components will be shown outside of operations. The new standard is effective for annual and interim periods in fiscal years beginning after December 15, 2017, and should be applied on a retrospective basis, except for the amendments related to capitalization of benefit cost, which should be applied on a prospective basis. The Company adopted this amended guidance in the first quarter of 2018 by separately presenting “Pension and postretirement benefits” expense in its consolidated statements of income.

ASU 2017-12, DERIVATIVES AND HEDGING (TOPIC 815)

In August 2017, the FASB issued amended guidance on the accounting for hedging activities. The amended guidance makes more hedging strategies qualify for hedge accounting. After initial qualification, the amended guidance permits a qualitative effectiveness assessment for certain hedges instead of a quantitative test, if the company can reasonably support an expectation of effectiveness throughout the term of the hedge. The amended guidance is effective for annual and interim periods beginning after January 1, 2019, but may be adopted immediately. The adoption should be on a cumulative effect basis

and applied prospectively. The Company is currently evaluating the amended guidance but does not expect there to be an impact of adopting this guidance on the Company's consolidated financial statements.

2 ACQUISITIONS

On February 15, 2017, Bonnell Aluminum acquired 100% of the stock of Futura Industries Corporation ("Futura") on a net debt-free basis for approximately \$92 million (the "Initial Purchase Price"). The amount actually funded in cash at the transaction date was approximately \$87.0 million (the "Initial Cash Funding"), which was the Initial Purchase Price net of preliminary closing adjustments for working capital and seller transaction-related obligations assumed and subsequently paid by Bonnell Aluminum. In addition, the Company was refunded \$5 million in the first quarter of 2018 since Futura did not meet certain performance requirements for the 2017 fiscal year ("Earnout Provision"). The acquisition, which was funded using Tredegar's revolving credit facility, was treated as an asset purchase for U.S. federal income tax purposes.

Futura, headquartered in Clearfield, Utah, with a national sales presence and particular strength in the western U.S., designs and manufactures a wide range of extruded aluminum products, including branded flooring trims and TSLOTS™, as well as OEM (original equipment manufacturer) components for truck grills, solar panels, fitness equipment and other applications. As a result of this transaction, Futura is now a wholly-owned subsidiary of the William L. Bonnell Company, Inc. (which is a wholly-owned subsidiary of Tredegar) and operates as a division of Bonnell Aluminum, and its results of operations are included in Tredegar's consolidated financial statements from the date of acquisition.

Under the terms of the transaction, \$5 million of the Initial Cash Funding was placed in escrow (the "Earnout Escrow") and was returned to Bonnell Aluminum because Futura did not achieve a targeted EBITDA level (as defined in the Stock Purchase Agreement) for the last eleven months of the fiscal year ended December 2017. At the acquisition date, the Company performed a probability weighted assessment in order to determine the fair value of this contingent asset. The assessment estimated a fair value of \$4.3 million and a receivable ("Initial Earnout Receivable") was recorded by Bonnell Aluminum. In the second quarter of 2017, the Company updated its valuation of this contingent asset, which resulted in a fair value of \$5.0 million. The receivable was increased to \$5.0 million, and \$0.7 million was recognized as income in the second quarter of 2017 in Other income (expense), net in the Consolidated Statements of Income.

The net purchase price for financial reporting purposes was set at approximately \$82.9 million (the "Adjusted Net Purchase Price"), which was the Initial Cash Funding less the Initial Earnout Receivable and the net settlement of certain post-closing adjustments of \$0.1 million paid to the seller during the second quarter of 2017. Adjustments to the purchase price were made retrospectively as if the accounting had been completed on the acquisition date. Based upon management's valuation of the fair value of tangible and identifiable intangible assets acquired (net of cash acquired) and liabilities assumed, the allocation of the Adjusted Net Purchase Price is as follows:

(In thousands)	
Accounts receivable	\$ 6,680
Inventories	10,342
Prepaid expenses and other current assets	240
Property, plant & equipment	32,662
Identifiable intangible assets:	
Customer relationships	24,000
Trade names	6,700
Trade payables & accrued expenses	(8,135)
Total identifiable net assets	72,489
Adjusted Net Purchase Price	82,860
Goodwill	\$ 10,371

The goodwill and identifiable intangible asset balances associated with this acquisition will be deductible for tax purposes on a straight-line basis over a period of approximately 15 years. For financial reporting purposes, customer relationships are being amortized over 12 years and trade names are being amortized over 13 years. Goodwill is not subject to amortization for financial reporting purposes.

For the year ended December 31, 2017, Tredegar's consolidated results of operations and its Aluminum Extrusions business segment included the following Futura results for the 10.5 months owned: sales of \$71.0 million, operating profit from ongoing operations of \$8.2 million, depreciation and amortization of \$5.0 million, and capital expenditures of \$2.5 million.

The following unaudited supplemental pro forma data presents Tredegar's consolidated sales, net income and related earnings per share as if the acquisition of Futura had been consummated at the beginning of 2016, and is not necessarily indicative of the Company's financial performance if the acquisition had actually been consummated as of that date, or of future performance. The supplemental unaudited pro forma measures for the years ended December 31, 2017 and 2016 are presented below:

<i>Tredegar Pro Forma Results with Futura Acquisition</i>				
(In thousands, except per-share data)				
	2017		2016	
Sales	\$	968,340	\$	904,877
Net income	\$	37,974	\$	27,805
Earnings per share:				
Basic	\$	1.15	\$	0.85
Diluted	\$	1.15	\$	0.85

Futura's pre-acquisition results for the period from January 1 to February 14, 2017, and therefore the pro forma information for 2017 presented above, were adversely impacted by significant disruptions to manufacturing operations and sales caused by the renovation of its anodizing line. The actual accretion to Tredegar's diluted earnings per share from Futura since the acquisition date was 12 cents per share for 2017.

The Company's pro forma net income was computed for the periods shown as: (i) the Company's reported net income, plus (ii) Futura's historical pre-acquisition period earnings before interest, taxes, depreciation and amortization and excluding one-time purchase accounting and transaction-related expenses, minus (iii) the pro forma pre-acquisition period depreciation and amortization for Futura under purchase accounting for the Company, minus (iv) the pro forma pre-acquisition period interest expense for the Company applied at an annual rate of 3.0% to the \$87.0 million Initial Cash Funding, minus (v) the pro forma pre-acquisition period income taxes applied at a rate of 39.1% to the pro forma pre-acquisition earnings before income taxes computed from items (ii) through (iv).

3 OTHER INCOME (EXPENSE), NET

Other income (expense), net consists of the following:

(In thousands)	2018	2017	2016
Gain (loss) on investment in kaléo accounted for under fair value method	\$ 30,600	\$ 33,800	\$ 1,600
Gain associated with the settlement of an escrow agreement related to Terphane, acquired in October 2011	—	11,856	—
Gain from insurance recoveries	—	5,261	1,902
Unrealized loss on investment property	(186)	—	(1,032)
Other	45	796	(89)
Total	\$ 30,459	\$ 51,713	\$ 2,381

See Note 17 for more details on the items broken out separately in the table above.

4 INVESTMENTS

In August 2007 and December 2008, the Company made an aggregate investment of \$7.5 million in kaleo, Inc. (“kaleo”), a privately held specialty pharmaceutical company dedicated to building innovative solutions for serious and life-threatening medical conditions. Tredegar owns Series A-3 Preferred Stock and Series B Preferred Stock in kaleo that, taken together, represents on a fully-diluted basis an approximate 20% interest in kaleo. Tredegar accounts for its investment in kaleo under the fair value method. At the time of the initial investment, the Company elected the fair value option of accounting since its investment objectives were similar to those of venture capitalists, which typically do not have controlling financial interests. Kaleo’s stock is not publicly traded.

The estimated fair value of the Company’s investment was \$84.6 million as of December 31, 2018 and \$54.0 million as of December 31, 2017. The Company recognized unrealized gains on its investment in kaleo of \$30.6 million (\$23.9 million after taxes) and \$33.8 million (\$24.0 million after taxes) in 2018 and 2017, respectively. Unrealized gains or losses associated with the Company’s investment in kaleo are included in “Other income (expense), net” in the consolidated statements of income and separately stated in the segment operating profit table in Note 5.

Kaleo has transitioned from a company with net losses in 2017 to a company with net income in 2018. Tredegar’s assessment of kaleo’s risk profile has improved during this transition resulting in a lower discount rate versus a year ago that is applied to kaleo’s projected unlevered after-tax cash flows to estimate kaleo’s enterprise value (“EV”) (the “DCF Method”) and the Company’s underlying share of kaleo’s equity value. Moreover, with net income as well as earnings before interest, taxes, depreciation and amortization (“EBITDA”), the EV of kaleo can also be estimated by applying the EV-to-adjusted EBITDA multiple of guideline public companies to kaleo’s most recent trailing 12-month adjusted EBITDA (the “EBITDA Multiple Method”).

The Company estimates the fair value of its investment in kaleo by: (i) computing the weighted average estimated EV utilizing both the DCF Method and EBITDA Multiple Method (including adjustments for any surplus or deficient working capital and estimates of contingent liabilities), (ii) adding cash and cash equivalents, (iii) subtracting interest-bearing debt, (iv) subtracting a private company liquidity discount estimated at 15% of the net result of (i) through (iii) and (v) applying liquidation preferences and fully diluted ownership percentages to the estimated equity value computed in (i) through (iv).

The Company’s estimate of kaleo’s EV as of December 31, 2018 was determined by weighting the EBITDA Multiple Method by 80% and the DCF Method by 20%. The heavier weighting towards the EBITDA Multiple Method was due to its heuristic nature and kaleo’s transition and actual performance in 2018, versus the hypothetical nature of the projections used in the DCF Method. The DCF Method projections rely on numerous assumptions and Level 3 inputs, including estimating market growth, market share, pricing, net margins (after allowances for temporary discounts, prompt pay discounts, product returns, wholesaler fees, chargebacks, rebates and copays), selling expenses, R&D expenses, general and administrative expenses, income taxes on unlevered pretax income, working capital, capital expenditures and the risk-adjusted discount rate. In addition, there are various regulatory and legal enforcement efforts, including an ongoing Department of Justice investigation related to kaleo’s Evzio business, which could have a material adverse effect on kaleo’s business that require assessment in any valuation method applied.

The table below provides a sensitivity analysis of the estimated fair value of the Company’s investment in kaleo for changes in the EBITDA multiple used in applying the EBITDA Multiple Method and the changes in the weighting of the DCF Method.

(\$ Millions)	EV-to-Adjusted EBITDA Multiple				
	7.6x	8.6x	9.6x	10.6x	11.6x
50%	\$ 76.3	\$ 81.2	\$ 86.1	\$ 91.0	\$ 95.9
40%	\$ 73.8	\$ 79.7	\$ 85.6	\$ 91.5	\$ 97.3
30%	\$ 71.4	\$ 78.3	\$ 85.1	\$ 92.0	\$ 98.8
20%	\$ 69.0	\$ 76.8	\$ 84.6	\$ 92.5	\$ 100.3
10%	\$ 66.5	\$ 75.4	\$ 84.2	\$ 93.0	\$ 101.8
—%	\$ 64.1	\$ 73.9	\$ 83.7	\$ 93.5	\$ 103.3

The ultimate value of the Company's ownership interest in kaléo will be determined and realized only if and when a liquidity event occurs, and the ultimate value could be materially different from the \$84.6 million estimated fair value reflected in the Company's financial statements at December 31, 2018.

On April 2, 2007, Tredegar invested \$10.0 million in Harbinger Capital Partners Special Situations Fund, L.P. (the "Harbinger Fund"), a private investment fund that is subject to limitations on withdrawal. There is no secondary market for interests in the fund. The Company's investment in the Harbinger Fund, which represents less than 1% of its total partnership capital, is accounted for under the cost method. The December 31, 2018 and 2017 carrying values in the consolidated balance sheets (included in "Other assets and deferred charges") were \$1.3 million and \$1.7 million, respectively. The carrying value at December 31, 2018 reflected Tredegar's cost basis in its investment in Harbinger, net of total withdrawal proceeds received and losses. Based on an observable price change, the Company recorded a loss of \$0.5 million in 2018 (none in 2017 or 2016). No withdrawal proceeds were received in 2018, 2017 or 2016. The timing and amount of future installments of withdrawal proceeds, which commenced in August 2010, was not known as of December 31, 2018. The Company has determined that there is no readily determinable fair value for the Harbinger Fund and has elected to record its investment in the Harbinger Fund at cost, less impairment, adjusted for observable price changes. Gains on the Company's investment in the Harbinger Fund will be recognized when there are positive observable price changes, including when the amounts expected to be collected from any withdrawal from the investment are known, which will likely be when cash in excess of the remaining carrying value is received. Losses will be recognized when management believes through observable methods that it is probable that future withdrawal proceeds will not exceed the remaining carrying value.

In 2018, Tredegar sold all its remaining interest in investment property it had held in Alleghany and Bath counties, Virginia. The total loss recorded on this investment property in 2018 was \$0.2 million (\$0.2 million after taxes). In 2016, the Company recorded an unrealized loss on this investment property of \$1.0 million (\$0.7 million after taxes) as a reduction in the estimated fair value of the investment that was not expected to be temporary. The Company's carrying value in this investment property (included in "Other assets and deferred charges" on the consolidated balance sheets) was \$1.6 million at December 31, 2017.

5 BUSINESS SEGMENTS

The Company's business segments are PE Films, Flexible Packaging Films and Aluminum Extrusions. PE Films is comprised of the following operating segments: personal care materials, surface protection films, and LED-based products. Flexible Packaging Films is comprised of the Company's polyester films business, Terphane Holdings LLC ("Terphane"). Aluminum Extrusions, which includes Bonnell Aluminum and its operating divisions, AACOA and Futura, produces high-quality, soft-alloy and medium-strength aluminum extrusions primarily for the following markets: building and construction, automotive, and specialty, which consists of consumer durables, machinery and equipment, electrical and distribution end-use products.

