UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2017

OR

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

For the transition period from to

Commission File No. 1-4347

ROGERS CORPORATION

(Exact name of Registrant as specified in its charter)

Massachusetts	**06-0513860**
(State or other jurisdiction of incorporation or organization)	*(I. R. S. Employer Identification No.)*

2225 W. Chandler Blvd., Chandler, Arizona 85224-6155

(Address of principal executive offices)

Registrant's telephone number, including area code: **(480) 917-6000**

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

Title of Each Class	**Name of Each Exchange on Which Registered**
Common Stock, $1 Par Value	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 the past 90 days. Yes ☒ No ☐

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

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

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

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

(Do not check if a smaller reporting company)

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

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

The aggregate market value of the voting common equity held by non-affiliates as of June 30, 2017, the last business day of the registrant's most recently completed second fiscal quarter, was approximately $1,963,793,036. Rogers has no non-voting common equity. The number of shares outstanding of common stock as of February 23, 2018 was 18,316,440.

Documents Incorporated by Reference:

Portions of Rogers' Definitive Proxy Statement for its 2018 Annual Meeting of Shareholders, currently scheduled for May 3, 2018, are incorporated by reference into Part III of this Form 10-K.

ROGERS CORPORATION
FORM 10-K

December 31, 2017

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Part I

Item 1. Business

In this Report, we use the terms "Company," "Rogers," "we," "us," and "our" unless otherwise indicated or the context otherwise requires, to refer to Rogers Corporation and its consolidated subsidiaries.

Forward-Looking Statements

This Annual Report on Form 10-K includes "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Such statements are generally accompanied by words such as "anticipate," "assume," "believe," "could," "estimate," "expect," "foresee," "goal," "intend," "may," "might," "plan," "potential," "predict," "project," "should," "seek," "target" or similar expressions that convey uncertainty as to future events or outcomes. Forward-looking statements are based on assumptions and beliefs that we believe to be reasonable; however, assumed facts almost always vary from actual results, and the differences between assumed facts and actual results could be material depending upon the circumstances. Where we express an expectation or belief as to future results, that expectation or belief is expressed in good faith and based on assumptions believed to have a reasonable basis. We cannot assure you, however, that the stated expectation or belief will occur or be achieved or accomplished. Among the factors that could cause our results to differ materially from those indicated by forward-looking statements are risks and uncertainties inherent in our business including, without limitation:

- failure to capitalize on, or volatility within, the Company's growth drivers, including advanced mobility and advanced connectivity;
- uncertain business, economic and political conditions in the United States and abroad, particularly in China, South Korea, Germany, Hungary and Belgium, where we maintain significant manufacturing, sales or administrative operations;
- fluctuations in foreign currency exchange rates;
- our ability to develop innovative products and have them incorporated into end-user products and systems;
- the extent to which end-user products and systems incorporating our products achieve commercial success;
- the ability of our sole or limited source suppliers to deliver certain key raw materials to us in a timely manner;
- intense global competition affecting both our existing products and products currently under development;
- failure to realize, or delays in the realization of, anticipated benefits of acquisitions and divestitures due to, among other things, the existence of unknown liabilities or difficulty integrating acquired businesses;
- our ability to attract and retain management and skilled technical personnel;
- our ability to protect our proprietary technology from infringement by third parties and/or allegations that our technology infringes third party rights;
- changes in effective tax rates or tax laws and regulations in the jurisdictions in which we operate;
- failure to comply with financial and restrictive covenants in our credit agreement or restrictions on our operational and financial flexibility due to such covenants;
- the outcome of ongoing and future litigation, including our asbestos-related product liability litigation;
- changes in environmental laws and regulations applicable to our business; and
- disruptions in, or breaches of, our information technology systems.

Our forward-looking statements are expressly qualified by these cautionary statements, which you should consider carefully, along with the risks discussed under the heading "Item 1A - Risk Factors" and "Item 7 - Management's Discussion and Analysis of Financial Condition and Results of Operations" and elsewhere in this report, that could cause actual results to differ materially from historical results or anticipated results. We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, unless required by law.

Overview

Rogers Corporation designs, develops, manufactures and sells high-quality and high-reliability engineered materials and components for mission critical applications. We operate principally three strategic operating segments: Advanced Connectivity Solutions (ACS), Elastomeric Material Solutions (EMS) and Power Electronics Solutions (PES). We have a history of innovation and have established Innovation Centers for our leading research and development activities in Chandler, Arizona, Burlington, Massachusetts, Eschenbach, Germany and Suzhou, China. We are headquartered in Chandler, Arizona.

Our growth strategy is based upon the following principles: (1) market-driven organization, (2) innovation leadership, (3) synergistic mergers and acquisitions, and (4) operational excellence. As a market-driven organization, we are focused on growth drivers, including advanced mobility and advanced connectivity. More specifically, the key trends and markets that affect our business include the increased use of advanced driver assistance systems, and adoption of electric and hybrid electric vehicles and new technology adoption in the telecom industry, including next generation wireless infrastructure. In addition to our focus on advanced mobility and advanced connectivity, we sell into a variety of other end markets including renewable energy, aerospace and defense and diverse general industrial applications.

Our sales and marketing approach is based on addressing these trends, while our strategy focuses on factors for success as a manufacturer of engineered materials and components: quality, service, cost, efficiency, innovation and technology. We have expanded our capabilities through organic investment and acquisitions and strive to ensure high quality solutions for our customers. We continue to review and re-align our manufacturing and engineering footprint in an effort to attain a leading competitive position globally. We have established or expanded our capabilities in various locations in support of our customers' growth initiatives.

We seek to enhance our operational and financial performance by investing in research and development, manufacturing and materials efficiencies, and new product initiatives that respond to the needs of our customers. We strive to evaluate operational and strategic alternatives to improve our business structure and align our business with the changing needs of our customers and major industry trends affecting our business.

In executing on our growth strategy, we have completed three strategic acquisitions: (1) in January 2017, we acquired the principal operating assets of Diversified Silicone Products, Inc. (DSP), a custom silicone product development and manufacturing business, serving a wide range of high reliability applications, (2) in November 2016, we acquired DeWAL Industries LLC (DeWAL), a leading manufacturer of polytetrafluoroethylene and ultra-high molecular weight polyethylene films, pressure sensitive tapes and specialty products for the industrial, aerospace, automotive, and electronics markets, and (3) in January 2015, we acquired Arlon LLC and its subsidiaries, other than Arlon India (Pvt) Limited (the acquired entities, collectively, Arlon), a leading manufacturer of high performance materials for the printed circuit board industry and silicone rubber-based materials.

Our Operating Segments

The following table reflects net sales of the Company's operating segments for the last three fiscal years:

(Dollars in thousands)	**2017**	2016	2015
ACS	**$ 301,092**	$ 277,787	$ 267,630
EMS	**312,661**	203,181	180,898
PES	**184,954**	152,367	150,288
Other	**22,336**	22,979	42,627
Total	**$ 821,043**	$ 656,314	$ 641,443

Additional financial information regarding each of our operating segments, along with information regarding our revenues and long-lived assets by geographic area, is available in Note 16, "Operating Segments and Geographic Information," to "Item 8 - Financial Statements and Supplementary Data."

Advanced Connectivity Solutions

Our ACS operating segment designs, develops, manufactures and sells circuit materials and solutions enabling high-performance and high-reliability connectivity for applications in wireless communications infrastructure (e.g., power amplifiers, antennas, small cells and distributed antenna systems), automotive (e.g., active safety, advanced driver assistance systems, telematics and thermal management), connected devices (e.g., mobile internet devices and Internet of Things), wired infrastructure (e.g., computing, servers and storage), consumer electronics and aerospace/defense. We sell our circuit materials under various trade names, including RO3000®, RO4000®, RT/duroid®, AD Series™ and CLTE Series™.

Our ACS operating segment has manufacturing and administrative facilities in Chandler, Arizona; Rogers, Connecticut; Bear, Delaware; Evergem, Belgium; and Suzhou, China.

Elastomeric Material Solutions

Our EMS operating segment designs, develops, manufactures and sells elastomeric material solutions for critical cushioning, sealing, impact protection and vibration management applications including general industrial, portable electronics (e.g., mobile internet devices), consumer goods (e.g., protective sports equipment), automotive, mass transportation, construction and printing applications. We sell our elastomeric materials under various trade names, including DeWAL™, ARLON®, PORON®, XRD®, BISCO®, eSORBA® HeatSORB™, and Diversified Silicone Products. The acquisitions of DeWAL and DSP, and their subsequent integration into our EMS operating segment, has enabled us to increase scale and complement our existing product offerings, thus enhancing our ability to support our customers.

Our EMS operating segment has manufacturing and administrative facilities in Woodstock, Connecticut; Rogers, Connecticut; Bear, Delaware; Carol Stream, Illinois; Narragansett, Rhode Island; Santa Fe Springs, California; Suzhou, China; and Ansan, Korea. We also own 50% of: (1) Rogers Inoac Corporation (RIC), a joint venture established in Japan to design, develop, manufacture and sell PORON products predominantly for the Japanese market and (2) Rogers INOAC Suzhou Corporation (RIS), a joint venture established in China to design, develop, manufacture and sell PORON products primarily for RIC customers in various Asian countries. INOAC Corporation owns the remaining 50% of both RIC and RIS. RIC has manufacturing facilities at the INOAC facilities in Nagoya and Mie, Japan, and RIS has manufacturing facilities at Rogers' facilities in Suzhou, China.

Power Electronics Solutions

Our PES operating segment designs, develops, manufactures and sells ceramic substrate materials for power module applications (e.g., variable frequency drives, vehicle electrification and renewable energy), laminated busbars for power inverter and high power interconnect applications (e.g., mass transit, hybrid-electric and electric vehicles, renewable energy and variable frequency drives) and micro-channel coolers (e.g., laser cutting equipment). We sell our ceramic substrate materials and micro channel coolers under the curamik® trade name, and our busbars under the ROLINX® trade name.

Our PES operating segment has manufacturing and administrative facilities in Ghent, Belgium; Eschenbach, Germany; Budapest, Hungary; and Suzhou, China.

Other

Our Other operating segment consists of elastomer components for applications in ground transportation, office equipment, consumer and other markets; elastomer floats for level sensing in fuel tanks, motors, and storage tanks; and inverters for portable communications and automotive markets. Trade names for our elastomer components include: NITROPHYL® floats for level sensing in fuel tanks, motors, and storage tanks and ENDUR® elastomer rollers. The Arlon polyimide and thermoset laminate business was also included within our Other operating segment prior to its divestiture in December 2015.

Sales and Competition

We sell our materials and components primarily through direct sales channels positioned near major concentrations of our customers in North America, Europe and Asia. We sold to over 5,000 customers worldwide in 2017, primarily original equipment manufacturers (OEMs) and component suppliers. No individual customer represented more than 10% of our total net sales for 2017; however, there are concentrations of OEM customers in our ACS (Chinese telecommunications equipment manufacturers) and PES (semiconductor and automotive manufacturers) operating segments. Although the loss of all of the sales made to any one of our larger customers would require a period of adjustment during which the results of a particular operating segment would be adversely impacted, we believe that such events could be successfully mitigated over a period of time due to the diversity of our customer base.

We employ a technical sales and marketing approach pursuant to which we work collaboratively to provide design engineering, testing, product development and other technical support services to OEMs that incorporate our engineered materials and components in their products. Component suppliers convert, modify or otherwise incorporate our engineered materials and components into their components for these OEMs in accordance with their specifications. Accordingly, we provide similar technical support services to component suppliers.