Information by business segment and geographic area for the last three years is provided below. There were no accounting transactions between segments and no allocations to segments. Net sales (sales less freight) and operating profit from ongoing operations are the measures of sales and operating profit used by the chief operating decision maker (Tredegar's President and Chief Executive Officer) for purposes of assessing performance. PE Films' net sales to The Procter & Gamble Company ("P&G") totaled \$106.5 million in 2018, \$122.4 million in 2017 and \$129.1 million in 2016. These amounts include plastic film sold to others that convert the film into materials used with products manufactured by P&G.

<i>Net Sales</i>			
(In thousands)	2018	2017	2016
PE Films	\$ 332,488	\$ 352,459	\$ 331,146
Flexible Packaging Films	123,830	108,355	108,028
Aluminum Extrusions	573,126	466,833	360,098
Total net sales	1,029,444	927,647	799,272
Add back freight	36,027	33,683	29,069
Sales as shown in consolidated statements of income	\$ 1,065,471	\$ 961,330	\$ 828,341

<i>Operating Profit</i>			
(In thousands)	2018	2017	2016
PE Films:			
Ongoing operations	\$ 36,181	\$ 41,546	\$ 26,312
Plant shutdowns, asset impairments, restructurings and other (a)	(5,905)	(4,905)	(4,602)
Goodwill impairment charge	(46,792)	—	—
Flexible Packaging Films:			
Ongoing operations	9,892	(2,626)	1,774
Plant shutdowns, asset impairments, restructurings and other (a)	(45)	(89,398)	(214)
Aluminum Extrusions:			
Ongoing operations	48,613	43,454	37,794
Plant shutdowns, asset impairments, restructurings and other (a)	(505)	321	(741)
Total	41,439	(11,608)	60,323
Interest income	369	209	261
Interest expense	5,702	6,170	3,806
Gain on investment in kaléo accounted for under the fair value method (a)	30,600	33,800	1,600
Loss on sale of investment property (a)	(38)	—	—
Unrealized loss on investment property (a)	186	—	1,032
Stock option-based compensation expense	1,221	264	56
Corporate expenses, net (a)	28,893	30,879	29,607
Income (loss) before income taxes	36,368	(14,912)	27,683
Income tax expense (benefit) (a)	11,526	(53,163)	3,217
Net income (loss)	\$ 24,842	\$ 38,251	\$ 24,466

<i>Identifiable Assets</i>		
(In thousands)	2018	2017
PE Films	\$ 231,720	\$ 289,514
Flexible Packaging Films	58,964	49,915
Aluminum Extrusions	281,372	268,127
Subtotal	572,056	607,556
General corporate (b)	100,920	111,696
Cash and cash equivalents (d)	34,397	36,491
Total	\$ 707,373	\$ 755,743

(In thousands)	<i>Depreciation and Amortization</i>			<i>Capital Expenditures</i>		
	2018	2017	2016	2018	2017	2016
PE Films	\$ 15,513	\$ 14,609	\$ 13,653	\$ 21,998	\$ 15,029	\$ 25,759
Flexible Packaging Films	1,262	10,443	9,505	5,423	3,619	3,391
Aluminum Extrusions	16,866	15,070	9,173	12,966	25,653	15,918
Subtotal	33,641	40,122	32,331	40,387	44,301	45,068
General corporate	163	155	141	427	61	389
Total	\$ 33,804	\$ 40,277	\$ 32,472	\$ 40,814	\$ 44,362	\$ 45,457

See footnotes following the tables.

Net Sales by Geographic Area (d)

(In thousands)	2018		2017		2016	
United States	\$	691,232	\$	584,066	\$	475,734
Exports from the United States to:						
Asia		75,904		84,846		73,220
Canada		51,984		46,505		45,683
Europe		6,203		8,505		7,348
Latin America		12,106		15,199		5,561
Operations outside the United States:						
Brazil		101,217		87,155		90,571
The Netherlands		45,667		54,380		54,352
Hungary		33,512		24,727		24,207
China		7,814		12,199		14,390
India		3,805		10,065		8,206
Total (c)	\$	1,029,444	\$	927,647	\$	799,272

(In thousands)	Identifiable Assets by Geographic Area (d)		Property, Plant & Equipment, Net by Geographic Area (d)	
	2018	2017	2018	2017
United States (b)	\$ 454,178	\$ 475,844	\$ 166,550	\$ 156,054
Operations outside the United States:				
Brazil	52,796	49,536	16,072	13,396
China	21,610	28,833	19,213	23,273
Hungary	23,615	28,573	15,436	18,230
The Netherlands	15,020	17,423	6,005	6,423
India	4,837	7,347	3,692	4,628
General corporate (b)	100,920	111,696	1,401	1,087
Cash and cash equivalents (d)	34,397	36,491	n/a	n/a
Total	\$ 707,373	\$ 755,743	\$ 228,369	\$ 223,091

Net Sales by Product Group

(In thousands)	2018		2017		2016	
PE Films:						
Personal care materials	\$	227,090	\$	246,416	\$	238,213
Surface protection films		98,126		99,079		84,013
LED lighting products & other films		7,272		6,964		8,920
Subtotal		332,488		352,459		331,146
Flexible Packaging Films		123,830		108,355		108,028
Aluminum Extrusions:						
Nonresidential building & construction		289,572		239,713		212,863
Consumer durables		66,416		54,126		39,293
Automotive		48,037		38,261		34,700
Machinery & equipment		41,899		33,450		20,872
Distribution		40,924		30,202		20,506
Residential building & construction		43,943		40,354		20,252
Electrical		42,335		30,727		11,612
Subtotal		573,126		466,833		360,098
Total	\$	1,029,444	\$	927,647	\$	799,272

See footnotes following the tables and a reconciliation of net sales to sales as shown in the *Consolidated Statements of Income* in the first table of this Note 5.

- (a) See Notes 1, 3, 4 and 17 for more information on losses associated with plant shutdowns, asset impairments and restructurings, unusual items, gains or losses from sale of assets, gains or losses on an investment accounted for under the fair value method and other items.
- (b) The balance sheets include the funded status of each of the Company's defined benefit pension and other postretirement plans. The funded status of the Company's defined benefit pension plan was a net liability of \$81.9 million and \$91.8 million as of December 31, 2018 and 2017, respectively. See Note 13 for more information on the Company's pension and other postretirement plans.
- (c) The difference between total consolidated sales as reported in the consolidated statements of income and segment, geographic and product group net sales reported in this note is freight of \$36.0 million in 2018, \$33.7 million in 2017 and \$29.1 million in 2016.
- (d) Information on exports and foreign operations are provided on the previous page. Cash and cash equivalents includes funds held in locations outside the U.S. of \$31.1 million and \$32.7 million at December 31, 2018 and 2017, respectively. Export sales relate almost entirely to PE Films. Operations outside the U.S. in The Netherlands, Hungary, China and India also relate to PE Films. Operations in Brazil are primarily related to Flexible Packaging Films, but also include PE Films operations. Sales from locations in The Netherlands and Hungary are primarily to customers located in Europe. Sales from locations in China (Guangzhou and Shanghai) are primarily to customers located in China, but also include other customers in Asia. The facility in Shanghai was shut down in the fourth quarter of 2018.

6 ACCOUNTS AND OTHER RECEIVABLES

As of December 31, 2018 and 2017, accounts receivable and other receivables, net, were \$124.7 million and \$120.1 million, respectively, made up of the following:

(In thousands)	2018	2017
Customer receivables	\$ 122,182	\$ 113,556
Other accounts and notes receivable	5,482	9,883
Total accounts and other receivables	127,664	123,439
Less: Allowance for bad debts and sales returns	(2,937)	(3,304)
Total accounts and other receivables, net	\$ 124,727	\$ 120,135

A reconciliation of the beginning and ending balances of the allowance for doubtful accounts and sales returns for the three years ended December 31, 2018 is as follows:

(In thousands)	2018	2017	2016
Balance, beginning of year	\$ 3,304	\$ 3,102	\$ 3,746
Charges to expense	553	2,369	1,410
Recoveries	(56)	(857)	(32)
Write-offs and settlements	(710)	(1,322)	(2,167)
Foreign exchange and other	(154)	12	145
Balance, end of year	\$ 2,937	\$ 3,304	\$ 3,102

7 INVENTORIES

Inventories consist of the following:

(In thousands)	2018	2017
Finished goods	\$ 24,938	\$ 20,281
Work-in-process	15,648	11,958
Raw materials	33,741	35,909
Stores, supplies and other	19,483	18,759
Total	\$ 93,810	\$ 86,907

Inventories stated on the LIFO basis amounted to \$18.2 million at December 31, 2018 and \$21.9 million at December 31, 2017, which were below replacement costs by \$16.4 million at December 31, 2018 and \$15.9 million at December 31, 2017. During 2018 and 2017, certain PE Films inventories accounted for on a LIFO basis declined, which resulted in cost of goods sold being stated at below current costs by \$0.3 million and \$1.5 million, respectively.

8 GOODWILL AND IDENTIFIABLE INTANGIBLE ASSETS

The components of goodwill and identifiable intangibles at December 31, 2018 and 2017, and related amortization periods for continuing operations are as follows:

(In thousands)	2018	2017	Amortization Periods
Goodwill	\$ 81,404	\$ 128,208	Not amortized
Identifiable intangible assets:			
Customer relationships (cost basis of \$29,568 in 2018 and \$29,647 in 2017)	22,785	25,444	10-12 years
Proprietary technology (cost basis of \$6,185 in 2018 and \$6,203 in 2017)	1,093	1,700	Not more than 15 years
Trade names (cost basis of \$13,690 in 2018 and \$13,887 in 2017)	12,417	13,408	5 - 13 years ^(a)
Total carrying value of identifiable intangibles	36,295	40,552	
Total carrying value of goodwill and identifiable intangible assets	\$ 117,699	\$ 168,760	

(a) Includes \$4.8 million of trade names with an indefinite life.

A reconciliation of the beginning and ending balance of goodwill for each of the two years in the period ended December 31, 2018 is as follows:

(In thousands)	PE Films	Aluminum Extrusions	Total
Net carrying value of goodwill at January 1, 2017	\$ 104,126	\$ 13,696	\$ 117,822
Acquisitions	—	10,370	10,370
Increase (decrease) due to foreign currency translation	16	—	16
Net carrying value of goodwill at December 31, 2017	104,142	24,066	128,208
Goodwill impairment charge	(46,792)	—	(46,792)
Increase (decrease) due to foreign currency translation	(12)	—	(12)
Net carrying value of goodwill at December 31, 2018	\$ 57,338	\$ 24,066	\$ 81,404

The goodwill of PE Films is carried by its Surface Protection component in the amount \$57.3 million as of December 31, 2018. The goodwill of Aluminum Extrusions is carried by its AACOA and Futura (which was acquired on February 15, 2017) components in the amounts of \$13.7 million and \$10.4 million, respectively, as of December 31, 2018.

The Company recorded a goodwill impairment charge of \$46.8 million (\$38.2 million after taxes) for goodwill associated with the acquisition of certain components of PE Films. During the third quarter of 2018, the Company performed a goodwill impairment analysis related to the Personal Care component of PE Films. This review was undertaken as a result of the expected loss of business from a key customer and revised projections for PE Films. Based on an evaluation of projections under various business planning scenarios, the Company concluded that the fair value of the Personal Care component of PE Films was less than its carrying value.

A reconciliation of the beginning and ending balance of identifiable intangibles for each of the two years in the period ended December 31, 2018 is as follows:

(In thousands)	Customer Relationships	Proprietary Technology	Trade Names	Total
PE Films:				
Net carrying value at January 1, 2017	\$ —	\$ 959	\$ —	\$ 959
Amortization expense	—	(114)	—	(114)
Net carrying value at December 31, 2017	—	845	—	845
Amortization expense	—	(115)	—	(115)
Net carrying value at December 31, 2018	\$ —	\$ 730	\$ —	\$ 730
Flexible Packaging Films:				
Net carrying value at January 1, 2017	\$ 12,084	\$ 5,574	\$ 6,375	\$ 24,033
Amortization expense	(1,793)	(1,161)	—	(2,954)
Increase (decrease) due to foreign currency translation	(16)	(2)	(33)	(51)
Impairment loss	(9,444)	(4,051)	(4,005)	(17,500)
Net carrying value at December 31, 2017	831	360	2,337	3,528
Amortization expense	(82)	(55)	(299)	(436)
Increase (decrease) due to foreign currency translation	(88)	(17)	(176)	(281)
Net carrying value at December 31, 2018	\$ 661	\$ 288	\$ 1,862	\$ 2,811
Aluminum Extrusions:				
Net carrying value at January 1, 2017	\$ 2,760	\$ 1,049	\$ 4,800	\$ 8,609
Additions related to acquisition of Futura	24,000	—	6,700	30,700
Amortization expense	(2,147)	(554)	(429)	(3,130)
Net carrying value at December 31, 2017	24,613	495	11,071	36,179
Amortization expense	(2,489)	(420)	(516)	(3,425)
Net carrying value at December 31, 2018	\$ 22,124	\$ 75	\$ 10,555	\$ 32,754
Total net carrying value of identifiable intangibles at December 31, 2018	\$ 22,785	\$ 1,093	\$ 12,417	\$ 36,295

During the fourth quarter of 2017, in conjunction with annual business planning as well as valuation activities and other efforts, the Company determined that the carrying value of Terphane's remaining long-lived assets were impaired (Terphane's goodwill was written off in 2015). Accordingly, the Company wrote down these assets based on an enterprise valuation for all of Terphane of approximately \$30 million. This write-down resulted in a non-cash asset impairment loss recognized during the fourth quarter of 2017 of \$101 million (\$87 million after non-cash tax benefits). As part of this write-down, customer relationships, proprietary technology and trade names were impaired by \$9.4 million, \$4.1 million and \$4.0 million, respectively, reducing their values to \$0.8 million, \$0.4 million and \$2.4 million, respectively. The remaining part of this write-down was related to property, plant and equipment. Also, Terphane's trade names were assigned estimated useful lives of 5 to 13 years, a change from the previous designation of an indefinite life.

Amortization expense for continuing operations over the next five years is expected to be as follows:

Year	Amount (In thousands)
2019	\$ 3,585
2020	3,585
2021	3,585
2022	3,450
2023	2,824

9 FINANCIAL INSTRUMENTS

Tredegar uses derivative financial instruments for the purpose of hedging margin exposure from fixed-price forward sales contracts in Aluminum Extrusions and exposure from currency volatility that exist as part of ongoing business operations (primarily in Flexible Packaging Films). These derivative financial instruments are designated as and qualify as cash flow hedges and are recognized in the consolidated balance sheet at fair value. The fair value of derivative instruments recorded on the consolidated balance sheets are based upon Level 2 inputs. If individual derivative instruments with the same counterparty can be settled on a net basis, the Company records the corresponding derivative fair values as a net asset or net liability.

In the normal course of business, Aluminum Extrusions enters into fixed-price forward sales contracts with certain customers for the future sale of fixed quantities of aluminum extrusions at scheduled intervals. In order to hedge margin exposure created from the fixing of future sales prices relative to volatile raw material (aluminum) costs, Aluminum Extrusions enters into a combination of forward purchase commitments and futures contracts to acquire or hedge aluminum, based on the scheduled purchases for the firm sales commitments. The fixed-price firm sales commitments and related hedging instruments generally have durations of not more than 12 months, and the notional amount of aluminum futures contracts that hedged future purchases of aluminum to meet fixed-price forward sales contract obligations was \$25.4 million (22.5 million pounds of aluminum) at December 31, 2018 and \$8.2 million (8.0 million pounds of aluminum) at December 31, 2017.

The table below summarizes the location and gross amounts of aluminum derivative contract fair values (Level 2) in the consolidated balance sheets as of December 31, 2018 and 2017:

(In thousands)	December 31, 2018		December 31, 2017	
	Balance Sheet Account	Fair Value	Balance Sheet Account	Fair Value
Derivatives Designated as Hedging Instruments				
Asset derivatives:	Prepaid expenses and other		Prepaid expenses and other	
Aluminum futures contracts		\$ 20		\$ 578
Liability derivatives:				
Aluminum futures contracts	Prepaid expenses and other	(1,650)	Prepaid expenses and other	(16)
Derivatives Not Designated as Hedging Instruments				
Asset derivatives:	Prepaid expenses and other	\$ —	Prepaid expenses and other	\$ —
Aluminum futures contracts				
Liability derivatives:	Prepaid expenses and other	—	Prepaid expenses and other	—
Aluminum futures contracts				
Net asset (liability)		\$ (1,630)		\$ 562

In the event that a counterparty to an aluminum fixed-price forward sales contract chooses not to take delivery of its aluminum extrusions, the customer is contractually obligated to compensate Aluminum Extrusions for any losses on the related aluminum futures and/or forward contracts through the date of cancellation.

The table below summarizes the location and gross amounts of foreign currency forward contract fair values (Level 2) in the consolidated balance sheets as of December 31, 2018 and 2017:

(In thousands)	December 31, 2018		December 31, 2017	
	Balance Sheet Account	Fair Value	Balance Sheet Account	Fair Value
Derivatives Designated as Hedging Instruments				
Asset derivatives:	Prepaid expenses and other		Accrued Expenses	
Foreign currency forward contracts		\$ 37		\$ —
Liability derivatives:	Accrued Expenses		Accrued Expenses	
Foreign currency forward contracts		(1,090)		(558)
Derivatives Not Designated as Hedging Instruments				
Asset derivatives:	Accrued Expenses		Accrued Expenses	
Foreign currency forward contracts		\$ —		\$ —
Liability derivatives:	Accrued Expenses		Accrued Expenses	
Foreign currency forward contracts		—		—
Net asset (liability)		\$ (1,053)		\$ (558)

The Company's earnings are exposed to foreign currency exchange risk primarily through the translation of the financial statements of subsidiaries that have a functional currency other than the U.S. Dollar. The Company estimates that the net mismatch translation exposure between Flexible Packaging Films business unit in Brazil, Terphane Limitada's ("Terphane Ltda.") U.S. Dollar quoted or priced sales and underlying Brazilian Real ("R\$") quoted or priced operating costs (excluding depreciation and amortization) is annual net costs of R\$125 million. Terphane Ltda. has the following outstanding foreign exchange average forward rate contracts to purchase Brazilian Real and sell U.S. Dollars:

USD Notional Amount (000s)	Average Forward Rate Contracted on USD/BRL	R\$ Equivalent Amount (000s)	Applicable Month	Estimated % of Terphane Ltda. R\$ Operating Cost Exposure Hedged
\$2,025	3.6442	R\$7,380	Jan-19	73%
\$2,025	3.6527	R\$7,397	Feb-19	75%
\$2,025	3.6593	R\$7,410	Mar-19	70%
\$2,025	3.6690	R\$7,430	Apr-19	72%
\$2,025	3.6795	R\$7,451	May-19	73%
\$2,025	3.6904	R\$7,473	Jun-19	72%
\$1,800	3.8826	R\$6,989	Jul-19	65%
\$1,800	3.8950	R\$7,011	Aug-19	68%
\$1,800	3.9070	R\$7,033	Sep-19	66%
\$1,800	3.9203	R\$7,056	Oct-19	67%
\$1,800	3.9331	R\$7,080	Nov-19	67%
\$1,800	3.9455	R\$7,102	Dec-19	73%
\$22,950	3.7826	R\$86,812		70%

These foreign currency exchange contracts have been designated and qualify as cash flow hedges of Terphane Limitada's forecasted sales to customers quoted or priced in U.S. Dollars over that period. By changing the currency risk associated with these U.S. Dollar sales, the derivatives have the effect of offsetting operating costs quoted or priced in Brazilian Real and decreasing the net exposure to Brazilian Real in the consolidated statements of income. The net fair value of the open forward contracts was a negative \$0.9 million as of December 31, 2018.

These derivative contracts involve elements of market risk that are not reflected on the consolidated balance sheet, including the risk of dealing with counterparties and their ability to meet the terms of the contracts. The counterparties to any forward purchase commitments are major aluminum brokers and suppliers, and the counterparties to any aluminum futures contracts are major financial institutions. Fixed-price forward sales contracts are only made available to the best and most credit-worthy customers. The counterparties to the Company's foreign currency cash flow hedge contracts are major financial institutions.

The pretax effect on net income (loss) and other comprehensive income (loss) of derivative instruments classified as cash flow hedges and described in the previous paragraphs for years ended December 31, 2018, 2017, and 2016 is summarized in the tables below:

(In thousands)	Cash Flow Derivative Hedges		
	Aluminum Futures Contracts		
Years Ended December 31,	2018	2017	2016
Amount of pre-tax gain (loss) recognized in other comprehensive income	\$ (1,123)	\$ 1,501	\$ 394
Location of gain (loss) reclassified from accumulated other comprehensive income into net income (effective portion)	Cost of goods sold	Cost of goods sold	Cost of goods sold
Amount of pre-tax gain (loss) reclassified from accumulated other comprehensive income to net income (effective portion)	\$ 1,069	\$ 1,210	\$ (1,630)

(In thousands)	Cash Flow Derivative Hedges					
	Foreign Currency Forward Contracts					
Years Ended December 31,	2018		2017		2016	
Amount of pre-tax gain (loss) recognized in other comprehensive income	\$ —	\$ (2,105)	\$ —	\$ (561)	\$ —	\$ —
Location of gain (loss) reclassified from accumulated other comprehensive income into net income (effective portion)	Cost of goods sold	Selling, general & admin	Cost of goods sold	Selling, general & admin	Cost of goods sold	Cost of goods sold
Amount of pre-tax gain (loss) reclassified from accumulated other comprehensive income to net income (effective portion)	\$ 62	\$ (1,796)	\$ 62	\$ (43)	\$ 62	\$ 62

Gains and losses on the ineffective portion of derivative instruments or derivative instruments that were not designated as hedging instruments were not material in 2018, 2017 and 2016. For the years ended December 31, 2018, 2017 and 2016, unrealized net losses from hedges that were discontinued were not material. As of December 31, 2018, the Company expected \$1.1 million of unrealized after-tax losses on derivative instruments reported in accumulated other comprehensive income to be reclassified to earnings within the next 12 months.

10 ACCRUED EXPENSES

Accrued expenses consist of the following:

(In thousands)	2018	2017
Vacation	\$ 8,946	\$ 8,575
Incentive compensation	6,979	7,958
Payrolls, related taxes and medical and other benefits	6,600	6,034
Workers' compensation and disabilities	4,048	3,746
Derivative contract liability	2,720	558
Accrued utilities	2,420	2,177
Accrued freight	2,091	1,581
Environmental liabilities (current)	1,990	3,110
Customer rebates	1,476	1,929
Accrued severance	637	783
Other	4,588	5,982
Total	\$ 42,495	\$ 42,433

A reconciliation of the beginning and ending balances of accrued expenses associated with asset impairments and costs related to exit and disposal activities for each of the three years in the period ended December 31, 2018 is as follows:

(In thousands)	Severance ^(a)	Asset Impairments ^(b)	Other ^(c)	Total
Balance at January 1, 2016	\$ 1,462	\$ —	\$ 405	\$ 1,867
For the year ended December 31, 2016:				
Charges	1,535	603	546	2,684
Cash spend	(1,143)	—	(397)	(1,540)
Charges against assets	—	(603)	—	(603)
Balance at December 31, 2016	1,854	—	554	2,408
For the year ended December 31, 2017:				
Charges	589	101,595	304	102,488
Cash spend	(1,816)	—	(382)	(2,198)
Charges against assets	—	(101,595)	—	(101,595)
Balance at December 31, 2017	627	—	476	1,103
For the year ended December 31, 2018:				
Charges	2,654	233	118	3,005
Cash spend	(2,665)	—	(434)	(3,099)
Charges against assets	—	(141)	—	(141)
Reversed to income	—	(92)	—	(92)
Balance at December 31, 2018	\$ 616	\$ —	\$ 160	\$ 776

(a) Severance primarily includes severance payments associated with the consolidation of North American PE Films manufacturing facilities in 2016 and 2017 and with the shutdown of the PE Films Shanghai, China facility in 2018.

(b) Asset impairments in 2017 primarily related to the Flexible Packaging Films' impairment of \$101 million.

(c) Other primarily includes other shutdown-related costs associated with the shutdown and sale of the Company's aluminum extrusions manufacturing facility in Kentland, Indiana.

See Note 17 for more information on plant shutdowns, asset impairments and restructurings of continuing operations.

11 DEBT AND CREDIT AGREEMENTS

On March 1, 2016, Tredegar entered into a \$400 million five-year, secured revolving credit facility ("Credit Agreement"), with an option to increase that amount by \$50 million.

Borrowings under the Credit Agreement bear an interest rate of LIBOR plus a credit spread and commitment fees charged on the unused amount under the Credit Agreement at various indebtedness-to-adjusted EBITDA levels as follows:

Pricing Under Credit Revolving Agreement (Basis Points)		
Indebtedness-to-Adjusted EBITDA Ratio	Credit Spread Over LIBOR	Commitment Fee
> 3.5x but <= 4.0x	250	45
> 3.0x but <= 3.5x	225	40
> 2.0x but <= 3.0x	200	35
> 1.0x but <= 2.0x	175	30
<= 1.0x	150	25

At December 31, 2018, the interest cost on debt borrowed under the Credit Agreement was priced at one-month LIBOR plus the applicable credit spread of 150 basis points.

The most restrictive covenants in the Credit Agreement include:

- Maximum indebtedness-to-adjusted EBITDA (“Leverage Ratio”) of 4.00x;
- Minimum adjusted EBIT-to-interest expense of 2.50x; and
- Maximum aggregate distributions to shareholders over the term of the Credit Agreement of \$100 million plus, beginning with the fiscal quarter ended March 31, 2016, 50% of net income and, at a Leverage Ratio of equal to or greater than 3.00x, a limitation on such payments for the succeeding quarter at the greater of (i) \$4 million and (ii) 50% of consolidated net income for the most recent fiscal quarter, and, at a Leverage Ratio of equal to or greater than 3.50x, the prevention of such payments for the succeeding quarter unless the fixed charge coverage ratio is equal to or greater than 1.20x.

The Credit Agreement is secured by substantially all of the Company’s and its domestic subsidiaries’ assets, including equity in certain material first-tier foreign subsidiaries.

At December 31, 2018, based upon the most restrictive covenant within the Credit Agreement, available credit under the Credit Agreement was approximately \$298 million. Total debt due and outstanding at December 31, 2018 is summarized below:

Debt Due and Outstanding at December 31, 2018 (In thousands)			
Year Due	Credit Agreement	Other	Total Debt Due
2019	\$ —	\$ —	\$ —
2020	—	—	—
2021	101,500	—	101,500
2022	—	—	—
2023	—	—	—
Total	\$ 101,500	\$ —	\$ 101,500

Tredegear believes that it was in compliance with all of its debt covenants as of December 31, 2018. Noncompliance with any of the debt covenants may have a material adverse effect on financial condition or liquidity in the event such noncompliance cannot be cured or should the Company be unable to obtain a waiver from the lenders. Renegotiation of the covenant through an amendment to the Credit Agreement may effectively cure the noncompliance, but may have an effect on financial condition or liquidity depending upon how the covenant is renegotiated.

12 STOCK OPTION AND STOCK AWARD PLANS

Tredegear has one equity incentive plan under which stock options may be granted to purchase a specified number of shares of common stock at a price no lower than the fair market value on the date of grant and for a term not to exceed 10 years. One stock option grant was made in 2018, with cliff vesting after two years. Two stock option grants were made in 2017, with one cliff vesting after two years and the other cliff vesting after three years. No stock options were granted in 2016.

The option plan also permits the grant of stock appreciation rights (“SARs”), stock, restricted stock, stock unit awards and incentive awards. Restricted stock grants ordinarily vest three years from the date of grant based upon continued employment. Stock unit awards vest upon the achievement of certain performance targets. No SARs have been granted since 1992 and none are currently outstanding.