We compete primarily with manufacturers of high-end materials, some of which are large, multi-national companies, principally on the basis of innovation, historical customer relationship s, product quality, reliability, performance and price, technical and engineering service and support, breadth of product line, and manufacturing capabilities. We also compete with manufacturers of commodity materials, including smaller regional producers with lower overhead costs and profit requirements located in Asia that attempt to upsell their products based principally upon price, particularly for products that have matured in their life cycle. We believe that we have a competitive advantage because of our reputation for innovation, the quality and reliability of our materials and components and our demonstrated commitment to technical support and customer service.

Research and Development

We have a history of innovation, and innovation leadership is a key component of our overall business strategy. The markets we serve are typically characterized by rapid technological changes and advances. Accordingly, the success of our strategy is in part dependent on our ability to develop market-leading products, which is primarily driven by efforts in research and development. We are focused on identifying technologies and innovations related to both our current product portfolio as well as other long term initiatives targeted at further diversifying and growing our business. As part of this technology commitment, we have Rogers Innovation Centers at Northeastern University in Burlington, Massachusetts, as well as at our facilities in Chandler, Arizona, Eschenbach, Germany and Suzhou, China. Our Innovation Centers focus on the earliest stages of technical and commercial development of new high-tech materials solutions in close alignment with market direction and needs.

Patents and Other Intellectual Property

We have many domestic and foreign patents, licenses and have additional patent applications pending related to each of our operating segments. These patents and licenses vary in duration and provide some protection from competition.

We also own a number of registered and unregistered trademarks and have acquired and developed certain confidential and proprietary technology, including trade secrets that we believe to be of some importance to our business.

While we believe our patents and other intellectual property provide a competitive advantage to our operating segments, we believe that a significant part of our competitive position and future success will be determined by factors such as the innovative skills, systems and process knowledge, and technological expertise of our personnel; the range and success of new products we develop; and our customer service and support.

Manufacturing and Raw Materials

The key raw materials used in our business are as follows: for our ACS operating segment, copper and polymer materials; for our EMS operating segment, polyurethane, polytetraflouroethylene, polyethylene and silicone materials; and for our PES operating segment, copper and ceramic materials.

Some of the raw materials used in our business are available through sole or limited-source suppliers. While we have undertaken strategies to mitigate the risks associated with sole or limited source suppliers, these strategies may not be effective in all cases, and disruptions in our supply of raw materials could negatively impact our production and have a material adverse impact on our business. For more information, see Item 1A - “Risk Factors.”

Seasonality

Except for some minor seasonality for consumer products, which often aligns with year-end holidays and product launch cycles, the operations of our segments have not been seasonal.

Our Employees

As of December 31, 2017, we employed approximately 3,400 people.

Backlog

Our backlog of firm orders was $122.8 million as of December 31, 2017, compared to $106.5 million as of December 31, 2016. The ACS, PES and Other operating segments experienced year-over-year increases in backlog of $2.2 million, $13.8 million and $4.5 million, respectively while the EMS operating segment experienced a year-over-year decrease of $6.4 million. The increase in backlog for the ACS, PES and Other operating segments is primarily due to overall sales growth in 2017 compared to 2016, as well as increases in long-term buying patterns in the ACS operating segment, and favorable currency fluctuations in our PES operating segment. The decrease in backlog for the EMS operating segment is primarily due to an increase in order fulfillment during 2017 as compared to 2016. Additionally, the 2017 EMS backlog contains $2.1 million related to DSP. The backlog of firm orders is expected to be filled within the next 12 months.

Executive Officers

Our executive officers as of February 27, 2018 were as follows:

Name	Age	Present Position	Year Appointed to Present Position	Other Positions Held During 2013-2017
Bruce D. Hoechner	58	President and Chief Executive Officer, Principal Executive Officer	2011	
Janice E. Stipp	58	Senior Vice President, Finance and Chief Financial Officer, Treasurer, Principal Financial Officer and Principal Accounting Officer	2017	Vice President, Finance, Chief Financial Officer and Corporate Treasurer, Principal Financial and Chief Accounting Officer, Rogers, from May 2016 to February 2017; Vice President, Finance, Chief Financial Officer and Corporate Treasurer, Rogers, from November 2015 to May 2016; Executive Vice President, Chief Financial Officer and Treasurer, Tecumseh Products Company from October 2011 to November 2015
Marc J. Beulque	53	Vice President, Global Operations	2016	Vice President, Power Electronics Solutions Operations and Research and Development from June 2013 to April 2016; General Manager, Power Distribution Systems from December 2011 to May 2013. As a result of an expansion of his responsibility to oversee all global operations of the Company, Mr. Beulque was appointed as an executive officer on February 9, 2018.
Robert C. Daigle	54	Senior Vice President and Chief Technology Officer	2009	
Gary M. Glandon	59	Senior Vice President and Chief Human Resources Officer	2017	Vice President and Chief Human Resources Officer, Rogers, from July 2012 to February 2017
Jeffrey M. Grudzien	56	Senior Vice President and General Manager, Advanced Connectivity Solutions	2017	Vice President, Advanced Connectivity Solutions, Rogers, from February 2012 to February 2017
Jay B. Knoll	54	Senior Vice President, Corporate Development, General Counsel and Secretary	2017	Vice President and General Counsel, Rogers, from November 2014 to February 2017; Senior Vice President, General Counsel PKC Group Oyj - North America from June 2012 to November 2014
Christopher R. Shadday	51	Senior Vice President and General Manager, Elastomeric Material Solutions	2017	Vice President and General Manager, Elastomeric Material Solutions, Rogers, from January 2016 to February 2017; Vice President of Marketing, Rogers, from November 2014 to December 2015; President, Viance, LLC from August 2011 to November 2014
Helen Zhang	54	Senior Vice President and General Manager, Power Electronics Solutions and President, Rogers Asia	2017	Vice President, Power Electronics Solutions and President, Rogers Asia, Rogers, from May 2012 to February 2017

Available Information

We make available on our website (http://www.rogerscorp.com), or through a link posted on our website, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, reports filed pursuant to Section 16 and amendments to those reports filed pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission (SEC). In addition, the SEC maintains an internet site that contains these reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC (http://www.sec.gov).

We also make available on our website, in a printable format, the charters for our Audit Committee, Compensation and Organization Committee, and Nominating and Governance Committee, in addition to our Corporate Governance Guidelines, Bylaws, Code of Business Ethics, Related Party Transactions Policy and Compensation Recovery Policy. Our website is not incorporated into or a part of this Form 10-K.

Item 1A. Risk Factors

Our business, financial condition and results of operations are subject to various risks, including those discussed below, which may affect the value of our stock. The risks discussed below are those that we believe are currently the most significant, although additional risks not presently known to us or that we currently deem less significant may also impact our business, financial condition and results of operations, perhaps materially.

Failure to capitalize on, or volatility within, the Company's growth drivers, including advanced connectivity and advanced mobility, which may adversely affect our business.

We derived approximately 28% and 25% of our net sales for the year ended December 31, 2017 from sales relating to the key market growth drivers of advanced connectivity and advanced mobility, respectively. These growth drivers are served by our direct and indirect customers in a variety of end markets, including transportation (specifically including the advanced driver assistance systems and electric and hybrid electric vehicles markets), communications, wireless infrastructure and portable electronics. These growth drivers, as well as specific market and industry trends within them, may be volatile, cyclical and sensitive to a variety of factors, including general economic conditions, technology disruptions, consumer preferences and political priorities. Adverse or cyclical changes to and within these growth drivers has resulted in, and may continue to result in, reduced demand for certain of our products, production overcapacity, increased inventory levels and price erosion, ultimately leading to a decline in our revenues and gross margins. Acceleration within these growth drivers and corresponding rapid increases in demand for certain products may require us to make significant capital investments or acquisitions in order to increase production levels and to maintain customer relationships and market positions. We may not in all circumstances be able to increase our production levels with sufficient speed or efficiency to capitalize fully on such increases in demand.

We have extensive international operations, and events and circumstances that have general international consequence or specific impact in the countries in which we operate may materially adversely affect our business.

For the year ended December 31, 2017, approximately 71% of our net sales resulted from sales in foreign markets, with approximately 48% and 22% of such net sales occurring in Asia and Europe, respectively. We expect our revenues in foreign markets to continue to represent a substantial majority of our consolidated net sales. We maintain significant manufacturing and administrative operations in China, South Korea, Germany, Hungary and Belgium, and approximately 63% of our employees are located outside the United States. Risks related to our extensive international operations include the following:

- foreign currency fluctuations, particularly in the value of the Euro, the Hungarian forint, the Japanese yen, the Chinese yuan and the South Korean won against the U.S. dollar;
- economic and political instability, due to regional or country-specific events or changes in relations between the United States and the countries in which we operate;
- accounts receivable practices across countries, including longer payment cycles;
- export control or customs matters and changes in trade policy, tariff regulations or other trade restrictions;
- complications in complying with a variety of foreign laws, including unexpected changes in the laws or regulations of the countries in which we operate;
- failure to comply with the Foreign Corrupt Practices Act or other applicable anti-corruption laws;
- greater difficulty protecting our intellectual property;
- employment regulations, work stoppages and labor and union disputes.

The foregoing risks may be particularly acute in markets such as China and India, where our operations are subject to greater uncertainty due to increased volatility associated with the developing nature of the economic, legal and governmental systems of these countries. In addition, our business has been - and may continue to be - adversely affected by the lack of development, or disruptions, of transportation or other critical infrastructure in emerging markets. If we are unable to successfully manage the risks associated with expanding our global business or to adequately manage operational fluctuations, it may materially adversely affect our business, financial condition and results of operations.

Our business is dependent upon our development of innovative products and our customers' incorporation of those products into end user products and systems that achieve commercial success.

As a manufacturer and supplier of engineered materials and components, our business depends upon our ability to innovate and sell our new and improved materials and components for inclusion in other products that are developed, manufactured and sold by our customers. We strive to differentiate our products and secure long-term demand through our engagement with our customers to design in our materials and components as part of their product development processes. The value of any design in largely depends upon the decision of our customers to manufacture their products or systems in production quantities, the commercial success of the ultimate product and the extent to which the design of our customers' products or systems could accommodate substitution of competitor products. A consistent failure to introduce new products in a timely manner, achieve design-ins or achieve market acceptance on commercially reasonable terms could materially adversely affect our business, financial condition and results

of operations. Also, the introduction of new products presents particularly significant business challenges in our business because product development commitments and expenditures must be made well in advance of product sales.

Our dependence on sole or limited source suppliers for certain of our raw materials could materially adversely affect our ability to manufacture products and materially increase our costs.

We rely on sole and limited source suppliers for certain of the raw materials that are critical to the manufacturing of our products. This reliance subjects us to risks related to our potential inability to obtain an adequate supply of required raw materials, particularly given our use of lean manufacturing and just-in-time inventory techniques, and our reduced control over pricing and timing of delivery of raw materials. Our operating results could be materially adversely affected if we were unable to obtain adequate supplies of these materials in a timely manner or if their cost increased significantly.

While we believe we could obtain and qualify alternative sources for most sole and limited source supplier materials, if necessary, the transition time could be long, particularly if the change requires us to redesign our systems. Ultimately, we may be unable to redesign our systems, which could further increase delays or prevent us from manufacturing our products at all. Even if a system redesign is feasible, increased costs associated with such a redesign would decrease our profit margins, perhaps materially, if we could not effectively pass such costs along to our customers. Further, it would likely result in production and delivery delays, which could lead to lost revenues and damage to our relationships with current and potential customers.

We face intense global competition, which could reduce demand for our products or create additional pricing pressure on our products.

We operate in a highly competitive global environment and compete with domestic and international companies principally on the basis of the following:

- innovation;
- historical customer relationships;
- product quality, reliability, performance and price;
- technical and engineering service and support;
- breadth of product line; and
- manufacturing capabilities.

Our competitors include commodity materials suppliers, which offer product substitutions based mostly on price, and suppliers of alternate solutions, which offer product substitutions or eliminations based mostly on disruptive technology. Certain of these competitors have greater financial and other resources than we have and, in some cases, these competitors are well established in specific product niches. We expect that our competitors will continue to improve the design and performance of their products, which could result in the development of products that offer price or performance features superior to our products. If we are unable to maintain our competitive advantage for any reason, demand for our products may be materially reduced, which may adversely affect our business, financial condition and results of operations.

We may acquire businesses, dispose of businesses or engage in other transactions for which we may not realize anticipated benefits, or it may take longer than expected to realize such benefits, which may materially adversely affect our business operating results and financial condition.

From time to time, we have explored and pursued transaction opportunities that we believe complement our core businesses, and we expect to do so again in the future. We also may consider divesting businesses or assets that we do not regard as part of our core businesses. These transaction opportunities may come in the form of acquisitions, joint ventures, investments, divestitures or other structures. There are risks associated with such transactions, including, without limitation, general business risk, integration risk, technology risk, market acceptance risk, litigation risk, environmental risk, regulatory approval risk and risks associated with the failure to complete announced transactions. In the case of acquisitions, we may not be able to discover, during the due diligence process or otherwise, all known and unknown risks associated with the business we are acquiring, including the existence of liabilities. In the case of divestitures, we may agree to indemnify acquiring parties for known or unknown liabilities arising from the businesses we are divesting. We also may incur significant costs in the pursuit and evaluation of transactions that we do not consummate for a variety of reasons.

Acquisition and disposition transactions may not ultimately create value for us or our stockholders and may harm our reputation and materially adversely affect our business, financial condition and results of operations.

Our business may be materially adversely affected if we cannot protect our proprietary technology or if we infringe the proprietary rights of others.

Our proprietary technology supports our ability to compete effectively with other companies, and we seek to protect our intellectual property rights by obtaining domestic and foreign patents, trademarks and copyrights and maintaining trade secrets for our manufacturing processes. It is possible, however, that our efforts to obtain such protection in the United States and abroad will be unsuccessful or that the protection afforded will not be sufficiently broad to protect our technology.

Even if domestic and foreign laws do grant initial protection to our technology, our competitors or other third parties may subsequently obtain and unlawfully copy, use or disclose our technologies, products, and processes. We believe that the risk of piracy of our technology is particularly acute in the foreign countries in which we operate. In circumstances in which we conclude that our proprietary technology has been infringed, we may pursue litigation to enforce our rights. The defense and prosecution of intellectual property infringement suits are both costly and time consuming, even if the outcome is favorable to us. If we are not successful in protecting our proprietary technology or if the protection afforded to us is not sufficiently broad, our competitors may be able to manufacture and offer products substantially similar to our own, thereby reducing demand for our products and adversely affecting our results of operations and financial condition. We may also be adversely affected by, and subject to increased competition as a result of, the normal expiration of our issued patents.

Third parties may also assert infringement claims against us in the future. In addition to the significant costs associated with such suits, as noted above, an adverse outcome could subject us to significant liabilities to third parties and/or require us to license rights from third parties or cease selling our products. Any of these events may have a material adverse effect on our business, financial condition and results of operations.

The failure to attract and retain specialized technical and management personnel could impair our expected growth and future success.

We depend upon the continued services and performance of key executives, senior management and skilled technical personnel, particularly our sales engineers and other professionals with significant experience in the key industries we serve. Competition for these personnel from other companies, academic institutions and government entities is intense, and our expected growth and future success will depend, in large part, upon our ability to attract and retain these individuals.

As a multinational corporation doing business in the United States and various foreign jurisdictions, changes in tax laws or exposures to additional tax liability could negatively impact our operating results.

As a result of the variability and uncertainty in global taxation, we are subject to a wide variety of tax-related risks, any of which could provoke changes in our global structure, international operations or intercompany agreements, which could materially reduce our net income in future periods or result in restructuring costs, increased effective tax rates and other expenses. Given the global nature of our business, a number of factors may increase our effective tax rates, including:

- decisions to redeploy foreign earnings outside of their country of origin for which we have not previously provided for income taxes;
- increased scrutiny of our transactions by taxing authorities;
- changes in the geographic mix of our profits among jurisdictions with differing statutory income tax rates;
- changes in tax laws and regulations or issuance of new interpretations of the law applicable to us.

For instance, on December 22, 2017, the Tax Cuts and Jobs Act of 2017 ("U.S. Tax Reform") was signed into law making significant changes to the Internal Revenue Code. As a result, the Company recorded a provisional estimate of $13.7 million of additional tax expense in the fourth quarter of 2017 associated with the one-time transition tax on the mandatory deemed repatriation of foreign earnings and impact of revaluing deferred tax assets at a new lower tax rate. We are continuing to evaluate the impact of U.S. Tax Reform and certain provisions of the new law may also impact our net income in future periods. In addition, many aspects of U.S. Tax Reform may be clarified by new interpretations and guidance from the Internal Revenue Service, the impact of which is uncertain. See Note 13, "Income Taxes," to "Item 8 - Financial Statements and Supplementary Data" for additional information regarding U.S. Tax Reform.

Additionally, our net income in 2016 was impacted by $12.4 million of additional tax expense associated with distributions from China subsidiaries and a change in assertion that earnings would be permanently reinvested. This change resulted in payment of $6.3 million in withholding taxes and accrual of $6.1 million of foreign deferred taxes that became payable upon future distributions subsequent to 2016. For additional information, see "Item 7 - Management's Discussion and Analysis of Financial Condition and Results of Operations."

The terms of our credit agreement require us to satisfy financial ratios and comply with numerous covenants, and our failure to do so could lead to acceleration of our outstanding indebtedness.

Our credit agreement contains, and any future debt agreements into which we enter may contain, certain financial ratios and certain restrictive covenants that, among other things, limit our ability to incur indebtedness or liens, acquire other businesses, dispose of assets, or make investments. Our ability to make scheduled payments on these borrowings and to satisfy financial ratios may be adversely affected by changes in economic or business conditions beyond our control, while the restrictive covenants to which we are subject may limit our ability to take advantage of potential business opportunities as they arise. Failure to satisfy these financial ratios or to comply with the covenants in our credit agreement would constitute a default. An uncured default with respect to one or more of our covenants could result in outstanding borrowings thereunder being declared immediately due and payable, which may also trigger an obligation to repay other outstanding indebtedness. Any such acceleration of our indebtedness would have a material adverse effect on our cash flows and financial condition.

We may be adversely affected by litigation stemming from product liability and other claims.

We are involved in various unresolved legal matters that arise in the ordinary course of our operations, including asbestos-related product liability claims related to our operations before the 1990s. See "Item 3 - Legal Proceedings" and Note 15, "Commitments and Contingencies" to "Item 8 - Financial Statements and Supplementary Data" for additional information. We maintain insurance coverage with respect to certain claims, but we cannot be certain that the policy coverage limits will be adequate or that the policies will cover any particular loss. Costs associated with, among other things, the defense of, or settlements or judgments relating to, claims against us that are not covered by insurance or that result in recoveries in excess of insurance coverage may adversely affect our business, financial condition and results of operations. Irrespective of insurance coverage, claims against us could divert the attention of our senior management and/or result in reputational damage, thereby adversely affecting our business.

Projections on the potential exposure and expected insurance coverage are based on a number of assumptions, including the number of new claims to be filed each year, the average cost of disposing of such claims, the length of time it takes to dispose of such claims, coverage issues among insurers and the continuing solvency of various insurance companies. To the extent such assumptions are inaccurate, the net liabilities that we have recorded in our financial statements may fail to approximate the losses we could suffer in connection with such claims.

We are subject to many environmental laws and regulations that could adversely affect our business.

We are subject to a variety of federal, state, local and foreign laws, rules and regulations related to the use, storage, handling, discharge or disposal of certain toxic, volatile or otherwise hazardous chemicals, gases and other substances used in manufacturing our products. Some of these laws in the United States include the Federal Clean Water Act, Clean Air Act, Resource Conservation and Recovery Act, Comprehensive Environmental Response, Compensation, and Liability Act, Toxic Substances Control Act, and similar state statutes and regulations. In the European Union we are subject to the EU regulation on Registration, Evaluation, Authorization and Restriction of Chemicals. Compliance with these laws and regulations could require us to incur substantial expenses, including in connection with the acquisition of new equipment. Any failure to comply with present or future environmental laws, rules and regulations could result in fines, suspension of production or cessation of operations, any of which could have a material adverse effect on our business, financial condition and results of operations.

In addition, some environmental laws impose liability, sometimes without fault, for investigating and/or cleaning up contamination on, or emanating from, properties currently or formerly owned, leased or operated by us, as well as for damages to property or natural resources and for personal injury arising out of such contamination. Such liability may be joint and several, meaning that we could be held responsible for more than our share of the liability involved, or even the entire liability. See Note 15, "Commitments and Contingencies" to "Item 8 - Financial Statements and Supplementary Data" for additional information.

A significant disruption in, or breach in security of, our information technology systems could materially and adversely affect our business or reputation.

In the ordinary course of business, we collect and store confidential information, including proprietary business information belonging to us, our customers, suppliers, business partners, other third parties and personally identifiable information of our employees. We rely on information technology systems to protect this information and to keep financial records, process orders, manage inventory, coordinate shipments to customers, and operate other critical functions. Our information technology systems may be susceptible to damage, disruptions or shutdowns due to power outages, hardware failures, telecommunication failures and user errors. If we experience a disruption in the information technology systems, it could result in the loss of sales and customers and significant incremental costs, which could adversely affect our business.

We may also be subject to security breaches caused by computer viruses, illegal break-ins or hacking, sabotage, or acts of vandalism by disgruntled employees or third parties. The risk of a security breach or disruption, particularly through cyberattack or cyber intrusion, including by computer hackers, foreign governments and cyber terrorists, has increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. Our information technology network and systems have been and, we believe, continue to be under constant attack. Accordingly, despite our security measures or those of our third party service providers, a security breach may occur, including breaches that we may not be able to detect. Security

breaches of our information technology systems could result in the misappropriation or unauthorized disclosure of confidential information belonging to us or to our customers, business partners, suppliers or employees, which could result in our suffering significant financial or reputational damage.

Employee benefit cost increases could reduce our profitability.

Our profitability is affected by employee benefit costs, particularly medical, pension and other employee benefits. In recent years, employee medical costs have increased due to factors such as the increase in health care costs in the United States. These factors will continue to put pressure on our business and financial performance, as employee benefit costs continue to escalate. We may not succeed in limiting future cost increases. Continued employee benefit cost increases could have an adverse effect on our results of operations, cash flows and financial condition.