A summary of stock options outstanding at December 31, 2018, 2017 and 2016, and changes during those years, is presented below:

	Number of Options	Option Exercise Price/Share			
		Range		Weighted Average	
Outstanding at January 1, 2016	881,513	\$ 17.13	to \$ 30.01	\$ 20.22	
Granted	—	—	to —	—	—
Forfeited and expired	(246,394)	17.13	to 30.01	18.90	
Exercised	(134,200)	17.13	to 19.84	17.23	
Outstanding at December 31, 2016	500,919	17.13	to 30.01	21.67	
Granted	209,551	15.65	to 15.65	15.65	
Forfeited and expired	(60,685)	17.13	to 30.01	21.42	
Exercised	(41,265)	19.84	to 19.84	19.84	
Outstanding at December 31, 2017	608,520	15.65	to 24.84	19.75	
Granted	451,083	19.35	to 19.35	19.35	
Forfeited and expired	(96,089)	15.65	to 24.84	19.58	
Exercised	(73,398)	15.65	to 22.49	18.15	
Outstanding at December 31, 2018	890,116	\$ 15.65	to \$ 24.84	\$ 19.69	

The following table summarizes additional information about stock options outstanding and exercisable at December 31, 2018:

Options Outstanding at December 31, 2018							Options Exercisable at December 31, 2018		
Range of Exercise Prices		Shares	Weighted Average		Aggregate Intrinsic Value (In thousands)	Shares	Weighted Average Exercise Price	Aggregate Intrinsic Value (In thousands)	
			Remaining Contractual Life (Years)	Exercise Price					
\$ —	to \$ 15.00	—	0.0	\$ —	\$ —	—	\$ —	\$ —	
15.01	to 17.50	163,641	5.4	15.65	34,365	—	—	—	
17.51	to 20.00	516,883	5.9	19.36	—	65,800	19.40	—	
20.01	to 25.00	209,592	4.5	23.69	—	209,592	23.69	—	
Total		890,116	5.5	\$ 19.69	\$ 34,365	275,392	\$ 22.66	\$ —	

The following table summarizes additional information about unvested restricted stock outstanding at December 31, 2018, 2017 and 2016:

	Unvested Restricted Stock			Maximum Unvested Restricted Stock Units Issuable Upon Satisfaction of Certain Performance Criteria		
	Number of Shares	Weighted Avg. Grant Date Fair Value/Share	Grant Date Fair Value (In thousands)	Number of Shares	Weighted Avg. Grant Date Fair Value/Share	Grant Date Fair Value (In thousands)
Outstanding at January 1, 2016	132,353	\$ 21.19	\$ 2,805	167,128	\$ 22.04	\$ 3,684
Granted	144,546	13.47	1,947	136,986	11.34	1,553
Vested	(52,167)	21.56	(1,125)	—	—	—
Forfeited	(17,377)	18.97	(330)	(65,685)	20.24	(1,329)
Outstanding at December 31, 2016	207,355	15.90	3,297	238,429	16.39	3,908
Granted	107,362	18.29	1,964	46,205	17.38	803
Vested	(50,154)	19.72	(989)	—	—	—
Forfeited	(57,887)	16.16	(935)	(112,501)	17.73	(1,995)
Outstanding at December 31, 2017	206,676	16.15	3,337	172,133	15.78	2,716
Granted	119,915	17.39	2,085	61,227	17.35	1,062
Vested	(64,702)	18.31	(1,185)	—	—	—
Forfeited	(17,153)	15.84	(272)	(48,651)	13.23	(644)
Outstanding at December 31, 2018	244,736	\$ 16.20	\$ 3,965	184,709	\$ 16.97	\$ 3,134

The total intrinsic value of stock options exercised was \$0.4 million in 2018, \$0.2 million in 2017 and \$0.2 million in 2016. The grant-date fair value of stock option-based awards vested was \$0.1 million in 2018, \$0.4 million in 2017 and \$0.4 million in 2016. As of December 31, 2018, there was unrecognized compensation cost of \$2.0 million related to stock option-based awards and \$1.8 million related to non-vested restricted stock and other stock-based awards. This cost is expected to be recognized over the remaining weighted average period of 1.2 years for stock option-based awards and 1.3 years for non-vested restricted stock and other stock-based awards.

Stock options exercisable totaled 275,392 shares at December 31, 2018 and 385,658 shares at December 31, 2017. Stock options available for grant totaled 1,548,917 shares at December 31, 2018.

13 RETIREMENT PLANS AND OTHER POSTRETIREMENT BENEFITS

Tredegar sponsors a noncontributory defined benefit (pension) plan covering certain current and former U.S. employees. The plans for salaried and hourly employees currently in effect is based on a formula using the participant's years of service and compensation or using the participant's years of service and a dollar amount. The plan is closed to new participants and pay for active plan participants for benefit calculations was frozen as of December 31, 2007. As of January 31, 2018, the plan no longer accrued benefits associated with crediting employees for service, thereby freezing all future benefits under the plan.

In addition to providing pension benefits, the Company provides postretirement life insurance and health care benefits for certain groups of employees. Tredegar and retirees share in the cost of postretirement health care benefits, with employees hired on or before January 1, 1993, receiving a fixed subsidy to cover a portion of their health care premiums. The Company eliminated prescription drug coverage for Medicare-eligible retirees as of January 1, 2006. Consequently, Tredegar is not eligible for any federal subsidies.

The following tables reconcile the changes in benefit obligations and plan assets in 2018 and 2017, and reconcile the funded status to prepaid or accrued cost at December 31, 2018 and 2017:

(In thousands)	Pension Benefits		Other Post-Retirement Benefits	
	2018	2017	2018	2017
Change in benefit obligation:				
Benefit obligation, beginning of year	\$ 318,123	\$ 303,126	\$ 7,704	\$ 7,436
Service cost	17	194	36	33
Interest cost	11,442	12,575	271	301
Effect of actuarial (gains) losses related to the following:				
Discount rate change	(23,653)	21,055	(546)	471
Retirement rate assumptions and mortality table adjustments	(914)	(2,145)	6	15
Other	(2,326)	(1,921)	(285)	(245)
Plan participant contributions	—	—	656	646
Benefits paid	(15,449)	(14,761)	(953)	(953)
Benefit obligation, end of year	\$ 287,240	\$ 318,123	\$ 6,889	\$ 7,704
Change in plan assets:				
Plan assets at fair value, beginning of year	\$ 226,354	\$ 214,559	\$ —	\$ —
Actual return on plan assets	(14,148)	21,034	—	—
Employer contributions	8,610	5,522	297	307
Plan participant contributions	—	—	656	646
Benefits paid	(15,449)	(14,761)	(953)	(953)
Plan assets at fair value, end of year	\$ 205,367	\$ 226,354	\$ —	\$ —
Funded status of the plans	\$ (81,873)	\$ (91,769)	\$ (6,889)	\$ (7,704)
Amounts recognized in the consolidated balance sheets:				
Accrued expenses (current)	\$ 182	\$ 182	\$ 456	\$ 457
Pension and other postretirement benefit obligations, net	81,691	91,587	6,433	7,247
Net amount recognized	\$ 81,873	\$ 91,769	\$ 6,889	\$ 7,704

Assumptions used for financial reporting purposes to compute net benefit income or cost and benefit obligations for continuing operations, and the components of net periodic benefit income or cost for continuing operations, are as follows:

(In thousands, except percentages)	Pension Benefits			Other Post-Retirement Benefits		
	2018	2017	2016	2018	2017	2016
Weighted-average assumptions used to determine benefit obligations:						
Discount rate	4.40%	3.72%	4.29%	4.37%	3.69%	4.24%
Expected long-term return on plan assets	6.00%	6.50%	6.50%	n/a	n/a	n/a
Weighted-average assumptions used to determine net periodic benefit cost:						
Discount rate	3.72%	4.29%	4.55%	3.69%	4.24%	4.49%
Expected long-term return on plan assets	6.50%	6.50%	7.00%	n/a	n/a	n/a
Components of net periodic benefit cost:						
Service cost	\$ 17	\$ 194	\$ 231	\$ 36	\$ 33	\$ 38
Interest cost	11,442	12,575	13,323	271	301	337
Expected return on plan assets	(15,011)	(14,955)	(15,980)	—	—	—
Amortization of prior service costs and gains or losses	13,894	12,320	13,312	(243)	(275)	(214)
Net periodic benefit cost	\$ 10,342	\$ 10,134	\$ 10,886	\$ 64	\$ 59	\$ 161

Net benefit income or cost is determined using assumptions at the beginning of each year. Funded status is determined using assumptions at the end of each year. The amount of the accumulated benefit obligation is the same as the projected benefit obligation. At December 31, 2018, the effect of a 1% change in the health care cost trend rate assumptions would not impact the post-retirement obligation.

Expected benefit payments for continuing operations over the next five years and in the aggregate for 2024-2028 are as follows:

(In thousands)	Pension Benefits	Other Post-Retirement Benefits
2019	\$ 16,826	\$ 456
2020	17,337	458
2021	17,713	461
2022	18,048	463
2023	18,268	461
2024—2028	92,435	2,236

Amounts recorded in 2018, 2017 and 2016 in accumulated other comprehensive income, before related deferred income taxes, consist of:

(In thousands)	Pension			Other Post-Retirement		
	2018	2017	2016	2018	2017	2016
Prior service cost (benefit)	\$ —	\$ 5	\$ 10	\$ —	\$ —	\$ —
Net actuarial (gain) loss	132,751	144,377	145,782	(1,821)	(1,238)	(1,756)

Pension expense is expected to be \$9.6 million in 2019. The amounts in accumulated other comprehensive income, before related deferred income taxes, that are expected to be recognized as components of net periodic benefit or cost during 2019 are as follows:

(In thousands)	Pension	Other Post-Retirement
Prior service cost (benefit)	\$ —	\$ —
Net actuarial (gain) loss	10,916	(230)

The percentage composition of assets held by pension plans for continuing operations at December 31, 2018, 2017 and 2016 are as follows:

	% Composition of Plan Assets at December 31,		
	2018	2017	2016
Pension plans related to continuing operations:			
Fixed income securities	8.6%	7.7%	8.0%
Large/mid-capitalization equity securities	18.2	19.0	14.7
Small-capitalization equity securities	6.8	6.4	5.3
International and emerging market equity securities	16.0	15.1	11.5
Total equity securities	41.0	40.5	31.5
Private equity and hedge funds	42.3	44.6	48.4
Other assets	8.1	7.2	12.1
Total for continuing operations	100.0%	100.0%	100.0%

Tredegar's targeted allocation percentage for pension plan assets and the expected long-term rate of return on assets used to determine its benefit obligation at December 31, 2018, are as follows:

	Target % Composition of Plan Assets *	Expected Long-term Return %
Pension plans related to continuing operations:		
Fixed income securities	12.0%	3.2%
Large/mid-capitalization equity securities	19.0	6.1
Small-capitalization equity securities	6.0	6.6
International and emerging market equity securities	18.0	7.3
Total equity securities	43.0	6.7
Private equity and hedge funds	45.0	6.1
Total for continuing operations	100.0%	6.0%

* Target percentages for the composition of plan assets represents a neutral position within the approved range of allocations for such assets.

Expected long-term returns are estimated by asset class and generally are based on inflation-adjusted historical returns, volatilities, risk premiums and managed asset premiums. The portfolio of fixed income securities is structured with maturities that generally match estimated benefit payments over the next 1-2 years. The other assets category is primarily comprised of cash and contracts with insurance companies. The Company's primary investment objective is to maximize total return with a strong emphasis on the preservation of capital, and it believes that over the long-term a diversified portfolio of fixed income securities, equity securities, hedge funds and private equity funds has a better risk-return profile than fixed income securities alone. The average remaining duration of benefit payments for the pension plans is about 11 years. The Company expects its required contributions to be approximately \$8.1 million in 2019.

Estimates of the fair value of assets held by the Company's pension plan are provided by unaffiliated third parties. Investments in private equity and hedge funds and certain fixed income securities by the Company's pension plan are measured at NAV, which is a practical expedient for measuring fair value. These assets are therefore excluded from the fair value hierarchy for each of the years presented. At December 31, 2018 and 2017, the pension plan assets are categorized by level within the fair value measurement hierarchy as follows:

(In thousands)	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Balances at December 31, 2018				
Large/mid-capitalization equity securities	\$ 37,323	\$ 37,323	\$ —	\$ —
Small-capitalization equity securities	13,880	13,880	—	—
International and emerging market equity securities	32,931	13,389	19,542	—
Fixed income securities	17,769	5,886	11,883	—
Other assets	6,779	6,779	—	—
Total plan assets at fair value	\$ 108,682	\$ 77,257	\$ 31,425	\$ —
Private equity and hedge funds	86,786			
Contracts with insurance companies	9,899			
Total plan assets, December 31, 2018	\$ 205,367			
Balances at December 31, 2017				
Large/mid-capitalization equity securities	\$ 42,920	\$ 42,920	\$ —	\$ —
Small-capitalization equity securities	14,477	14,477	—	—
International and emerging market equity securities	34,153	16,409	17,744	—
Fixed income securities	17,513	5,374	12,139	—
Other assets	5,822	5,822	—	—
Total plan assets at fair value	\$ 114,885	\$ 85,002	\$ 29,883	\$ —
Private equity and hedge funds	100,974			
Contracts with insurance companies	10,495			
Total plan assets, December 31, 2017	\$ 226,354			

Tredegar also has a non-qualified supplemental pension plan covering certain employees. Effective December 31, 2005, further participation in this plan was terminated and benefit accruals for existing participants were frozen. The plan was designed to restore all or a part of the pension benefits that would have been payable to designated participants from the principal pension plans if it were not for limitations imposed by income tax regulations. The projected benefit obligation relating to this unfunded plan was \$2.0 million at December 31, 2018 and \$2.2 million at December 31, 2017. Pension expense recognized for this plan was \$0.1 million in 2018, \$0.1 million in 2017 and \$0.1 million in 2016. This information has been included in the preceding pension benefit tables.

Approximately 72 employees at the Company's film products manufacturing facility in Kerkrade, The Netherlands are covered by a collective bargaining agreement that includes participation in a multi-employer pension plan. Pension expense recognized for participation in this plan, which is equal to required contributions, was \$0.4 million in 2018, \$0.4 million in 2017 and \$0.4 million in 2016. This information has been excluded from the preceding pension benefit tables.

14 SAVINGS PLAN

Tredegar has a savings plan that allows eligible employees to voluntarily contribute a percentage of their compensation, up to Internal Revenue Service ("IRS") limitations. The provisions of the savings plan provided the following benefits for salaried and certain hourly employees:

- The Company makes matching contributions to the savings plan of \$1 for every \$1 an employee contributes per pay period up to a maximum of 5% of eligible compensation.
- The savings plan includes immediate vesting of matching contributions and automatic enrollment at 3% of eligible compensation unless the employee opts out or elects a different percentage.