We also sponsor various defined benefit pension plans that cover certain employees. Our costs of providing defined benefit pension plans have risen dramatically in recent years, and are dependent upon a number of factors and assumptions that drive our projected liabilities and annual expenses, such as discount rates, the actual and projected rates of return on the plans' assets, governmental regulation, global equity prices, portfolio composition, mortality rates and our required and/or voluntary contributions to the plans. Changes in assumptions, the ability to grow our pension investments over time to increase the value of the plans' assets, and other factors relating to worldwide and domestic economic trends and financial market conditions, could all have a negative impact on our pension plans, which could result in an increase in our pension liabilities, a reduction in the funded status of our plan, increases in annual expense recognized related to the plans, and requirements to increase funding for some or all of our defined benefit pension plans, among other factors, all of which could negatively impact our operations and financial condition.

In October 2017, the Company merged two of the defined benefit pension plans (the Merged Plan). The Company currently intends to terminate the Merged Plan and has requested a determination letter from the Internal Revenue Service (IRS). We expect the settlement process to be completed in late 2018 or early 2019, but the process for finalizing the termination of the Merged Plan includes compliance with a regulatory review by the IRS and the timing of the resolution of the compliance process may be delayed. Following receipt of approval from the IRS and upon the effectiveness of the termination of the Merged Plan, we plan to distribute the benefits remaining in the Merged Plan. This distribution could have an adverse effect on our results of operations, cash flows and financial condition.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We operate various manufacturing facilities and sales offices throughout the United States, Europe and Asia. In the second quarter of 2017, we completed the relocation of our headquarters from Rogers, Connecticut to Chandler, Arizona. The following table provides certain information about the principal general offices and manufacturing facilities used by our operating segments:

Location	Floor Space (Square Feet)	Type of Facility	Leased / Owned	Operating Segment
United States				
Rogers, Connecticut	388,131	Manufacturing / Administrative Offices	Owned	ACS & EMS
Chandler, Arizona	147,000	Manufacturing	Owned	ACS
Chandler, Arizona	105,100	Manufacturing	Owned	ACS
Chandler, Arizona	75,000	Administrative Offices	Owned	All
Chandler, Arizona	17,000	Warehouse/ Administrative Offices	Leased through 3/2020	ACS
Carol Stream, Illinois	216,600	Manufacturing	Owned	EMS
Woodstock, Connecticut	150,636	Manufacturing	Owned	EMS
Bear, Delaware	125,000	Manufacturing / Administrative Offices	Owned	ACS & EMS
Burlington, Massachusetts	6,000	R&D Lab and Office Space	Leased through 2/2020	All
Narragansett, Rhode Island	84,600	Manufacturing	Owned	EMS
North Kingston, Rhode Island	10,000	Warehouse	Leased through 3/2020	EMS
Santa Fe Springs, California	42,000	Manufacturing / Administrative Offices	Leased through 7/2019	EMS
Europe				
Eschenbach, Germany	149,000	Manufacturing / Administrative Offices	Leased through 6/2021	PES
Ghent, Belgium *	114,000	Manufacturing	Leased through 8/2018	PES
Evergem, Belgium	77,000	Manufacturing / Administrative Offices	Owned	ACS
Budapest, Hungary	42,000	Manufacturing	Leased through 2/2019	PES
Asia				
Suzhou, China	821,000	Manufacturing / Administrative Offices	Owned	All
Ansan, Korea	40,000	Manufacturing	Leased through 10/2021	EMS
Tokyo, Japan	3,094	Sales Office	Leased through 2/2020	PES
Taipei, Taiwan, R.O.C.	1,000	Sales Office	Leased through 7/2018	ACS
Anyang, Korea	500	Sales Office	Leased through 7/2018	EMS
Anyang, Korea	500	Sales Office	Leased through 12/2019	All
Singapore	1,000	Sales Office	Leased through 12/2018	All
Shanghai, China	1,000	Sales Office	Leased through 3/2019	All
Shenzhen, China	1,000	Sales Office	Leased through 5/2018	All
Beijing, China	1,000	Sales Office	Leased through 5/2018	All

* We plan to exit this facility when we cease use at the end of the lease term.

Item 3. Legal Proceedings

Asbestos products litigation

We were a defendant in 687 asbestos-related product liability cases as of December 31, 2017, compared to 605 cases as of December 31, 2016, with the change reflecting new cases, dismissals, settlements and other dispositions. We have never mined, milled, manufactured or marketed asbestos; rather, we made and provided to industrial users a limited number of products that contained encapsulated asbestos, but we stopped manufacturing these products in the late 1980s. In virtually all of the cases against us, the plaintiffs are seeking unspecified damages above a jurisdictional minimum against multiple defendants who may have manufactured, sold or used asbestos-containing products to which the plaintiffs were allegedly exposed and from which they purportedly suffered injury. Most of these cases are being litigated in Illinois, Maryland and Missouri; however, we are also defending cases in other states. We intend to vigorously defend these cases, primarily on the basis of the plaintiffs' inability to establish compensable loss as a result of exposure to our products. As of December 31, 2017, the estimated liability and estimated insurance recovery for all current and future claims projected through 2058 were $76.2 million and $69.2 million, respectively.

The defense and settlement costs of our asbestos-related product liability litigation to date have been substantially covered by insurance. Our consolidated financial statements include approximately $7.0 million of estimated asbestos-related expenses that exceed asbestos-related insurance coverage for all current and future claims projected through 2058. See Note 15, "Commitments and Contingencies" to "Item 8 - Financial Statements and Supplementary Data" for additional information regarding our asbestos-related product liability litigation.

Other matters

We are currently involved in a variety of other legal proceedings that we view as ordinary routine litigation incidental to our business, including commercial disputes, intellectual property matters, personal injury claims, tax claims and employment matters. Although the outcome of no legal matter can be predicted with certainty, we do not believe that the outcome of any of these legal proceedings, either individually or in the aggregate, will have a material adverse effect on our business, financial position, results of operations or cash flows. In addition, we are involved in certain environmental matters, principally investigations, that we do not view as material legal proceedings, either pending or known to be contemplated. See Note 15, "Commitments and Contingencies" to "Item 8 - Financial Statements and Supplementary Data" for additional information regarding these matters.

Item 4. **Mine Safety Disclosures**

Not applicable.

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Capital Stock Market Prices and Dividend Policy

Our capital stock is traded on the New York Stock Exchange under the symbol "ROG". As of the end of business on February 23, 2018, we had 307 shareholders of record. On the same date, the trading price of our capital stock closed at $160.53 per share.

The following table sets forth the high and low sales prices during each quarter of the last two fiscal years on a per share basis:

	2017		2016	
	High	**Low**	High	Low
Fourth	**$168.07**	**$131.56**	$78.35	$51.98
Third	**133.85**	**107.24**	69.26	54.14
Second	**113.26**	**80.35**	67.91	56.67
First	**90.45**	**75.93**	61.64	41.92

We did not pay any dividends on our capital stock in fiscal 2017 and 2016. We expect to maintain a policy of emphasizing longer-term growth of capital rather than immediate dividend income and do not anticipate paying cash dividends in the foreseeable future. Our Third Amended Credit Agreement (as defined herein), entered into as of February 17, 2017, generally permits us to pay cash dividends to our shareholders, provided that (i) no default or event of default has occurred and is continuing or would result from the dividend payment and (ii) our leverage ratio does not exceed 2.75 to 1.00. If our leverage ratio exceeds 2.75 to 1.00, we may nonetheless make up to $20.0 million in restricted payments, including cash dividends, during the fiscal year, provided that no default or event of default has occurred and is continuing or would result from the payments. Our leverage ratio did not exceed 2.75 to 1.00 as of December 31, 2017.

Issuer Purchases of Equity Securities

On August 6, 2015, we initiated a share repurchase program ("the Program") of up to $100.0 million of the Company's capital stock. The Program has no expiration date, and may be suspended or discontinued at any time without notice. We initiated this program to mitigate potentially dilutive effects of stock options and shares of restricted stock granted by the Company, in addition to enhancing shareholder value.

There were no shares repurchased in 2017. All previous repurchases were made using cash from operations and cash on hand. As of December 31, 2017, $52.0 million remained available to purchase under the program. See Note 9, "Share Repurchase" to "Item 8 - Financial Statements and Supplementary Data" for information regarding dividends and share repurchases for the year.

Item 6. Selected Financial Data

(Dollars in thousands, except per share amounts)	**2017**	2016	2015	2014	2013
Financial Results					
Net sales	**$ 821,043**	$ 656,314	$ 641,443	$ 610,911	$ 537,482
Income before income taxes	**$ 132,925**	$ 82,280	$ 66,173	$ 81,224	$ 49,722
Net Income	**$ 80,459**	$ 48,283	$ 46,320	$ 53,412	$ 38,203
Per Share Data					
Basic	**$ 4.43**	$ 2.68	$ 2.52	$ 2.94	$ 2.22
Diluted	**$ 4.34**	$ 2.65	$ 2.48	$ 2.86	$ 2.15
Book value	**$ 41.99**	$ 35.28	$ 32.55	$ 31.91	$ 31.38
Financial Position					
Current assets	**$ 454,523**	$ 458,401	$ 428,665	$ 438,174	$ 383,623
Current liabilities	**$ 113,808**	$ 101,185	$ 78,648	$ 120,445	$ 90,040
Ratio of current assets to current liabilities	**4.0 to 1**	4.5 to 1	5.5 to 1	3.6 to 1	4.3 to 1
Cash and cash equivalents	**$ 181,159**	$ 227,767	$ 204,586	$ 237,375	$ 191,884
Net working capital	**$ 340,715**	$ 357,216	$ 350,017	$ 317,729	$ 293,583
Property, plant and equipment, net	**$ 179,611**	$ 176,916	$ 178,661	$ 150,420	$ 146,931
Total assets	**$ 1,125,134**	$ 1,056,500	$ 930,355	$ 840,435	$ 811,321
Borrowings under credit facility	**$ 130,982**	$ 235,877	$ 173,557	$ 25,000	$ 60,000
Shareholders' equity	**$ 766,573**	$ 635,786	$ 584,582	$ 587,281	$ 560,314
Borrowings under credit facility as a percentage of shareholders' equity	**17.1%**	37.1%	29.7%	4.3%	10.7%
Other Data					
Depreciation and amortization	**$ 44,099**	$ 37,847	$ 34,054	$ 26,268	$ 26,351
Research and development expenses	**$ 29,547**	$ 28,582	$ 27,644	$ 22,878	$ 21,646
Capital expenditures	**$ 27,215**	$ 18,136	$ 24,837	$ 28,755	$ 16,859
Number of employees (approximate)	**3,400**	3,100	2,800	2,800	2,500
Net sales per employee	**$ 241**	$ 212	$ 229	$ 218	$ 215
Number of shares outstanding at year end	**18,255**	18,021	17,957	18,403	17,855

Amounts disclosed above have been adjusted for our 2015 change in accounting principle from the last in, first out (LIFO) cost method to the first in, first out (FIFO) cost method for valuing inventory for all operations that were using the LIFO cost method. The financial data included within the preceding table should be read in conjunction with our Management's Discussion and Analysis of Financial Condition and Results of Operations as well as the Financial Statements and Supplementary Data included in Items 7 and 8, respectively of this Form 10-K, and with our previously filed Forms 10-K.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of operations should be read together with the Selected Financial Data and our Consolidated Financial Statements and the related notes that appear elsewhere in this Form 10-K.