The Company also has a non-qualified plan that restores matching benefits for employees suspended from the savings plan due to certain limitations imposed by income tax regulations (“restoration plan”). Charges recognized for these plans were \$3.7 million in 2018, \$3.5 million in 2017 and \$3.2 million in 2016. The Company’s liability under the restoration plan was \$1.0 million at December 31, 2018 (consisting of 65,280 phantom shares of common stock) and \$1.3 million at December 31, 2017 (consisting of 65,548 phantom shares of common stock) and valued at the closing market price on those dates.

The Tredegar Corporation Benefits Plan Trust (the “Trust”) purchased 7,200 shares of the Company’s common stock in 1998 for \$0.2 million and 46,671 shares of its common stock in 1997 for \$1.0 million, as a partial hedge against the phantom shares held in the restoration plan. There have been no shares purchased since 1998 except for re-invested dividends. The cost of the shares held by the Trust is shown as a reduction to shareholders’ equity in the consolidated balance sheets.

15 RENTAL EXPENSE AND CONTRACTUAL COMMITMENTS

Rental expense for continuing operations was \$5.2 million in 2018, \$4.4 million in 2017 and \$2.9 million in 2016. Rental commitments under all noncancellable leases for continuing operations as of December 31, 2018, are as follows:

(In thousands)		
2019	\$	4,445
2020		4,007
2021		3,591
2022		2,391
2023		1,245
Remainder		2,630
Total minimum lease payments	\$	18,309

Contractual obligations for plant construction and purchases of real property and equipment amounted to \$14.1 million at December 31, 2018.

16 INCOME TAXES

The U.S. Tax Cuts and Jobs Act (“TCJA”) makes broad and complex changes to the U.S. tax code, including, but not limited to: (i) reducing the U.S. federal corporate income tax rate from 35% to 21%; (ii) requiring companies to pay a one-time transition tax on certain unrepatriated earnings of foreign subsidiaries; (iii) generally eliminating U.S. federal income taxes on dividends from foreign subsidiaries; (iv) creating new taxes on certain foreign earnings; (v) eliminating certain deductions; and (vi) providing the option to full expensing of qualified property.

The SEC staff issued Staff Accounting Bulletin No. 118 (“SAB 118”), which provides guidance on accounting for the tax effects of the TCJA. SAB 118 provides a measurement period that should not extend beyond one year from the TCJA enactment date for companies to complete the accounting under Accounting Standards Codification No. 740 (“ASC 740”). In accordance with SAB 118, a company must reflect the income tax effects of a company’s accounting for those tax effects of the TCJA for which the accounting under ASC 740 is complete. To the extent that a company’s accounting for certain tax effects of the TCJA is incomplete, but it is able to determine a reasonable estimate, it must record a provisional estimate in the financial statements. If a company cannot determine a reasonable estimate to be included in the financial statements, it should continue to apply ASC 740 on the basis of the provisions of the tax law that were in effect immediately before the enactment of the TCJA.

The Company applied the guidance in SAB 118 when accounting for the enactment-date effects of the TCJA in 2017 and throughout 2018. At December 31, 2017, the Company had not completed its accounting for all the enactment-date income tax effects of the TCJA under ASC 740, Income Taxes as described below. At December 31, 2018, the Company has now completed its accounting for the enactment-date income tax effects of the TCJA.

Item (i) above was completed in 2017 and resulted in a non-cash deferred income tax benefit in the fourth quarter of 2017 of \$3.9 million to adjust applicable deferred income tax assets and liabilities for the change in the U.S. federal corporate rate. Income tax accruals on U.S. income in 2018 and future periods will apply the new 21% U.S. federal income tax rate.

Item (ii) was not completed in 2017. The Company did not accrue any deemed repatriation taxes on unremitted earnings of its foreign subsidiaries in 2017 since its preliminary assessment indicated that such foreign subsidiaries had no net cumulative unremitted earnings due to historical repatriation. Upon further analysis of the TCJA and notices and regulations issued and proposed by the U.S. Department of the Treasury and the Internal Revenue Service, the Company finalized its

calculations of the deemed repatriation tax liability in 2018 and concluded once again that the Company would not owe any transition tax and that no adjustment was required in 2018.

The application of the new Global Intangible (“GILTI”) tax rules to the Company, which is part of item (iv), was not completed in 2017. The rules are complex, and under GAAP the Company is allowed to make a policy choice of either: (a) treating taxes due on future U.S. inclusions in taxable income relate to GILTI as current period expense when incurred (the “period cost method”), or (b) factoring such amounts into the Company’s measurement of its deferred income taxes (the “deferred method”). The Company was not able to complete its analysis of these rules and could not reasonably estimate the effect of this provision of the TCJA in 2017. Accordingly, the Company did not make any adjustments related to the potential GILTI tax in its 2017 financial statements and did not make a policy decision whether to record deferred income taxes on GILTI. After further consideration in 2018, the Company elected to account for GILTI in the year the tax was incurred. In 2018, application of the GILTI provisions did not result in any additional U.S. income tax.

Income (loss) before income taxes and income tax expense (benefit) are as follows:

(In thousands)	2018	2017	2016
Income (loss) before income taxes:			
Domestic	\$ 17,663	\$ 67,549	\$ 26,284
Foreign	18,705	(82,461)	1,399
Total	\$ 36,368	\$ (14,912)	\$ 27,683
Current income tax expense (benefit):			
Federal	\$ (187)	\$ (20,560)	\$ 4,302
State	815	800	(709)
Foreign	2,090	3,247	3,255
Total	2,718	(16,513)	6,848
Deferred income tax expense (benefit):			
Federal	8,708	(23,302)	(2,505)
State	364	(949)	1,396
Foreign	(264)	(12,399)	(2,522)
Total	8,808	(36,650)	(3,631)
Total income tax expense (benefit)	\$ 11,526	\$ (53,163)	\$ 3,217

The significant differences between the U.S. federal statutory rate and the effective income tax rate for continuing operations are as follows:

(In thousands, except percentages)	2018		2017		2016	
	Amount	%	Amount	%	Amount	%
Income tax expense (benefit) at federal statutory rate	\$ 7,638	21.0	\$ (5,219)	35.0	\$ 9,689	35.0
U.S. tax on foreign branch income	1,901	5.2	—	—	—	—
Foreign rate differences	1,805	5.0	2,546	(17.1)	499	1.8
Non-deductible goodwill and asset impairment loss	1,801	5.1	228	(1.5)	13	—
Tax contingency accruals and tax settlements	773	2.1	(420)	2.8	104	0.4
Valuation allowance for capital loss carryforwards	553	1.5	83	(0.6)	267	1.0
State taxes, net of federal income tax benefit	520	1.4	656	(4.4)	647	2.3
Non-deductible expenses	322	0.9	434	(2.9)	396	1.4
Stock-based compensation	175	0.5	199	(1.3)	—	—
Unremitted earnings from foreign operations	126	0.3	—	—	(256)	(0.9)
Worthless stock deductions	—	—	(61,413)	411.9	—	—
Impact of U.S. Tax Cuts and Jobs Act	—	—	(4,433)	29.7	—	—
Settlement of Terphane acquisition escrow	—	—	(4,200)	28.2	—	—
Increase in value of kaléo investment held abroad	—	—	(2,326)	15.6	(197)	(0.7)
Domestic production activities deduction	—	—	—	—	(735)	(2.7)
Remitted earnings from foreign operations	—	—	—	—	(6,574)	(23.7)
Changes in estimates related to prior year tax provision	(303)	(0.8)	320	(2.1)	330	1.2
Research and development tax credit	(420)	(1.2)	(375)	2.5	(550)	(2.0)
Valuation allowance due to foreign losses and impairments	(975)	(2.7)	20,757	(139.3)	(416)	(1.5)
Foreign derived intangible income deduction	(1,050)	(2.9)	—	—	—	—
Brazilian tax incentive	(1,340)	(3.7)	—	—	—	—
Income tax expense (benefit) at effective income tax rate	\$ 11,526	31.7	\$ (53,163)	356.5	\$ 3,217	11.6

Income taxes from continuing operations in 2018 were primarily impacted by not recording a tax benefit on a portion of the PE Films Personal Care goodwill impairment charge, the additional tax impact of Tredegar's Brazilian subsidiaries being included in its US consolidated tax return as foreign branches as well as the tax impact of the local statutory tax rates of Tredegar's foreign subsidiaries being higher than the current US tax rate of 21%. These increases to income tax expense were offset by recording a tax benefit on a portion of foreign losses and impairments, by the tax benefit of the foreign derived intangible income deduction under the TCJA, and by the benefit of tax incentives in Brazil.

During 2017, the Company completed a plan to liquidate for tax purposes one of its domestic subsidiaries, which allowed it to claim an income tax benefit on the write-off of the stock basis of Terphane, Inc. (Terphane's U.S. affiliate) on its 2017 U.S. federal income tax return. The Company recorded an income tax benefit during the second quarter of 2017 of \$8.1 million related to this worthless stock deduction, net of valuation allowances and accrual for uncertain tax positions. Also, during the fourth quarter of 2017, as a result of valuation activities and other efforts, the Company claimed an ordinary loss for U.S. federal and state income tax purposes of \$153 million for the write-off of the stock basis of Terphane Limitada (Terphane's Brazilian entity). The full tax benefit accrued for the Terphane Limitada worthless stock deduction at the 35% U.S. corporate income tax rate applicable for 2017 was approximately \$54 million. This benefit was reduced by \$4.8 million in conjunction with the TCJA for the portion of the deduction that is expected to be applied to income generated after 2017 where the new U.S. federal corporate income tax rate of 21% is applicable. The significant foreign rate difference for 2017 is primarily due to the difference between Hungary's income tax rate of 9% and the U.S. federal corporate income tax rate of 35%.

Tredegar accrues U.S. federal income taxes on unremitted earnings of all foreign subsidiaries where required. However, due to changes in the taxation of dividends under TCJA, Tredegar will only record U.S. federal income taxes on unremitted earnings of its foreign subsidiaries where Tredegar cannot take steps to eliminate any potential tax on future distributions from its foreign subsidiaries. Prior to the second quarter of 2016, deferred U.S. federal income taxes had not been recorded for the undistributed earnings for Terphane Limitada because the Company had intended to permanently reinvest these earnings. Due to concerns about the political and economic conditions in Brazil, Terphane Limitada began making cash distributions to the

Company in 2016. During the second quarter of 2016, Terphane Limitada paid a dividend of \$10.7 million to the Company. During the second quarter of 2017, the Company recognized a net tax benefit of \$0.4 million associated with additional U.S. tax related to this repatriation of cash from Brazil offset by the reversal of related tax contingencies. Because of the accumulation of significant losses related to foreign currency translations at Terphane Limitada, there were no deferred income tax liabilities associated with the U.S. federal income taxes and foreign withholding taxes on Terphane Limitada's undistributed earnings as of and December 31, 2018 and 2017.

Income taxes in 2016 included the recognition of an additional valuation allowance of \$0.3 million related to expected limitations on the utilization of assumed capital losses on certain investments. In 2016, the difference between the federal statutory rate and the effective tax rate is primarily driven by the \$6.4 million tax benefit from excess foreign tax credits related to the repatriation of cash from Brazil discussed above.

The Brazilian federal statutory income tax rate is a composite of 34.0% (25.0% of income tax and 9.0% of social contribution on income). Terphane's manufacturing facility in Brazil is the beneficiary of certain income tax incentives that allow for a reduction in the statutory Brazilian federal income tax rate levied on the operating profit of its products. These incentives produce a current tax rate of 15.25% for Terphane (6.25% of income tax and 9.0% social contribution on income). The incentives have been granted for a 10-year period, which has a commencement date of January 1, 2015 and will expire at the end of 2024. The benefit from the tax incentives was \$1.3 million in 2018 and was immaterial for 2017 and 2016.

Deferred income tax liabilities and deferred income tax assets at December 31, 2018 and 2017, are as follows:

(In thousands)	2018	2017
Deferred income tax liabilities:		
Amortization of goodwill and identifiable intangibles	\$ 13,416	\$ 22,739
Foreign currency translation gain adjustment	300	433
Excess of carrying value over tax basis of investment in kaléo	15,131	8,602
Derivative financial instruments	—	167
Other	184	—
Total deferred income tax liabilities	29,031	31,941
Deferred income tax assets:		
Depreciation	2,399	4,917
Pensions	17,153	19,626
Employee benefits	6,676	6,842
Excess capital losses	1,519	4,695
Inventory	3,644	2,884
Asset write-offs, divestitures and environmental accruals	1,200	1,754
Tax benefit on U.S. federal, state and foreign NOL and credit carryforwards	23,507	33,384
Timing adjustment for unrecognized tax benefits on uncertain tax positions, including portion relating to interest and penalties	267	184
Allowance for doubtful accounts	382	406
Derivative financial instruments	432	—
Other	—	261
Deferred income tax assets before valuation allowance	57,179	74,953
Less: Valuation allowance	24,736	28,499
Total deferred income tax assets	32,443	46,454
Net deferred income tax (assets) liabilities	\$ (3,412)	\$ (14,513)
Amounts recognized in the consolidated balance sheets:		
Deferred income tax assets (noncurrent)	\$ 3,412	\$ 16,636
Deferred income tax liabilities (noncurrent)	—	2,123
Net deferred income tax assets (liabilities)	\$ 3,412	\$ 14,513

Except as noted below, the Company believes that it is more likely than not that future taxable income will exceed future tax-deductible amounts thereby resulting in the realization of deferred income tax assets. The Company has estimated gross

federal, state and foreign tax credits and net operating loss carryforwards of \$23.5 million and \$33.4 million at December 31, 2018 and 2017, respectively. The U.S. federal tax credits will expire in between 2026 and 2037. The U.S. federal net operating loss carryforwards were fully utilized in 2018. The majority of the foreign net operating loss carryforwards do not expire. The U.S. state carryforwards expire at different points over the next 9 to 20 years.