In the following discussion and analysis, we sometimes provide financial information that was not prepared in accordance with U.S. generally accepted accounting principles (GAAP). Management believes that such non-GAAP financial measures can provide meaningful supplemental information regarding the Company's performance by excluding certain expenses that are generally non-recurring or otherwise may not be indicative of the core business operating results. In general, the Company believes that any such additional non-GAAP financial information provided is useful to management and investors in assessing the Company's historical performance and for planning, forecasting and analyzing future periods. However, non-GAAP financial measures have limitations as an analytical tool and should not be considered in isolation from, or solely as an alternative to, financial information prepared in accordance with GAAP. Any time we provide non-GAAP financial measures in the following narrative, we identify it as such and in close proximity provide the most directly comparable GAAP financial measure, as well as the information necessary to reconcile the two measures.

Business Overview

Rogers Corporation designs, develops, manufactures and sells high-quality and high-reliability engineered materials and components for mission critical applications. We operate principally three strategic operating segments: Advanced Connectivity Solutions (ACS), Elastomeric Material Solutions (EMS) and Power Electronics Solutions (PES). We have a history of innovation and have established Innovation Centers for our leading research and development activities in Chandler, Arizona, Burlington, Massachusetts, Eschenbach, Germany and Suzhou, China. We are headquartered in Chandler, Arizona.

Our growth strategy is based upon the following principles: (1) market-driven organization, (2) innovation leadership, (3) synergistic mergers and acquisitions, and (4) operational excellence. As a market-driven organization, we are focused on growth drivers, including advanced mobility and advanced connectivity. More specifically, the key trends and markets that affect our business include the increased use of advanced driver assistance systems and adoption of electric and hybrid electric vehicles and new technology adoption in the telecom industry, including next generation wireless infrastructure. In addition to our focus on advanced mobility and advanced connectivity, we also sell into a variety of other end markets including renewable energy, aerospace and defense and diverse general industrial applications.

Our sales and marketing approach is based on addressing these trends, while our strategy focuses on factors for success as a manufacturer of engineered materials and components: quality, service, cost, efficiency, innovation and technology. We have expanded our capabilities through organic investment and acquisitions and strive to ensure high quality solutions for our customers. We continue to review and re-align our manufacturing and engineering footprint in an effort to attain a leading competitive position globally. We have established or expanded our capabilities in various locations in support of our customers' growth initiatives.

We seek to enhance our operational and financial performance by investing in research and development, manufacturing and materials efficiencies, and new product initiatives that respond to the needs of our customers. We strive to evaluate operational and strategic alternatives to improve our business structure and align our business with the changing needs of our customers and major industry trends affecting our business.

In executing on our growth strategy, we have completed three strategic acquisitions: (1) in January 2017, we acquired the principal operating assets of Diversified Silicone Products, Inc. (DSP), a custom silicone product development and manufacturing business, serving a wide range of high reliability applications, (2) in November 2016, we acquired DeWAL Industries LLC (DeWAL), a leading manufacturer of polytetrafluoroethylene and ultra-high molecular weight polyethylene films, pressure sensitive tapes and specialty products for the industrial, aerospace, automotive, and electronics markets, and (3) in January 2015, we acquired Arlon LLC and its subsidiaries, other than Arlon India (Pvt) Limited (the acquired entities, collectively, Arlon), a leading manufacturer of high performance materials for the printed circuit board industry and silicone rubber-based materials.

2017 Executive Summary

In 2017 as compared to 2016, our net sales increased 25.1% to $821.0 million, gross margin increased 79 basis points to 38.8%, operating margin increased 315 basis points to 15.9% and operating income increased 56.0% to $130.8 million. The following key factors should be considered when reviewing our results of operations, financial condition and liquidity for the periods discussed:

- *Our net sales increase in 2017 was attributable to increases in net sales across all of our strategic operating segments, reflecting both growth attributable to our recent acquisitions and organic growth within each operating segment.* Each of ACS, EMS and PES recorded net sales growth. ACS experienced continued growth in automotive radar applications, consumer electronics, and aerospace and defense, partially offset by lower demand in wireless infrastructure applications and satellite TV dish applications. EMS net sales increased primarily from the recent acquisitions of DeWAL and DSP, and from higher end-market demand from core markets, including automotive, mass transit, portable electronics, general

industrial, and consumer products applications. PES saw strength across most of its traditional markets, including laser diode cooler applications, renewable energy, mass transit, electric and hybrid electric vehicles and variable frequency motor drives. See "Segment Sales and Operations."

- *Our gross margin improved 79 basis points and our operating margin increased 315 basis points in 2017 compared to 2016 primarily as a result of increased demand and our operational excellence initiatives.* Gross margin and operating margin were favorably impacted by the increase in net sales, combined with operational excellence initiatives across our operating segments including increased capacity utilization, operational process enhancements and automation, conversion of fixed cost structure to variable, benefits from low cost country manufacturing expansion, and synergies from the recent acquisitions of DeWAL and DSP. See "Results of Operations."
- *We continue to execute on our synergistic acquisition strategy.* The acquisitions of DeWAL and DSP, and their subsequent integration into our EMS operating segment, have enabled us to extend the product portfolio and technology capabilities with complementary high-end, high performance elastomeric materials.
- *During 2017, we refinanced our borrowings under our revolving credit facility and as a result of strong financial performance, we made discretionary principal payments of $110.2 million.* Our outstanding borrowings under our credit facility decreased to $131.0 million as of December 31, 2017.
- *We are an innovation company and in 2017 spent 3.6% of our net sales on research and development.* Research and development (R&D) expenses were $29.5 million in 2017, an increase of 3.4% from $28.6 million in 2016. The increased spending was due to continued investments that are targeted at developing new platforms and technologies. We have made concerted efforts to realign our R&D organization to better fit the future direction of our Company, including dedicating resources to focus on current product extensions and enhancements to meet our short-term and long-term technology needs.

Results of Operations

The following table sets forth, for the periods indicated, selected operations data expressed as a percentage of net sales.

	2017	2016	2015
Net sales	**100.0 %**	100.0 %	100.0 %
Gross margin	**38.8 %**	38.0 %	36.7 %
Selling, general and administrative expenses	**19.5 %**	20.8 %	20.5 %
Research and development expenses	**3.6 %**	4.4 %	4.3 %
Restructuring and asset impairment charges	**0.4 %**	0.1	— %
Gain on sale of long-lived assets	**(0.6)%**	— %	— %
Operating income	**15.9 %**	12.8 %	11.9 %
Equity income in unconsolidated joint ventures	**0.6 %**	0.6 %	0.5 %
Other income (expense), net	**0.4 %**	(0.3)%	(1.3)%
Interest expense, net	**(0.7)%**	(0.6)%	(0.7)%
Income before income taxes	**16.2 %**	12.5 %	10.3 %
Income tax expense	**6.4 %**	5.2 %	3.1 %
Income from continuing operations	**9.8 %**	7.4 %	7.2 %

2017 vs. 2016

Net Sales

(Dollars in thousands)	**2017**	2016	Percent Change
Net sales	**$ 821,043**	$ 656,314	25.1%

Net sales increased by 25.1% in 2017 compared to 2016. This increase was driven by the net sales from our recent acquisitions of DeWAL and DSP, as well as higher organic net sales in our three strategic operating segments (ACS, EMS and PES). The ACS operating segment had an increase in net sales of 8.4% due to higher end-market demand in automotive radar applications, consumer electronics, and aerospace and defense, partially offset by lower demand in wireless infrastructure applications and satellite TV dish applications. EMS net sales increased 53.9% primarily due to the recent acquisitions of DeWAL and DSP, and from higher end-market product demand from core markets, including automotive, mass transit, portable electronics, general industrial and consumer products applications. PES had increased net sales of 21.4% due to higher end-market demand in laser diode cooler applications, renewable energy, mass transit, electric and hybrid electric vehicles and variable frequency motor drives. Net sales were unfavorably impacted by 0.1% due to currency fluctuations primarily as a result of the depreciation in value of the Renminbi relative to the U.S. dollar, offset in part by appreciation in value of the Euro relative to the U.S. dollar.

See “Segment Sales and Operations” below for further discussion on operating segment performance.

Gross Margin

(Dollars in thousands)	**2017**	2016	Percent Change
Gross Margin	**$ 318,575**	$ 249,485	27.7%
Percentage of sales	**38.8%**	38.0%	

Gross margin as a percentage of net sales increased by 79 basis points to 38.8% in 2017 compared to 38.0% in 2016. In 2017, gross margin was favorably impacted by an increase in net sales combined with operational excellence initiatives across our operating segments, including increased capacity utilization, operational process enhancements and automation, conversion of fixed cost structure to variable, benefits from low cost country manufacturing expansion, and synergies from the recent acquisitions of DeWAL and DSP.

Selling, General and Administrative Expenses

(Dollars in thousands)	**2017**	2016	Percent Change
Selling, general and administrative expenses	**$ 160,011**	$ 136,317	17.4%
Percentage of sales	**19.5%**	20.8%	

Selling, general and administrative (SG&A) expenses increased by 17.4% in 2017 compared to 2016, due principally to $6.1 million of additional equity and incentive compensation expense, $4.8 million of additional other intangible assets amortization and depreciation related to the acquisitions, $4.7 million of additional SG&A expenses from the operations of the acquired businesses, $3.6 million of additional sales and marketing costs, $1.3 million of corporate development activity costs, and $3.4 million for additional asbestos liability accruals. Our 2017 results also include $3.2 million of acquisition and integration costs related to DeWAL and DSP. SG&A decreased as a percent of net sales to 19.5% in 2017 compared to 20.8% in 2016 as a result of administrative cost containment activities.

Research and Development Expenses

(Dollars in thousands)	**2017**	2016	Percent Change
Research and development expense	**$ 29,547**	$ 28,582	3.4%
Percentage of sales	**3.6%**	4.4%	

Research and development (R&D) expenses increased by 3.4% in 2017 compared to 2016. The increase is due to continued investments that are targeted at developing new platforms and technologies focused on long-term growth initiatives at our Innovation Centers in the United States, Europe and Asia. As a percentage of sales, R&D costs decreased from 4.4% in 2016 to 3.6% in 2017 primarily due to sales growth increasing at a higher rate than the increase in R&D spend.

Other Operating Expenses (Income)

(Dollars in thousands)	**2017**	2016	Percent Change
Restructuring and asset impairment charges	**$ 3,567**	$ 734	386.0%
Gain on sale of long-lived assets	**$ (5,329)**	$ —	N/A

In the second quarter of 2017, we completed the physical relocation of our global headquarters from Rogers, Connecticut to Chandler, Arizona. We recorded $2.8 million of expense related to this project in 2017 compared to $0.7 million recorded in 2016.

In the third quarter of 2017, we recognized a $0.3 million impairment charge related to our remaining investment in BrightVolt, Inc. (formerly known as Solicore, Inc.). As this investment does not relate to a specific operating segment, we allocated it ratably among the three operating segments.

In the fourth quarter of 2017, we recognized a $0.5 million impairment charge related to the remaining net book value of an other intangible asset within our ROLINX® product line in our PES operating segment.

In the first quarter of 2017, we completed the planned sale of a parcel of land in Belgium that had been classified as held for sale as of December 31, 2016 and recognized a gain on sale of approximately $0.9 million in operating income.

Also in the third quarter of 2017, we completed the sale of a facility located in Belgium and recognized a gain on sale of approximately $4.4 million in operating income.

Equity Income in Unconsolidated Joint Ventures

(Dollars in thousands)	**2017**	2016	Percent Change
Equity income in unconsolidated joint ventures	**$ 4,898**	$ 4,146	18.1%

Equity income in unconsolidated joint ventures increased 18.1% in 2017 from 2016. The increases were due to higher demand, primarily in the portable electronics market.

Other Income (Expense), Net

(Dollars in thousands)	**2017**	2016	Percent Change
Other income (expense), net	**$ 3,379**	$ (1,788)	289.0%

In 2017, the increase in other income (expense), net was attributable to gains in copper derivative transactions of approximately $1.9 million compared to gains of $0.5 million in 2016, as well as gains from foreign currency fluctuations of $0.8 million compared to losses of $1.8 million in 2016. In 2016, we also recorded an additional loss related to the sale of the Arlon polyimide and thermoset laminate business of $0.2 million, and $0.8 million of expense for tax indemnity receivables that were reversed due to the release of uncertain tax positions.

Interest Expense, Net

(Dollars in thousands)	**2017**	2016	Percent Change
Interest expense, net	**$ (6,131)**	$ (3,930)	56.0%

Interest expense, net, increased by 56.0% in 2017 from 2016. This increase was primarily due to higher outstanding borrowings on our credit facility in 2017 compared to 2016 due to borrowings to fund the acquisitions of DeWAL and DSP. As explained in "Liquidity, Capital Resources and Financial Position" below, we made discretionary principal payments of $110.2 million in 2017 to reduce our outstanding borrowings under our credit facility to $131.0 million as of December 31, 2017.

Income Tax Expense

(Dollars in thousands)	**2017**	2016	Percent Change
Income tax expense	**$ 52,466**	$ 33,997	54.3%
Effective tax rate	**39.5%**	41.3%	

Our effective tax rate for 2017 was 39.5%, including our provisional estimate of the impact of the recent significant tax reform in the United States (U.S. Tax Reform), compared to 41.3% in 2016. The 2017 rate decrease was primarily due to lower foreign tax impact on remitted and unremitted foreign earnings and profits, equity compensation excess tax deductions recognized in 2017 and increased international tax rate benefits due to earnings mix. This was substantially offset by our provisional estimate of the impact of U.S. Tax Reform, a decrease in reversal of reserves associated with uncertain tax positions and a change in valuation allowance associated with deferred tax assets that are capital in nature. See Note 13, "Income Taxes" to "Item 8 - Financial Statements and Supplementary Data" for additional information regarding U.S. Tax Reform.

Excluding the impact of U.S. Tax Reform, our effective tax rate for 2017 was 29.2%.

On December 22, 2017, Staff Accounting Bulletin No. 118 (SAB 118) was issued to address the application of US GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Act. In accordance with SAB 118, we have determined that the $1.7 million of the deferred tax expense recorded in connection with the remeasurement of certain deferred tax assets and liabilities and the $12.0 million of tax expense recorded in connection with the transition tax on the mandatory deemed repatriation of foreign earnings was a provisional amount and a reasonable estimate at December 31, 2017. Management will subject these estimates to further analysis related to certain matters, such as federal and state interpretations of U.S. Tax Reform, U.S. Treasury regulations, administrative interpretations or court decisions, a more detailed analysis of post-1986 undistributed foreign subsidiary earnings and profits (E&P) that may require further adjustments and changes to certain estimates, as well as potential correlative adjustments. Any subsequent adjustment to these amounts will be recorded to tax expense in the quarter of 2018 when the analysis is complete. See Note 13, "Income Taxes" to "Item 8 - Financial Statements and Supplementary Data" for additional information regarding U.S. Tax Reform.

Backlog

Our backlog of firm orders was $122.8 million as of December 31, 2017, compared to $106.5 million as of December 31, 2016. The ACS, PES and Other operating segments experienced year-over-year increases in backlog of $2.2 million, $13.8 million and $4.5 million, respectively while the EMS operating segment experienced a year-over-year decrease of $6.4 million. The increase in backlog for the ACS, PES and Other operating segments is primarily due to overall sales growth in 2017 compared to 2016, as well as increases in long-term buying patterns in the ACS operating segment, and favorable currency fluctuations in our PES operating segment. The decrease in backlog for the EMS operating segment is primarily due to an increase in order fulfillment during 2017 as compared to 2016. Additionally, the 2017 EMS backlog contains $2.1 million related to DSP. The backlog of firm orders is expected to be filled within the next 12 months.

2016 vs. 2015

Net Sales

(Dollars in thousands)	**2016**	2015	Percent Change
Net Sales	**$ 656,314**	$ 641,443	2.3%

Net sales increased by 2.3% in 2016 from 2015, driven primarily by the ACS and EMS operating segments. The ACS operating segment net sales increased 3.8%, including a negative currency impact of 1.0%. The EMS operating segment net sales increased 12.3%, including a negative currency impact of 1.8%. The PES operating segment net sales increased 1.4%, including a negative currency impact of 0.9%. In total, the increase in net sales in 2016 included a negative currency impact of 1.2%. Additionally, sales in 2016 declined by 2.9% due to the non-core divestiture of the Arlon polyimide and thermoset laminate business, which was sold in December 2015.

Gross Margin

(Dollars in thousands)	**2016**	2015	Percent Change
Gross Margin	**$ 249,485**	$ 235,362	6.0%
Percentage of sales	**38.0%**	36.7%	

Gross margin as a percentage of net sales increased by 130 basis points to 38.0% in 2016 compared to 36.7% in 2015. In 2016, gross margin was favorably impacted by an increase in net sales and lower commodities pricing, combined with operational excellence initiatives across our business units and the divestiture of the lower margin Arlon polyimide and thermoset business in 2015. Our 2015 results included $1.6 million of expense for a non-recurring purchase accounting fair value adjustment for inventory related to the Arlon acquisition.

Selling, General and Administrative Expenses

(Dollars in thousands)	**2016**	2015	Percent Change
Selling, general and administrative expenses	**$ 136,317**	$ 131,463	3.7%
Percentage of sales	**20.8%**	20.5%	

Selling, general and administrative (SG&A) expenses increased by 3.7% in 2016 compared with 2015. Our 2016 results increased principally due to $7.7 million of incentive compensation due to the Company meeting performance incentive targets and $4.5 million of costs associated with non-acquisition related strategic projects. These increases were partially offset by cost savings from cost containment initiatives. Our 2016 results include $3.8 million of acquisition costs related to DeWAL and DSP and 2015 included $4.8 million in integration expenses related to the Arlon acquisition and $3.2 million related to the establishment of an environmental reserve.

Research and Development Expenses

(Dollars in thousands)	**2016**	2015	Percent Change
Research and development expense	**$ 28,582**	$ 27,644	3.4%
Percentage of sales	**4.4%**	4.3%	

Research and development (R&D) expenses increased by 3.4% in 2016 compared with 2015. As a percentage of sales, R&D costs increased from 4.3% in 2015 to 4.4% in 2016. The overall increase was due to continued investments that are targeted at developing new platforms and technologies focused on long-term growth initiatives at our Innovation Centers in the United States, Europe and Asia.

Equity Income in Unconsolidated Joint Ventures

(Dollars in thousands)	**2016**	2015	Percent Change
Equity income in unconsolidated joint ventures	**$ 4,146**	$ 2,890	43.5%

Equity income in unconsolidated joint ventures increased 43.5% in 2016 from 2015. The increase was due to the appreciation of the Japanese Yen against the U.S. dollar, as the currency value significantly changed. Excluding the impact of the currency change, net sales increased due to higher demand primarily in the portable electronics market.

Interest Expense, Net

(Dollars in thousands)	**2016**	2015	Percent Change
Interest expense, net	**$ (3,930)**	$ (4,480)	(12.3)%

Interest expense, net, was lower expense by 12.3% in 2016 from 2015. The decrease year over year was driven by $103.4 million of debt repayments in 2016 on borrowings incurred in January 2015 associated with the Arlon acquisition.

Other Income (Expense), Net

(Dollars in thousands)	**2016**	2015	Percent Change
Other income (expense), net	**$ (1,788)**	$ (8,492)	(78.9)%

In 2015, our results included $4.8 million of a loss on the sale of the Arlon specialty polyimide and epoxy-based laminates business and $2.4 million of receivables related to the tax indemnities that were reversed, which related to the release of uncertain tax positions. Comparing 2016 to 2015, we recognized a net favorable impact of $1.5 million due to copper hedging transactions and a net unfavorable impact of $1.9 million due to foreign currency transactions. Additionally, in the third quarter of 2016, we had $0.8 million of expense for tax indemnity receivables that were reversed, which related to the release of uncertain tax positions, and in the first quarter of 2016, we recorded an additional loss related to the sale of the Arlon polyimide and thermoset laminate business of $0.2 million.

Income Tax Expense

(Dollars in thousands)	**2016**	2015	Percent Change
Income tax expense	**$ 33,997**	$ 19,853	71.2%
Effective tax rate	**41.3%**	30.0%	

Our effective tax rate for 2016 was 41.3% compared to 30.0% in 2015. The increase from 2015 is primarily related to withholding taxes on off-shore cash movements, a change to our assertion that certain foreign earnings are permanently reinvested and a change in the mix of earnings attributable to higher-taxing jurisdictions, offset by benefits associated with an increase in the reversal of reserves for uncertain tax positions. This increase was offset by the prior year being unfavorably impacted by adjustments related to finalization of 2014 income tax year returns. The prior year also included a benefit due to a change of the state tax rate as a result of a legal reorganization and release of valuation allowance on certain state tax attributes.

Historically, our intention was to permanently reinvest the majority of our foreign earnings indefinitely or to distribute them only when it is tax efficient to do so. As a result of certain internal restructuring transactions effectuated to more closely align our subsidiaries from an operational, legal and geographic perspective and improve management of financial resources, with respect to offshore distributions, we modified our assertion of certain accumulated foreign subsidiary earnings considered permanently reinvested during 2016. This change resulted in accrual of a deferred tax liability of $6.1 million associated with distribution related foreign taxes on undistributed earnings of our Chinese subsidiaries that are no longer considered permanently reinvested. In the event that we distributed these funds to other offshore subsidiaries, these taxes would become due. In addition, we incurred $6.3 million of withholding taxes related to distributions from China.

Backlog

Our backlog of firm orders was $106.5 million as of December 31, 2016, as compared to $63.3 million as of December 31, 2015. ACS, EMS, PES and Other operating segments experienced year over year increases in backlog of $13.2 million, $15.8 million, $13.8 million and $0.4 million, respectively. Contributing to the year over year change in backlog was an improvement in general market conditions. Additionally, the 2016 backlog contained $7.2 million related to the DeWAL business.

Segment Sales and Operations

Core Strategic

Advanced Connectivity Solutions

(Dollars in millions)	**2017**	2016	2015
Net sales	**$ 301.1**	$ 277.8	$ 267.6
Operating income	**$ 56.2**	$ 44.0	$ 45.1

The ACS operating segment is comprised of high frequency circuit material products used for making circuitry that receives, processes and transmits high frequency communications signals, in a wide variety of markets and applications, including wireless communications, automotive, high reliability, wired infrastructure, aerospace and defense, and consumer applications, among others.

2017 vs. 2016

Net sales in this segment increased by 8.4% in 2017 compared to 2016. The increase in net sales is primarily driven by end market demand in automotive radar applications 48.3%, consumer electronics 38.3%, and aerospace and defense 8.8%, partially offset by lower demand in wireless infrastructure applications 5.0% and satellite TV dish applications 14.3%. Net sales were unfavorably impacted by 0.4% due to currency fluctuations, primarily as a result of the depreciation in value of the Renminbi relative to the U.S. dollar.

Operating income improved by 27.8% in 2017 compared to 2016. As a percentage of net sales in 2017, operating income was 18.7%, a 280 basis point increase, compared to 15.8% in 2016. This increase is primarily due to higher net sales as well as lower costs from continued operational efficiencies and cost reduction initiatives.