Valuation allowances of \$7.7 million, \$8.5 million and \$1.5 million at December 31, 2018, 2017 and 2016, respectively, are recorded against the tax benefit on U.S. federal, state and foreign tax credits and net operating loss carryforwards generated by certain foreign and domestic subsidiaries that may not be recoverable in the carryforward period. The valuation allowance for excess capital losses from investments and other related items was \$1.2 million, \$4.4 million and \$11.2 million at December 31, 2018, 2017 and 2016, respectively. The current year balance decreased primarily due to the expiration of a portion of the capital loss carryforwards. The amount of the deferred income tax asset considered realizable, however, could be adjusted in the near term if estimates of the fair value of certain investments during the carryforward period change. Tredegar continues to evaluate opportunities to utilize capital loss carryforwards prior to their expiration at various dates in the future. As circumstances and events warrant, allowances will be reversed when it is more likely than not that future taxable income will exceed deductible amounts, thereby resulting in the realization of deferred income tax assets. The valuation allowance for asset impairments in foreign jurisdictions where the Company believes it is more likely than not that the deferred income tax asset will not be realized was \$15.8 million and \$15.6 million at December 31, 2018 and 2017, respectively (none in 2016).

A reconciliation of the Company's unrecognized uncertain tax positions since January 1, 2016, is shown below:

(In thousands)	Years Ended December 31,		
	2018	2017	2016
Balance at beginning of period	\$ 1,962	\$ 3,315	\$ 4,049
Increase (decrease) due to tax positions taken in:			
Current period	13	27	1,151
Prior period	1,430	(532)	43
Increase (decrease) due to settlements with taxing authorities	—	(51)	(1,706)
Reductions due to lapse of statute of limitations	(44)	(797)	(222)
Balance at end of period	\$ 3,361	\$ 1,962	\$ 3,315

Additional information related to unrecognized uncertain tax positions since January 1, 2016 is summarized below:

(In thousands)	Years Ended December 31,		
	2018	2017	2016
Gross unrecognized tax benefits on uncertain tax positions (reflected in current income tax, other noncurrent liability accounts, or deferred tax assets in the balance sheet)	\$ 3,361	\$ 1,962	\$ 3,315
Deferred income tax assets related to unrecognized tax benefits on uncertain tax positions (reflected in deferred income tax accounts in the balance sheet)	(211)	(153)	(345)
Net unrecognized tax benefits on uncertain tax positions, which would impact the effective tax rate if recognized	3,150	1,809	2,970
Interest and penalties accrued on deductions taken relating to uncertain tax positions (approximately \$107, \$(1) and \$(262) reflected in income tax expense in the income statement in 2018, 2017 and 2016, respectively, with the balance shown in current income tax and other noncurrent liability accounts in the balance sheet)	243	136	135
Related deferred income tax assets recognized on interest and penalties	(56)	(32)	(49)
Interest and penalties accrued on uncertain tax positions net of related deferred income tax benefits, which would impact the effective tax rate if recognized	187	104	86
Total net unrecognized tax benefits on uncertain tax positions reflected in the balance sheet, which would impact the effective tax rate if recognized	\$ 3,337	\$ 1,913	\$ 3,056

Tredegar, or one of its subsidiaries, files income tax returns in the U.S. federal jurisdiction, various states and jurisdictions outside the U.S. With few exceptions, Tredegar is no longer subject to U.S. federal, state or non-U.S. income tax examinations by tax authorities for years before 2014. The Company anticipates that it is reasonably possible that Federal and state income tax audits or statutes may settle or close within the next 12 months, which could result in the recognition of up to approximately \$3.2 million of the balance of unrecognized tax positions, including any payments that may be made.

17 LOSSES ASSOCIATED WITH PLANT SHUTDOWNS, ASSET IMPAIRMENTS AND RESTRUCTURINGS, UNUSUAL ITEMS, GAINS FROM SALE OF ASSETS AND OTHER ITEMS

Losses associated with plant shutdowns, asset impairments, restructurings and other charges in 2018 (as shown in the segment operating profit table in Note 5) totaled \$6.5 million (\$5.9 million after taxes), and unless otherwise noted below, are also included in “Asset impairments and costs associated with exit and disposal activities” in the consolidated statements of income. Results in 2018 included:

- Quarterly charges associated with the shutdown of PE Films’ manufacturing facility in Shanghai, China, which includes categories of expenses shown in the table below (Accelerated depreciation and a portion of Other facility consolidation-related costs and Severance & employee related expenses, as noted in the table below, are included in “Cost of goods sold” in the consolidated statements of income):

(\$ in millions)	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		2018	
	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
Severance & employee related expenses	—	—	0.4	0.4	1.3	1.3	0.5	0.5	2.2	2.2
Accelerated depreciation	—	—	0.1	0.1	0.4	0.4	0.1	0.1	0.6	0.6
Other facility consolidation-related costs	—	—	0.1	0.1	0.1	0.1	0.3	0.3	0.5	0.5
Total	—	—	0.6	0.6	1.8	1.8	0.9	0.9	3.3	3.3
Amount included in “Cost of goods sold” in the consolidated statements of income	—	—	0.2	0.2	0.7	0.7	0.3	0.3	1.2	1.2

Note: BT = before taxes; AT = after taxes

- Quarterly charges related to estimated excess costs associated with the ramp-up of new product offerings and additional expenses related to strategic capacity expansion projects by PE Films of \$1.0 million (\$0.9 million after taxes), \$0.6 million (\$0.5 million after taxes), \$0.2 million (\$0.1 million after taxes) and \$0.3 million (\$0.2 million after taxes) for the first, second, third and fourth quarter, respectively (included in “Cost of goods sold” in the consolidated statements of income);
- Quarterly charges for professional fees associated with the Terphane Limitada worthless stock deduction, the impairment of assets of Flexible Packaging Films, determining the effect of the new U.S. federal income tax law, and a market study for PE Films of \$0.3 million (\$0.2 million after taxes), \$0.4 million (\$0.3 million after taxes) and \$0.1 million (\$0.1 million after taxes) for the first, third and fourth quarter, respectively (included in “Selling, general and administrative expenses” in the consolidated statements of income);
- Quarterly charges for severance and other employee-related costs associated with restructurings in PE Films of \$0.1 million (\$0.1 million after taxes), \$0.3 million (\$0.2 million after taxes) and \$0.3 million (\$0.3 million after taxes) for the first, third and fourth quarter, respectively, and in Aluminum Extrusions of \$0.1 million (\$0.1 million after taxes) in the first quarter;
- A fourth quarter charge of \$0.5 million (\$0.4 million after taxes) associated with business development projects (included in “Selling, general and administrative expense” in the consolidated statements of income and “Corporate expenses, net” in the statement of net sales and operating profit by segment);
- A fourth quarter charge of \$0.5 million (\$0.4 million after taxes) for professional fees associated with the implementation of new accounting guidance and analysis and revisions to the Company’s internal control over financial reporting (included in “Selling, general and administrative expenses” in the consolidated statements of income);

- A fourth quarter benefit of \$0.3 million (\$0.2 million after taxes) (included in “Other income (expense), net” in the consolidated statements of income) from the reversal of a PE Films’ contingent liability related to the acquisition of Bright View Technologies;
- A fourth quarter charge of \$0.1 million (\$0.1 million after taxes) and a third quarter charge of \$0.2 million (\$0.1 million after taxes) related to expected future environmental costs at the aluminum extrusions manufacturing facility in Carthage, Tennessee (included in “Cost of goods sold” in the consolidated statements of income);
- A third quarter charge of \$0.1 million (\$0.1 million after taxes) related to wind damage that occurred in the third quarter of 2018 at the aluminum extrusions manufacturing facility in Elkhart, Indiana (included in “Selling, general and administrative expenses” in the consolidated statements of income); and
- A fourth quarter charge of \$0.1 million (\$0.1 million after taxes) related to a fire that occurred in the fourth quarter of 2018 at the PE Films facility in Rétság, Hungary (included in “Selling, general and administrative expenses” in the condensed consolidated statements of income).

Results in 2018 include a net unrealized gain on the Company’s investment in kaléo (included in “Other income (expense), net” in the consolidated statements of income) of \$30.6 million (\$23.9 million after taxes). Losses on the Company’s investment in the Harbinger Fund of \$0.2 million (\$0.1 million after taxes), \$0.1 million (\$0.1 million after taxes) and \$0.2 million (\$0.2 million after taxes) were recognized in the second, third and fourth quarters of 2018, respectively (included in “Other income (expense), net” in the consolidated statements of income). See Note 4 for additional information on investments.

In the third quarter of 2018, the Company recorded a goodwill impairment charge of \$46.8 million (\$38.2 million after taxes) for goodwill associated with the acquisition of certain components of PE Films. See Note 8 for additional details.

The Company recorded an unrealized loss on its investment property in Alleghany and Bath Counties, Virginia (included in “Other income (expense), net” in the consolidated statements of income) of \$0.2 million (\$0.2 million after taxes) in the third quarter of 2018. This loss was recognized when the property was sold in the fourth quarter of 2018.

In June 2018, the Company announced plans to close its facility in Shanghai, China, which primarily produces plastic films used as components for personal care products (“Shanghai transition”). Production ceased at this plant during the fourth quarter of 2018. The Company expects to recognize costs associated with exit and disposal activities of \$5.0 million, down from an initial amount of \$7.1 million, comprised of: (i) retention, severance and related costs (\$2.9 million), (ii) customer-related costs (\$0.5 million), and (iii) legal, asset disposal and other cash costs (\$1.6 million). In addition, the Company expects non-cash asset write-offs and accelerated depreciation of \$0.6 million, down from an initial amount of \$0.9 million. Net annual cash savings from consolidating operations of \$1.7 million is expected. Proceeds from expected property disposals are uncertain. The Company anticipates that these activities, including property disposals, will require 12-18 months to execute, and the costs are expected to be incurred during this period.

Total expenses associated with the Shanghai transition were \$3.3 million (\$3.3 million after taxes) in 2018, (\$2.1 million included in “Asset impairments and costs associated with exit and disposal activities, net of adjustments” and \$1.2 million included in “Cost of goods sold” in the consolidated statements of income). Cash expenditures were \$2.5 million in 2018.

Losses associated with plant shutdowns, asset impairments, restructurings and other charges for continuing operations in 2017 (as shown in the segment operating profit table in Note 5) totaled \$94.0 million (\$79.2 million after taxes), and unless otherwise noted below, are also included in “Asset impairments and costs associated with exit and disposal activities” in the consolidated statements of income. Results in 2017 included:

- A fourth quarter charge of \$101.3 million (\$87.2 million after taxes) related to the impairment of assets at Flexible Packaging Films. During the fourth quarter of 2017, in conjunction with annual business planning as well as valuation activities and other efforts, the Company determined that the carrying value of Terphane’s remaining long-lived assets were impaired (Terphane’s goodwill was written off in 2015). Accordingly, the Company wrote down these assets based on an enterprise valuation for all of Terphane of approximately \$30 million;
- Second quarter income of \$11.9 million (\$11.9 million after taxes) related to the settlement of an escrow arrangement established upon the acquisition of Terphane Holdings, LLC in 2011 (included in “Other income (expense), net” in the consolidated statements of income). In settling the escrow arrangement, the Company assumed the risk of the claims (and associated legal fees) against which the escrow previously secured the Company. While the ultimate amount of such claims is unknown, the Company believes that it is reasonably possible that it could be liable for some portion of these claims, and currently estimates the amount of such future claims at approximately \$3.5 million;

- First quarter charges of \$3.3 million (\$2.0 million after taxes) related to the acquisition of Futura, i) associated with accounting adjustments of \$1.7 million made to the value of inventory sold by Aluminum Extrusions after its acquisition of Futura (included in “Cost of goods sold” in the consolidated statements of income), ii) acquisition costs of \$1.5 million and, iii) integration costs of \$0.1 million (included in “Selling, general and administrative expenses” in the consolidated statements of income), offset in the second quarter by pretax income of \$0.7 million (\$0.5 million after taxes) related to the fair valuation of an earnout provision (included in “Other income (expense), net” in the consolidated statements of income);
- Quarterly charges related to estimated excess costs associated with the ramp-up of new product offerings and additional expenses related to strategic capacity expansion projects by PE Films of \$1.4 million (\$1.3 million after taxes), \$0.9 million (\$0.8 million after taxes), \$0.6 million (\$0.5 million after taxes) and \$0.6 million (\$0.6 million after taxes) for the first, second, third and fourth quarter, respectively, and by Aluminum Extrusions of \$0.3 million (\$0.2 million after taxes), \$0.1 million (less than \$0.1 million after taxes) and \$0.1 million (less than \$0.1 million after taxes) for the first, second, and third quarters, respectively (included in “Cost of goods sold” in the consolidated statements of income);
- A third quarter charge of \$0.2 million (\$0.1 million after taxes) associated with the consolidation of domestic PE Films’ manufacturing facilities for other facility consolidation-related expenses, a second quarter charge of \$0.3 million (\$0.2 million after taxes), which includes accelerated depreciation of \$0.1 million (included in “Cost of goods sold” in the consolidated statements of income) and other facility consolidation-related expenses of \$0.2 million (\$0.1 million is included in “Cost of goods sold” in the consolidated statements of income), offset by a reversal of severance and other employee-related costs of \$0.3 million (\$0.2 million after taxes) and a first quarter charge of \$0.7 million (\$0.4 million after taxes), which includes severance and other employee-related costs of \$0.2 million, asset impairments of \$0.1 million, accelerated depreciation of \$0.1 million (included in “Cost of goods sold” in the consolidated statements of income) and other facility consolidation-related expenses of \$0.3 million (\$0.2 million is included in “Cost of goods sold” in the consolidated statements of income);
- Fourth quarter net gain of \$5.1 million (\$3.2 million after taxes), related to the explosion that occurred in the second quarter of 2016 at the aluminum extrusions manufacturing facility in Newnan, Georgia, which includes the recognition of a gain on the involuntary conversion of an asset of \$5.3 million for insurance proceeds used for the replacement of capital equipment (included in “Other income (expense), net” in the consolidated statements of income), partially offset by excess production costs of \$0.2 million (\$0.1 million after taxes) (included in “Cost of goods sold” in the consolidated statements of income); a second quarter net gain on the expected recovery of excess production costs of \$0.9 million (\$0.6 million after taxes) incurred in prior periods for which recovery from insurance carriers was not previously considered to be reasonably assured (included in “Cost of goods sold” in the consolidated statements of income); and a first quarter net loss of \$0.4 million (\$0.2 million after taxes), which includes \$0.3 million for other costs for which recovery from insurance carriers was not considered to be reasonably assured (reversed in the second quarter) and legal and consulting fees of \$0.1 million (included in “Selling, general and administrative expenses” in the consolidated statements of income);
- A fourth quarter charge of \$1.5 million (\$1.0 million after taxes) and a first quarter charge of \$0.4 million (\$0.2 million after taxes) related to expected future environmental costs at the aluminum extrusions manufacturing facilities in Carthage, Tennessee and Newnan, Georgia (included in “Cost of goods sold” in the consolidated statements of income);
- A fourth quarter charge of \$0.8 million (\$0.5 million after taxes) at Corporate related to expected future environmental costs at various shutdown facilities (included in “Cost of goods sold” in the consolidated statements of income);
- A fourth quarter charge of \$1.3 million (\$0.8 million after taxes), a third quarter charge of \$0.2 million (\$0.1 million after taxes), a second quarter charge of \$0.6 million (\$0.4 million after taxes), and a first quarter charge of \$0.3 million (\$0.2 million after taxes), associated with business development projects (included in “Selling, general and administrative expense” in the consolidated statements of income and “Corporate expenses, net” in the statement of net sales and operating profit by segment);
- A fourth quarter charge of \$0.1 million (less than \$0.1 million after taxes) and a third quarter charge of \$0.1 million (less than \$0.1 million after taxes) for severance and other employee-related costs associated with restructurings in PE Films, and a fourth quarter charge of \$0.1 million (\$0.1 million after taxes) for severance and other employee-related costs associated with restructurings in Aluminum Extrusions and a fourth quarter charge of \$0.1 million (\$0.1 million after taxes) and a first quarter charge of \$0.3 million (\$0.2 million after taxes) for severance and other employee-related costs associated with restructurings in Corporate (included in “Corporate expenses, net” in the statement of net sales and operating profit by segment);