2016 vs. 2015

Net sales in this segment increased by 3.8% in 2016 compared to 2015. Currency fluctuations decreased net sales by 1.0%. The increase in net sales is driven primarily by automotive radar applications for advanced driver assistance systems 23.1% and aerospace and defense applications 8.7% and other applications 30.0%, partially offset by a decline in the wireless telecom market 3.5% and lower demand in the satellite TV dish applications 22.2%.

Operating income declined by 2.6% in 2016 from 2015. As a percentage of net sales, 2016 operating income was 15.8%, a 110 basis point decrease as compared to the 16.9% reported in 2015. Operating income in 2016 was positively impacted by higher sales, however this increase was offset by unfavorable mix, unfavorable volume pricing and absorption, higher incentive compensation and additional corporate selling, general and administrative expense allocations. 2015 results included $5.3 million of charges comprised of $2.6 million of integration expenses related to the Arlon acquisition, $1.0 million of Arlon purchase accounting expenses related to the non-recurring fair value adjustment for inventory, $1.4 million of allocated environmental charge and $0.4 million of allocated severance related charges.

Elastomeric Material Solutions

(Dollars in millions)	**2017**	2016	2015
Net sales	**$ 312.7**	$ 203.2	$ 180.9
Operating income	**$ 51.4**	$ 26.6	$ 20.0

The EMS operating segment is comprised of polyurethane and silicone foam products, which are sold into a wide variety of applications and markets, including general industrial, portable electronics, automotive, mass transit and consumer applications. In November 2016, we completed the acquisition of DeWAL, a leading manufacturer of polytetrafluoroethylene, ultra-high molecular weight polyethylene films, pressure sensitive tapes and specialty products for the industrial, aerospace, automotive, and electronics markets. In January 2017, we acquired the principal operating assets of DSP, a custom silicone product development and manufacturing business, serving a wide range of high reliability applications. The integration of DeWAL and DSP into our EMS operating segment has enabled us to extend the product portfolio and technology capabilities with complementary high-end, high performance elastomeric materials.

2017 vs. 2016

Net sales in this segment increased 53.9% in 2017 compared to 2016. The increase in net sales was primarily driven by the acquisitions of DeWAL and DSP 38.8%, as well as an increase in organic net sales 15.1%. EMS experienced higher end-market demand in core markets including automotive 28.0%, mass transit 23.5%, portable electronics 22.6%, general industrial 13.6% and consumer products applications 8.1%. Net sales were unfavorably impacted by 0.4% due to currency fluctuations, primarily as a result of the depreciation in value of the Renminbi relative to the U.S. dollar, partially offset by the appreciation in value of the Korean Won and Euro relative to the U.S. dollar.

Operating income improved 93.3% in 2017 compared to 2016. As a percentage of net sales, 2017 operating income was 16.4%, a 340 basis point increase compared to 13.1% in 2016. This increase is primarily due to higher net sales attributable to both acquisitions and organic growth, as well as lower costs from continued operational efficiencies. Operating income in 2017 included a $1.6 million charge to reflect a purchase accounting fair value adjustment for inventory related to the DeWAL and DSP acquisitions and $3.2 million of acquisition and integration costs. Operating income in 2017 also included increased other intangible assets amortization and depreciation expense of $4.9 million related to the DeWAL and DSP acquisitions.

2016 vs. 2015

Net sales in this segment increased by 12.3% in 2016 from 2015. Currency fluctuations decreased net sales by 1.8%. The increase in net sales was driven primarily by portable electronics applications 23.9%, automotive applications 41.4% and general industrial 1.6%. These increases were partially offset by declines in demand in consumer applications 15.2% and mass transit 1.9%. The results of DeWAL have been included in our consolidated financial statements only for the period subsequent to the completion of our acquisition. During this period, net sales attributable to DeWAL totaled $5.4 million.

Operating income increased by 33.1% in 2016 from 2015. As a percentage of net sales, 2016 operating income was 13.1%, a 210 basis point increase as compared to the 11.0% reported in 2015. The increase in operating income in 2016 is primarily due to an increase in net sales, partially offset by corporate selling, general and administrative expense allocations and higher incentive compensation. 2016 results also include $3.8 million of acquisition costs related to the DeWAL and DSP acquisitions, along with $0.9 million of expenses related to the non-recurring fair value adjustment for DeWAL inventory. The results of DeWAL have been included in our consolidated financial statements only for the period subsequent to the completion of our acquisition. During this period, operating income attributable to DeWAL totaled $2.0 million. 2015 results included $3.2 million of charges comprised of $1.6 million of integration expenses related to the Arlon acquisition, $0.5 million of Arlon purchase accounting expenses related to the non-recurring fair value adjustment for inventory, $0.8 million of allocated environmental charge and $0.3 million of allocated severance related charges.

Power Electronics Solutions

(Dollars in millions)	**2017**	2016	2015
Net sales	**$ 185.0**	$ 152.4	$ 150.3
Operating income	**$ 16.0**	$ 6.0	$ 3.8

The PES operating segment is comprised of two product lines - curamik® direct-bonded copper (DBC) substrates that are used primarily in the design of intelligent power management devices, such as IGBT (insulated gate bipolar transistor) modules that enable a wide range of products including highly efficient industrial motor drives, wind and solar energy converters and electrical systems in automobiles, and ROLINX® busbars that are used primarily in power distribution systems products in electric and hybrid electric vehicles and clean technology applications.

2017 vs. 2016

Net sales in this segment increased 21.4% in 2017 compared to 2016. The increase in net sales was driven by higher demand for laser diode cooler applications 44.6%, renewable energy 40.3%, mass transit 23.4%, electric and hybrid electric vehicles 18.5% and variable frequency motor drives 10.3%. Net sales were favorably impacted by 0.8% due to currency fluctuations primarily as a result of the appreciation in value of the Euro relative to the U.S. dollar, partially offset by the depreciation in value of the Renminbi relative to the U.S. dollar.

Operating income increased 168.8% in 2017 compared to 2016. As a percentage of net sales, 2017 operating income was 8.7%, a 480 basis point increase as compared to 3.9% in 2016. This increase is primarily due to higher net sales and increased equipment utilization, supply chain volume discounts, and improved productivity from operational excellence initiatives, partially offset by a $0.5 million impairment charge related to the remaining net book value of an other intangible asset within our ROLINX® product line in our PES operating segment.

2016 vs. 2015

Net sales in this segment increased by 1.4% in 2016 from 2015. Currency fluctuations decreased net sales by 0.9%. The increase in net sales was driven by demand in electric and hybrid electric vehicles 15.6%, variable frequency motor drives 7.9% and certain renewable energy applications 2.0%. These increased net sales were partially offset by lower demand in rail applications 40.6%.

Operating income increased 59.1% in 2016 from 2015. As a percentage of net sales, 2016 operating income was 3.9%, a 140 basis point increase as compared to the 2.5% reported in 2015. This increase is primarily due to operational efficiency programs and an increase in net sales partially offset by unfavorable product mix, increased incentive compensation and corporate selling, general and administrative expense allocations. 2015 included approximately $2.0 million of allocated charges comprised of $1.1 million of an environmental charge and $0.9 million of severance related charges.

Other

(Dollars in millions)	**2017**	2016	2015
Net sales	**$ 22.3**	$ 23.0	$ 42.6
Operating income	**$ 7.2**	$ 7.3	$ 7.4

Our Other operating segment consists of our elastomer rollers and floats business, as well as our inverter distribution business. Additionally, this segment included the acquired Arlon polyimide and thermoset laminate business from January 2015 until it was sold in December 2015.

2017 vs 2016

Net sales decreased 2.8% in 2017 compared to 2016, primarily due to lower demand in global light vehicles, as well as a negative impact from currency fluctuations of 0.7% resulting from a depreciation in the value of the Renminbi relative to the U.S. dollar.

Operating income in 2017 decreased by 2.4% compared to 2016 primarily due to lower net sales, partially offset by the impact of continuing operating efficiencies.

2016 vs 2015

Net sales decreased by 46.1% in 2016 from 2015, due principally to the impact of the divestiture of the Arlon polyimide and thermoset laminate business in December 2015. Net sales were unfavorably impacted by 1.4% due to currency fluctuations.

Operating income decreased 1.1% in the 2016 from 2015. The decline was primarily due to lower net sales partially offset by $0.6 million of integration expenses related to the Arlon acquisition that are included in 2015 results, which didn't repeat in 2016.

As a percentage of net sales, operating income increased to 31.9% in 2016 from 17.4% in 2015, due principally to the sale of the lower margin Arlon polyimide and thermoset laminate business.

Product and Market Development

Our research and development team is dedicated to growing our business by developing cost effective solutions that improve the performance of customers' products and by identifying business and technology acquisition or development opportunities to expand our market presence. Currently, R&D spend is approximately 3.6% of net sales.

Liquidity, Capital Resources and Financial Position

We believe our existing sources of liquidity and cash flows expected to be generated from operations, together with available credit facilities, will be sufficient to fund our operations, capital expenditures, research and development efforts, and debt service commitments, as well as our other operating and investing needs, for at least the next twelve months. We regularly review and evaluate the adequacy of our cash flows, borrowing facilities and banking relationships to ensure that we have the appropriate access to cash to fund both near-term operating needs and long-term strategic initiatives.

(Dollars in thousands)	As of December 31,	
Key Balance Sheet Accounts:	**2017**	2016
Cash and cash equivalents	**$ 181,159**	$ 227,767
Accounts receivable, net	**$ 140,562**	$ 119,604
Inventories	**$ 112,557**	$ 91,130
Outstanding borrowings on credit facilities	**$ 130,982**	$ 241,188

(Dollars in thousands)	For the year ended December 31,	
Key Cash Flow Measures:	**2017**	2016
Cash provided by operating activities	**$ 138,982**	$ 116,967
Cash (used in) investing activities	**$ (78,270)**	$ (151,804)
Cash (used in) provided by financing activities	**$ (113,187)**	$ 57,869

At December 31, 2017, cash and cash equivalents were $181.2 million as compared to $227.8 million at the end of 2016, a decrease of $46.6 million, or approximately 20.5%. This decrease was primarily due to discretionary principal payments on our outstanding credit facility of $110.2 million during 2017, a payment of $60.2 million for the acquisition of DSP in January 2017, and $27.2 million in capital expenditures, partially offset by cash generated by operations.

The following table illustrates the location of our cash and cash equivalents by our three major geographic areas:

	As of December 31,		
(Dollars in thousands)	**2017**	2016	2015
United States	**$ 35,653**	$ 95,481	$ 37,263
Europe	**41,307**	37,791	66,295
Asia	**104,199**	94,495	101,028
Total cash and cash equivalents	**$ 181,159**	$ 227,767	$ 204,586

Approximately $145.5 million of cash and cash equivalents are held by non-U.S. subsidiaries. As a result of U.S. Tax Reform, these funds have been subjected to U.S. tax through the transition tax, but could be subject to additional taxes if they are redeployed outside of their country of origin. With the exception of certain of our Chinese subsidiaries, we have historically and continue to assert that foreign earnings are indefinitely reinvested. While we have not currently changed our assertion with respect to foreign earnings compared to prior years, we are currently evaluating the impact of U.S. Tax Reform on our global structure and any associated impacts it may have on our assertion on a go forward basis and as such have not included a provisional estimate of the impact. See Note 13, "Income Taxes," to "Item 8 - Financial Statements and Supplementary Data" for additional information regarding U.S. Tax Reform.