- Fourth quarter charges of \$0.4 million (\$0.2 million after taxes) for professional fees associated with the Terphane Limitada worthless stock deduction and impairment of assets of Flexible Packaging Films;
- A fourth quarter charge of \$0.3 million (\$0.3 million after taxes) associated with asset impairments at PE Films' Hungary facility; and
- A third quarter charge of \$0.2 million (\$0.1 million after taxes) associated with the settlement of customer claims and other costs related to the previously shutdown aluminum extrusions manufacturing facility in Kentland, Indiana.

Results in 2017 include a net unrealized gain on the Company's investment in kaléo (included in "Other income (expense), net" in the consolidated statements of income) of \$33.8 million (\$24.0 million after taxes). See Note 4 for additional information on investments.

Total expenses associated with the North American facility consolidation project were \$0.8 million (\$0.5 million after taxes) in 2017 (included in "Cost of goods sold" in the consolidated statements of income) and the total expenses for the project since inception were \$7.3 million. Cash expenditures for the restructuring were \$1.9 million in 2017, which included capital expenditures of \$0.1 million. Total cash expenditures since project inception were \$16.0 million through December 31, 2017, which includes \$11.2 million for capital expenditures. Additional cash payments for remaining accrued costs of \$0.4 million were paid in 2018.

Losses associated with plant shutdowns, asset impairments, restructurings and other charges for continuing operations in 2016 (as shown in the segment operating profit table in Note 5) totaled \$6.1 million (\$3.9 million after taxes), and unless otherwise noted below, are also included in "Asset impairments and costs associated with exit and disposal activities" in the consolidated statements of income. Results in 2016 included:

- Fourth quarter net loss \$0.7 million (\$0.4 million after taxes), related to the explosion that occurred in the second quarter of 2016 at the aluminum extrusions manufacturing facility in Newnan, Georgia, which consists of excess production costs for which recovery from insurance is not assured of \$0.6 million (\$0.4 million after taxes) (included in "Cost of goods sold" in the consolidated statements of income) and legal and consulting fees of \$0.1 million (\$0.1 million after taxes) (included in "Selling, general and administrative expenses" in the consolidated statements of income), third quarter net income of \$1.7 million (\$1.1 million after taxes), which includes the recognition of a gain of \$1.9 million (\$1.2 million after taxes) for a portion of the insurance recoveries approved by the insurer to begin the replacement of capital equipment, offset by the impairment of equipment damaged by the explosion of \$0.3 million (\$0.2 million after taxes) (net amount included in "Other income (expense), net" in the consolidated statements of income), and the reversal of an accrual for other costs related to the explosion not recoverable from insurance of \$0.1 million (\$0.0 million after taxes) (included in "Selling, general and administrative expenses" in the consolidated statements of income), and second quarter net loss of \$0.6 million (\$0.4 million after taxes) for other costs related to the explosion not recoverable from insurance (included in "Selling, general and administrative expenses" in the consolidated statements of income);
- Quarterly charges associated with the consolidation of domestic PE Films' manufacturing facilities, which includes categories of expenses shown in the table below (Accelerated depreciation and a portion of Other facility consolidation-related costs as noted in the table below are included in "Cost of goods sold" in the consolidated statements of income):

	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter		2016	
	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
(\$ in millions)										
Severance	0.3	0.2	0.4	0.2	0.3	0.2	0.3	0.2	1.2	0.8
Asset impairments	0.3	0.2	0.1	0.1	0.1	—	—	—	0.4	0.3
Accelerated depreciation	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.2	0.6	0.4
Other facility consolidation-related costs	0.5	0.3	0.8	0.5	0.6	0.4	0.2	0.1	2.0	1.3
Total	1.1	0.7	1.3	0.9	1.1	0.7	0.8	0.5	4.3	2.8
Other facility consolidation-related costs included in "Cost of goods sold" in the consolidated statements of income	0.4	0.2	0.7	0.4	0.4	0.2	0.2	0.1	1.6	1.0

Note: BT = before taxes; AT = after taxes

- A fourth quarter charge of \$0.6 million (\$0.4 million after taxes) associated with the acquisition of Futura by Bonnell Aluminum (included in “Selling, general and administrative expenses” in the consolidated statements of income);
- A fourth quarter charge of \$0.5 million (\$0.3 million after taxes) related to expected future environmental costs at the aluminum extrusions manufacturing facility in Newnan, Georgia (included in “Cost of goods sold” in the consolidated statements of income);
- A first quarter charge of \$0.4 million (\$0.2 million after taxes) associated with a non-recurring business development project (included in “Selling, general and administrative expense” in the consolidated statements of income and “Corporate expenses, net” in the statement of net sales and operating profit by segment);
- A third quarter charge of \$0.3 million (\$0.2 million after taxes) for severance and other employee-related costs associated with restructurings in PE Films (\$0.1 million) (\$0.1 million after taxes) and Corporate (\$0.2 million) (\$0.1 million after taxes) (included in “Corporate expenses, net” in the statement of net sales and operating profit by segment);
- A fourth quarter charge of \$0.3 million (\$0.2 million after taxes) related to contingencies associated with the application of prior period Brazilian value-added tax credits in Flexible Packaging Films (included in “Cost of goods sold” in the consolidated statements of income);
- A fourth quarter charge of \$0.2 million (\$0.1 million after taxes) associated with asset impairments in PE Films;
- A fourth quarter gain of \$0.1 million (\$0.0 million after taxes) related to contractual indemnifications associated with the anticipated settlement of a Terphane pre-acquisition contingency (included in “Other income (expense), net” in the consolidated statements of income); and
- A fourth quarter gain of \$0.1 million (\$0.1 million after taxes) associated with the shutdown of the aluminum extrusions manufacturing facility in Kentland, Indiana, which includes a pretax gain of \$0.2 million (\$0.1 million after taxes) related to the sale of the property, partially offset by pretax charges of \$0.1 million (\$0.0 million after taxes) associated with the shutdown of this facility and a third quarter charge of \$0.3 million (\$0.2 million after taxes) associated with shutdown costs.

Results in 2016 include a net unrealized gain on the Company’s investment in kaléo (included in “Other income (expense), net” in the consolidated statements of income) of \$1.6 million (\$1.2 million after taxes). The Company recorded an unrealized loss on its investment property in Alleghany and Bath Counties, Virginia (included in “Other income (expense), net” in the consolidated statements of income) of \$1.0 million (\$0.7 million after taxes) in the fourth quarter of 2016. See Note 4 for additional information on investments.

18 CONTINGENCIES

Tredegear is involved in various stages of investigation and remediation relating to environmental matters at certain current and former plant locations. Where the Company has determined the nature and scope of any required environmental remediation activity, estimates of cleanup costs have been obtained and accrued. As efforts continue to maintain compliance with applicable environmental laws and regulations, additional contingencies may be identified. If additional contingencies are identified, the Company’s practice is to determine the nature and scope of those contingencies, obtain and accrue estimates of the cost of remediation, and perform remediation. The Company does not believe that additional costs that could arise from those activities will have a material adverse effect on its financial position. However, those costs could have a material adverse effect on its financial condition, results of operations and cash flows at that time.

The Company is involved in various other legal actions arising in the normal course of business. After taking into consideration the relevant information, the Company believes that it has sufficiently accrued for probable losses and that the actions will not have a material adverse effect on its financial position. However, the resolution of the actions in a future period could have a material adverse effect on quarterly or annual operating results at that time.

From time to time, the Company enters into transactions with third parties in connection with the sale of assets or businesses in which it agrees to indemnify the buyers or third parties involved in the transaction, or in which the sellers or third parties involved in the transaction agree to indemnify Tredegear, for certain liabilities or risks related to the assets or business. Also, in the ordinary course of its business, the Company may enter into agreements with third parties for the sale of goods or services that may contain indemnification provisions. In the event that an indemnification claim is asserted, liability for indemnification would be subject to an assessment of the underlying facts and circumstances under the terms of the applicable agreement. Further, any indemnification payments may be limited or barred by a monetary cap, a time limitation, or a deductible or basket. For these reasons, Tredegear is unable to estimate the maximum amount of the potential future liability under the indemnity provisions of these agreements. The Company does, however, accrue for losses for any known contingent

liability, including those that may arise from indemnification provisions, when future payment is probable and the amount is reasonably estimable. The Company discloses contingent liabilities if the probability of loss is reasonably possible and material.

In 2011, Tredegar was notified by U.S. Customs and Border Protection (“U.S. Customs”) that certain film products exported by Terphane Ltda. to the U.S. since November 6, 2008 could be subject to duties associated with an anti-dumping duty order on imported PET films from Brazil. The Company contested the applicability of these anti-dumping duties to the films exported by Terphane Ltda., and it filed a request with the U.S. Department of Commerce (“Commerce”) for clarification about whether the film products at issue are within the scope of the anti-dumping duty order. In December 2014, the U.S. International Trade Commission separately voted to revoke the anti-dumping duty order on imported PET films from Brazil. On February 20, 2015, certain U.S. producers of PET films filed a summons with the U.S. Court of International Trade to appeal the determination by the U.S. International Trade Commission. After lengthy litigation, on June 19, 2018, the U.S. Court of International Trade ruled in favor of Terphane Ltda. by upholding the determination by Commerce that Terphane Ltda.’s films are outside the scope of the anti-dumping duty order. The plaintiffs chose not to appeal the U.S. Court of International Trade’s opinion affirming Commerce’s scope ruling. On September 4, 2018, the plaintiffs filed to dismiss their appeal of the December 2014 decision that revoked the anti-dumping duty order on PET films from Brazil. The U.S. Court of International Trade issued an Order of Dismissal on September 5, 2018. The litigation has now ended.

19 SELECTED QUARTERLY FINANCIAL DATA

Tredegar Corporation and Subsidiaries
(In Thousands, Except Per-Share Amounts)
(Unaudited)

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
For the year ended December 31, 2018				
Sales	\$ 258,711	\$ 263,759	\$ 267,294	\$ 275,707
Gross profit	46,732	44,652	40,478	47,826
Net income (loss)	\$ 18,165	\$ 14,722	\$ (34,201)	\$ 26,157
Earnings (loss) per share:				
Basic	\$ 0.55	\$ 0.45	\$ (1.03)	\$ 0.79
Diluted	\$ 0.55	\$ 0.44	\$ (1.03)	\$ 0.79
Shares used to compute earnings (loss) per share:				
Basic	32,982	33,074	33,110	33,103
Diluted	32,988	33,108	33,110	33,112
For the year ended December 31, 2017				
Sales	\$ 221,026	\$ 247,347	\$ 247,121	\$ 245,836
Gross profit	32,959	44,149	43,992	38,998
Net income	\$ 3,703	\$ 44,204	\$ 8,274	\$ (17,929)
Earnings per share:				
Basic	\$ 0.11	\$ 1.34	\$ 0.25	\$ (0.54)
Diluted	\$ 0.11	\$ 1.34	\$ 0.25	\$ (0.54)
Shares used to compute earnings per share:				
Basic	32,920	32,961	32,954	32,948
Diluted	32,957	33,051	32,954	32,949

The 2017 Gross profit amounts have changed from the amounts disclosed in the prior year due to the retrospective adoption of ASU 2017-07, which resulted in the separate presentation of "Pension and postretirement benefits" expense in the consolidated statements of income. Historically the Company had reported a portion of its pension and postretirement benefit expenses in cost of goods sold, a component used in the calculation of Gross profit.

Item 16. FORM 10-K SUMMARY

Not Applicable.

EXHIBIT INDEX

- 2.1 [Stock Purchase Agreement, made as of October 1, 2012, by and among The William L. Bonnell Company, Inc., AACOA, Inc., the shareholders of AACOA, Inc., and Daniel G. Formsma, as the representative of the shareholders of AACOA, Inc. \(filed as Exhibit 2.1 to Tredegar Corporation's \("Tredegar's"\) Current Report on Form 8-K \(File No. 1-10258\), filed on October 3, 2012, and incorporated herein by reference\). \(Schedules and exhibits have been omitted pursuant to Item 601\(b\)\(2\) of Regulation S-K. Tredegar agrees to furnish supplementally to the Securities and Exchange Commission a copy of any omitted exhibit or schedule upon request\)](#)
- 2.2 [Membership Interest Purchase Agreement, dated as of October 14, 2011, by and among TAC Holdings, LLC, Gaucho Holdings B.V. and Tredegar Film Products Corporation \(filed as Exhibit 2.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on October 19, 2011, and incorporated herein by reference\). \(Schedules and exhibits have been omitted pursuant to Item 601\(b\)\(2\) of Regulation S-K. Tredegar agrees to furnish supplementally to the Securities and Exchange Commission a copy of any omitted exhibit or schedule upon request\)](#)
- 2.3 [Stock Purchase Agreement, dated as of February 1, 2017, by and among Futura Industries Corporation, Futura Corporation, Susan D. Johnson, The Susan D. Johnson Trust, Ken Wells, The William L. Bonnell Company, Inc., and, in his capacity as Sellers' Representative, Brent F. Lloyd \(filed as Exhibit 2.1 of Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on February 2, 2017, and incorporated herein by reference\). \(Schedules and exhibits have been omitted pursuant to Item 601\(b\)\(2\) of Regulation S-K. Tredegar agrees to furnish supplementally to the Securities and Exchange Commission a copy of any omitted exhibit or schedule upon request.\)](#)
- 3.1 [Amended and Restated Articles of Incorporation of Tredegar \(filed as Exhibit 3.1 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)
- 3.1.1 [Articles of Amendment to Amended and Restated Articles of Incorporation of Tredegar \(filed as Exhibit 3.3 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)
- 3.1.2 [Articles of Amendment to Amended and Restated Articles of Incorporation of Tredegar, as of May 24, 2013 \(filed as Exhibit 3.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on May 29, 2013 and incorporated herein by reference\)](#)
- 3.1.3 [Articles of Amendment to Amended and Restated Articles of Incorporation of Tredegar Corporation, as of May 4, 2016 \(filed as Exhibit 3.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on May 6, 2016, and incorporated herein by reference\).](#)
- 3.2 [Amended and Restated Bylaws of Tredegar \(filed as Exhibit 3.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on February 24, 2017, and incorporated herein by reference\)](#)
- 4.1 [Credit Agreement, dated as of March 1, 2016, among Tredegar Corporation, as borrower, the lenders named therein, JPMorgan Chase Bank, N.A., as administrative agent, SunTrust Bank, Citizens Bank of Pennsylvania and PNC Bank, National Association, as co-syndication agents, and U.S. Bank National Association, BMO Harris Bank, N.A., Bank of America, N.A. and Wells Fargo Bank, National Association, as co-documentation agents, and the other lenders party thereto \(filed as Exhibit 4.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on March 3, 2016, and incorporated herein by reference\).](#)
- 4.1.1 [Guaranty, dated as of March 1, 2016, by and among the subsidiaries of Tredegar Corporation listed on the signature pages thereto in favor of JPMorgan Chase Bank, N.A., as administrative agent, for the ratable benefit of the Holders of Guaranteed Obligations \(as defined therein\) \(filed as Exhibit 4.2 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on March 3, 2016, and incorporated herein by reference\).](#)
- 4.1.2 [Pledge and Security Agreement, dated as of March 1, 2016, by and among Tredegar Corporation and the subsidiaries of Tredegar Corporation listed on the signature pages thereto and JPMorgan Chase Bank, N.A., as administrative agent, for the ratable benefit of the Secured Parties \(as defined therein\) \(filed as Exhibit 4.3 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on March 3, 2016, and incorporated herein by reference\).](#)
- 10.1 [Reorganization and Distribution Agreement, dated as of June 1, 1989, between Tredegar and Ethyl Corporation \(filed as Exhibit 10.1 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)
- *10.2 [Employee Benefits Agreement, dated as of June 1, 1989, between Tredegar and Ethyl Corporation \(filed as Exhibit 10.2 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)

- 10.3 [Tax Sharing Agreement, dated as of June 1, 1989, between Tredegar and Ethyl Corporation \(filed as Exhibit 10.3 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)
- 10.4 [Indemnification Agreement, dated as of June 1, 1989, between Tredegar and Ethyl Corporation \(filed as Exhibit 10.4 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)
- *10.5 [Tredegar Industries, Inc. Retirement Benefit Restoration Plan \(filed as Exhibit 10.7 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)
- *10.5.1 [Amendment to the Tredegar Industries, Inc. Retirement Benefit Restoration Plan \(filed as Exhibit 10.7.1 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2004, and incorporated herein by reference\)](#)
- *10.6 [Tredegar Industries, Inc. Savings Plan Benefit Restoration Plan \(filed as Exhibit 10.6 to Tredegar's Annual Report on Form 10-K \(File No. 1-10258\) for the year ended December 31, 2013, and incorporated herein by reference\)](#)
- *10.6.1 [Resolutions of the Executive Committee of the Board of Directors of Tredegar Corporation adopted on December 28, 2004 \(effective as of December 31, 2004\) amending the Tredegar Corporation Retirement Savings Plan Benefit Restoration Plan \(filed as Exhibit 10.9.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on December 30, 2004, and incorporated herein by reference\)](#)
- *10.7 [Tredegar 2004 Equity Incentive Plan as Amended and Restated Effective March 27, 2009 \(filed as Annex 1 to Tredegar's Definitive Proxy Statement on Schedule 14A \(File No. 1-10258\) filed on April 14, 2009 and incorporated herein by reference\)](#)
- *10.8 [Form of Notice of Nonstatutory Stock Option Grant and Nonstatutory Stock Option Terms and Conditions \(filed as Exhibit 10.3 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\) filed on February 27, 2013, and incorporated herein by reference\)](#)
- *10.9 [Form of Notice of Stock Unit Award and Stock Unit Award Terms and Conditions \(filed as Exhibit 10.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on March 1, 2016, and incorporated herein by reference\)](#)
- *10.10 [Form of Notice of Stock Award and Stock Award Terms and Conditions \(filed as Exhibit 10.2 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on March 1, 2016, and incorporated herein by reference\)](#)
- 10.11 [Agreement, dated as of February 19, 2014, by and among Tredegar Corporation, John D. Gottwald, William M. Gottwald and Floyd D. Gottwald, Jr. \(filed as Exhibit 10.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on February 20, 2014, and incorporated herein by reference\)](#)
- *10.12 [Severance Agreement with D. Andrew Edwards, dated June 25, 2015 \(filed as Exhibit 10.3 to Tredegar's Current Report on Form 8-K \(file No. 1-10258\) filed on June 29, 2015, and incorporated herein by reference\)](#)
- *10.12.1 [First Amendment to Severance Agreement with D. Andrew Edwards, dated February 25, 2016 \(filed as Exhibit 10.3 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on March 1, 2016, and incorporated herein by reference\)](#)
- *10.13 [Severance Agreement with Michael J. Schewel, dated May 9, 2016 \(filed as Exhibit 10.17 to Tredegar's Annual Report on Form 10-K/A \(File No. 1-10258\) for the year ended December 31, 2016, and incorporated herein by reference\)](#)
- *10.14 [Tredegar Corporation 2018 Equity Incentive Plan \(filed as Annex A to Tredegar's Definitive Proxy Statement on Schedule 14A \(File No. 1-10258\) filed on March 22, 2018, and incorporated herein by reference\)](#)
- *10.15 [Form of Notice of Nonstatutory Stock Option Grant and Nonstatutory Stock Option Terms and Conditions \(filed as Exhibit 10.1 to Tredegar's Current Report on Form 8-K \(File No. 1-10258\), filed on May 7, 2018, and incorporated herein by reference\)](#)
- +21 [Subsidiaries of Tredegar](#)
- +23.1 [Consent of KPMG LLP, Independent Registered Public Accounting Firm](#)
- +23.2 [Consent of PricewaterhouseCoopers, LLP, Independent Registered Public Accounting Firm](#)
- +31.1 [Certification of John D. Gottwald, President and Chief Executive Officer of Tredegar Corporation, pursuant to Rules 13a-14\(a\) and 15d-14\(a\) promulgated under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002](#)

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on March 18, 2019.

<u>Signature</u>	<u>Title</u>
<u>/s/ John D. Gottwald</u> (John D. Gottwald)	President, Chief Executive Officer and Director (Principal Executive Officer)
<u>/s/ D. Andrew Edwards</u> (D. Andrew Edwards)	Vice President and Chief Financial Officer (Principal Financial Officer)
<u>/s/ Frasier W. Brickhouse, II</u> (Frasier W. Brickhouse, II)	Corporate Treasurer and Controller (Principal Accounting Officer)
<u>/s/ William M. Gottwald</u> (William M. Gottwald)	Chairman of the Board of Directors
<u>/s/ George C. Freeman, III</u> (George C. Freeman, III)	Director
<u>/s/ Kenneth R. Newsome</u> (Kenneth R. Newsome)	Director
<u>/s/ Gregory A. Pratt</u> (Gregory A. Pratt)	Director
<u>/s/ Thomas G. Snead, Jr.</u> (Thomas G. Snead, Jr.)	Director
<u>/s/ John M. Steitz</u> (John M. Steitz)	Director
<u>/s/ Carl E. Tack, III</u> (Carl E. Tack, III)	Director
<u>/s/ Anne G. Waleski</u> (Anne G. Waleski)	Director

Tredegar Corporation

<u>Entity</u>	<u>State of Incorporation</u>
Tredegar Corporation	Virginia
AACOA, Inc.	Michigan
AACOA Extrusions, Inc.	Michigan
Bon L Aluminum LLC	Virginia
Bon L Campo Limited Partnership	Texas
Bon L Holdings LLC	Virginia
Bon L Manufacturing Company	Virginia
The William L Bonnell Company, Inc.	Georgia
Bright View Technologies Corporation	Virginia
El Campo GP, LLC	Virginia
Futura Industries Corporation	Delaware
Guangzhou Tredegar Film Products Company Limited	China
Idlewood Properties, Inc.	Virginia
Jackson River Mountain Properties, LLC	Virginia
TAC Holdings LLC	Virginia
Terphane Acquisition Corp. II	Cayman Islands
Terphane Holdings LLC	Delaware
Terphane LLC	Delaware
Terphane Limitada	Brazil
TG Holdings International C.V.	The Netherlands
Tredegar Brasil Industria de Plasticos Ltda.	Brazil
Tredegar Capital Holdings LLC	Virginia
Tredegar Far East Corporation	Virginia
Tredegar Film Products B.V.	The Netherlands
Tredegar Film Products Company Shanghai, Limited	China
Tredegar Film Products Corporation	Virginia
Tredegar Film Products (Europe), Inc.	Virginia
Tredegar Film Products India Private Limited	India
Tredegar Film Products Kft.	Hungary
Tredegar Film Products (Korea), Inc.	Korea
Tredegar Film Products - Lake Zurich, LLC	Virginia
Tredegar Film Products (Latin America), Inc.	Virginia
Tredegar Film Products (U.S.) LLC	Virginia
Tredegar Films Development, Inc.	Virginia
Tredegar International Holdings Coöperatief U.A.	The Netherlands
Tredegar Investments, LLC	Virginia
Tredegar Investments II, LLC	Virginia
Tredegar Performance Films Inc.	Virginia
Tredegar Personal Care, LLC	Virginia
Tredegar Real Estate Holdings, Inc.	Virginia
Tredegar Surface Protection, LLC	Virginia

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the registration statements (No. 333-120132, No. 333-115423, No. 333-66562, No. 033-64647) on Form S-8 of Tredegar Corporation of our reports dated March 18, 2019, with respect to the consolidated balance sheet of Tredegar Corporation as of December 31, 2018, the related consolidated statements of income, comprehensive income (loss), cash flows, and shareholders' equity for the year ended December 31, 2018, and the related notes, and the effectiveness of internal control over financial reporting as of December 31, 2018, which reports appear in the December 31, 2018 annual report on Form 10-K of Tredegar Corporation.

Our report on the consolidated financial statements refers to a change in the method of accounting for revenue.

Our report dated March 18, 2019, on the effectiveness of internal control over financial reporting as of December 31, 2018, expresses our opinion that Tredegar Corporation did not maintain effective internal control over financial reporting as of December 31, 2018 because of the effect of material weaknesses on the achievement of the objectives of the control criteria and contains an explanatory paragraph that states the Company had an ineffective control environment resulting from an insufficient number of trained resources, ineffective risk assessment, ineffective information and communication, and ineffective monitoring activities resulting in ineffective control activities related to the design and operation of process-level controls and general information technology controls across all financial reporting processes.

/s/ KPMG LLP

Richmond, Virginia
March 18, 2019

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statement on Form S-8 (Nos. 333-120132, 333-115423, 033-64647, and 333-66562) of Tredegar Corporation of our report dated February 21, 2018, except for the change in the manner in which the Company accounts for pension and postretirement benefits discussed in Note 1 to the consolidated financial statements, as to which the date is March 18, 2019, relating to the financial statements, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Richmond, Virginia

March 18, 2019

Section 302 Certification

I, John D. Gottwald, certify that:

- (1) I have reviewed this Annual Report on Form 10-K for the year ended December 31, 2018, of Tredegar Corporation;
- (2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
- (3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
- (4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting;
- (5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 18, 2019

/s/ John D. Gottwald

John D. Gottwald
President and Chief Executive Officer
(Principal Executive Officer)

Section 302 Certification

I, D. Andrew Edwards, certify that:

- (1) I have reviewed this Annual Report on Form 10-K for the year ended December 31, 2018, of Tredegar Corporation;
- (2) Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
- (3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
- (4) The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting;
- (5) The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: March 18, 2019

/s/ D. Andrew Edwards

D. Andrew Edwards

Vice President and Chief Financial Officer

(Principal Financial Officer)

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of Tredegar Corporation (the "Company") for the year ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, John D. Gottwald, President and Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ John D. Gottwald

John D. Gottwald
President and Chief Executive Officer
(Principal Executive Officer)

March 18, 2019

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the Annual Report on Form 10-K of Tredegar Corporation (the "Company") for the year ended December 31, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, D. Andrew Edwards, Vice President and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and
- (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ D. Andrew Edwards

D. Andrew Edwards
Vice President and Chief Financial Officer
(Principal Financial Officer)

March 18, 2019