Net working capital was $340.7 million, $357.2 million and $350.0 million as of December 31, 2017, 2016 and 2015, respectively.

Significant changes in our balance sheet accounts from December 31, 2016 to December 31, 2017 were as follows:

- Accounts receivable increased 17.5% to $140.6 million as of December 31, 2017, from $119.6 million at December 31, 2016. The increase was due primarily to higher net sales in 2017 resulting from our acquisitions of DeWAL in late 2016 and DSP in early 2017, as well as higher organic net sales in our three strategic operating segments.
- Inventory increased 23.5% to $112.6 million as of December 31, 2017, from $91.1 million at December 31, 2016. The increase is due primarily to a $9.1 million increase in raw materials and a $6.5 million increase in finished goods as a result of increased demand across all operating segments, partially offset by a $1.1 million decrease in work in process inventory due to lower demand of certain components in our EMS operating segment. The increase in inventory over the prior year also includes fluctuations in foreign currency transactions of $2.8 million. Additionally, inventory increased $3.5 million as of December 31, 2017 due to the acquisition of DSP in January 2017.
- Goodwill increased 13.8% to $237.1 million as of December 31, 2017, from $208.4 million at December 31, 2016. The increase is due primarily to the acquisition of DSP in January 2017. There were no impairments of goodwill during the year ended December 31, 2017.
- Other intangible assets increased 17.3% to $160.3 million as of December 31, 2017 from $136.7 million at December 31, 2016. This increase is due primarily to the acquisition of DSP in January 2017, partially offset by amortization of definite-lived other intangible assets and an impairment charge of $0.5 million during the year related to the remaining net book value of an other intangible asset within our ROLINX® product line in our PES operating segment.

During 2017, $78.3 million of net cash was used for investing activities as compared to $151.8 million in 2016 and $180.3 million in 2015. Investing activities for 2017 included the acquisition of DSP, which used $60.2 million in investing cash (net), compared to $133.9 million in investing cash (net) used for the DeWAL acquisition in 2016. Capital expenditures were $27.2 million, $18.1 million and $24.8 million in 2017, 2016 and 2015, respectively. During 2018, we expect capital spending to be in the range of approximately $50.0 million to $60.0 million. We plan to fund the 2018 capital requirements with cash from operations.

Net cash used in financing activities was $113.2 million in 2017, compared to $57.9 million and $83.0 million in 2016 and 2015, respectively. The increase is due primarily to the $110.2 million in payments on our outstanding credit facility and $0.5 million payments on capital leases during 2017. Financing activities in 2016 and 2015 included borrowings of $166.0 million and $125.0 million, respectively, to finance the acquisitions of DeWAL, DSP and Arlon.

Credit Facilities

On June 18, 2015, we entered into a secured five year credit agreement with JPMorgan Chase Bank, N.A, as administrative agent, and the lenders party thereto (the "Second Amended Credit Agreement"). The Second Amended Credit Agreement provided (1) a $55.0 million term loan; (2) up to $295.0 million of revolving loans, with sublimits for multicurrency borrowings, letters of credit and swing-line notes; and (3) a $50.0 million expansion feature.

On February 17, 2017, we entered into a secured five-year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent, and the lenders party thereto (the "Third Amended Credit Agreement"), which amended and restated the Second Amended Credit Agreement. The Third Amended Credit Agreement refinanced the Second Amended Credit Agreement, eliminated the term loan under the Second Amended Credit Agreement, and increased the principal amount of the revolving credit facility to up to $450.0 million borrowing capacity with sublimits for multicurrency borrowings, letters of credit and swing-line notes, and provided an additional $175.0 million accordion feature. All revolving loans under the Third Amended Credit Agreement are due on the maturity date, February 17, 2022. We are not required to make any quarterly principal payments under the Third Amended Credit Agreement. During 2017, we made discretionary principal payments of $110.2 million to reduce the amount outstanding on our credit facility. As of December 31, 2017, we had $131.0 million in outstanding borrowings under our credit facility. See Note 12, "Debt," for additional information on the Third Amended Credit Agreement.

Restriction on Payment of Dividends

Our Third Amended Credit Agreement generally permits us to pay cash dividends to our shareholders, provided that (i) no default or event of default has occurred and is continuing or would result from the dividend payment and (ii) our leverage ratio does not exceed 2.75 to 1.00. If our leverage ratio exceeds 2.75 to 1.00, we may nonetheless make up to $20.0 million in restricted payments, including cash dividends, during the fiscal year, provided that no default or event of default has occurred and is continuing or would result from the payments. Our leverage ratio did not exceed 2.75 to 1.00 as of December 31, 2017.

Contractual Obligations

The following table summarizes our significant contractual obligations as of December 31, 2017.

(Dollars in thousands)	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
Operating leases	$ 13,469	$ 3,833	$ 5,613	$ 3,549	$ 474
Capital leases	6,452	579	5,798	75	—
Interest payments on capital lease	542	177	364	1	—
Inventory purchase obligations	1,027	1,027	—	—	—
Capital commitments [1]	18,539	18,539	—	—	—
Outstanding borrowings on credit facility [2]	130,982	—	—	130,982	—
Interest payments on outstanding borrowings [3]	17,481	4,098	8,741	4,642	—
Retiree health and life insurance benefits	2,032	352	583	302	795
Total	$ 190,524	$ 28,605	$ 21,099	$ 139,551	$ 1,269

[1] This amount represents non-cancelable vendor purchase commitments.

[2] As noted above in the description of our Third Amended Credit Agreement, we are no longer required to make quarterly principal payments on outstanding borrowings under our term loan. Accordingly, all outstanding borrowings under our credit facility are now due on February 17, 2022.

[3] Estimated future interest payments are based on a leveraged based spread that ranges from 1.375% to 1.75%, plus projected forward 1-month LIBOR rates.

Unfunded pension benefit obligations, which amount to $5.7 million at December 31, 2017, are expected to be paid from operating cash flows and the timing of payments is not definitive. Retiree health and life insurance benefits, which amount to $2.0 million, are expected to be paid from operating cash flows.

Other long-term liabilities, such as deferred taxes, unrecognized tax benefits and asbestos-related product liability reserves, have been excluded from the table due to the uncertainty of the timing of payments combined with the absence of historical trends to be used as a predictor for such payments.

Effects of Inflation

We do not believe that inflation had a material impact on our business, sales, or operating results during the periods presented.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have, or are, in the opinion of management, reasonably likely to have, a current or future material effect on our financial condition or results of operations.

Critical Accounting Policies

Our consolidated financial statements are prepared in accordance with U.S. generally accepted accounting principles, which require management to make estimates, judgments and assumptions that affect the amounts reported in the financial statements and accompanying notes. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances and believe that appropriate reserves have been established based on reasonable methodologies and appropriate assumptions based on facts and circumstances that are known; however, actual results may differ from these estimates under different assumptions or conditions. An accounting policy is deemed to be critical if it requires an accounting estimate to be made based on assumptions that are highly judgmental and uncertain at the time the estimate is made, if different estimates could reasonably have been used, or if changes to those estimates are reasonably likely to periodically occur that could affect the amounts carried in the financial statements. These critical accounting policies are as follows:

Revenue Recognition

We recognize revenue when all of the following criteria are met: (1) we have entered into a binding agreement, (2) the product has shipped and title and risk of ownership have passed, (3) the sales price to the customer is fixed or determinable, and (4) collectability is reasonably assured. We recognize revenue based upon a determination that all criteria for revenue recognition have been met, which, based on the majority of our shipping terms, is considered to have occurred upon shipment of the finished product. Some shipping terms require the goods to be through customs or be received by the customer before title passes. In those instances, revenue is not recognized until either the customer has received the goods or they have passed through customs, depending on the circumstances. As appropriate, we record estimated reductions to revenue for customer returns and allowances and warranty claims. Provisions for such allowances are made at the time of sale and are typically derived from historical trends and other relevant information. See further discussion in Note 19, "Recent Accounting Standards" to "Item 8 - Financial Statements and Supplementary Data."

Inventory Valuation

Inventories are stated at the lower of cost or net realizable value with costs determined primarily on a first-in first-out basis. We also maintain a reserve for excess, obsolete and slow-moving inventory that is primarily developed by utilizing both specific product identification and historical product demand as the basis for our analysis. Products and materials that are specifically identified as obsolete are fully reserved. In general, most products that have been held in inventory greater than one year are fully reserved unless there are mitigating circumstances, including forecasted sales or current orders for the product. The remainder of the allowance is based on our estimates and fluctuates with market conditions, design cycles and other economic factors. Risks associated with this allowance include unforeseen changes in business cycles that could affect the marketability of certain products and an unexpected decline in current production. We closely monitor the marketplace and related inventory levels and have historically maintained reasonably accurate allowance levels. Our obsolescence reserve has ranged from 10% to 14% of gross inventory over the last three years.

Goodwill and Other Intangible Assets

We have made acquisitions over the years that included the recognition of intangible assets. Intangible assets are classified into three categories: (1) goodwill; (2) other intangible assets with definite lives subject to amortization; and (3) other intangible assets with indefinite lives not subject to amortization. Other intangible assets can include items such as trademarks and trade names, licensed technology, customer relationships and covenants not to compete, among other things. Each definite-lived other intangible asset is amortized over its respective economic useful life using the economic attribution method.

Goodwill is tested for impairment annually and between annual impairment tests if events or changes in circumstances indicate the carrying value may be impaired. If it is more likely than not that our goodwill is impaired, then we compare the estimated fair value of each of our reporting units to their respective carrying value. If a reporting unit's carrying value is greater than its fair value, then an impairment is recognized for the excess and charged to operations. We currently have four reporting units with goodwill: ACS, EMS, curamik® and Elastomer Components Division (ECD). Consistent with historical practice, the annual impairment test on these reporting units was performed as of November 30, 2017.

The application of the annual goodwill impairment test requires significant judgment, including the identification of reporting units, assignment of assets and liabilities to reporting units, and determination of the fair value of each reporting unit. Determining the fair value is subjective and requires the use of significant estimates and assumptions, including financial projections for net sales, gross margin and operating margin, discount rates, terminal year growth rates and future market conditions, among others. We estimated the fair value of our reporting units using an income approach based on the present value of future cash flows through a five year discounted cash flow analysis. The discounted cash flow analysis utilized the discount rates for each of the reporting units ranging from 11.0% for EMS to 12.3% for curamik®, and a terminal year growth rate of 3% for all four reporting units. We believe this approach yields the most appropriate evidence of fair value as our reporting units are not easily compared to other corporations involved in similar businesses. We further believe that the assumptions and rates used in our annual goodwill impairment test are reasonable, but inherently uncertain. There were no impairment charges resulting from our goodwill impairment analysis in 2017. The ACS, EMS, curamik® and ECD reporting units had allocated goodwill of approximately $51.7 million, $111.6 million, $71.6 million and $2.2 million, respectively, at December 31, 2017.

Indefinite-lived other intangible assets are tested for impairment annually and between annual impairment tests if events or changes in circumstances indicate the carrying value may be impaired. If it is more likely than not that an indefinite-lived other intangible asset is impaired, then we compare the estimated fair value of that indefinite-lived other intangible asset to its respective carrying value. If an indefinite-lived other intangible asset's carrying value is greater than its fair value, an impairment is recognized for the excess and charged to operations. The application of the annual indefinite-lived other intangible asset impairment test requires significant judgment, including the determination of fair value of each indefinite-lived other intangible asset. Fair value is primarily based on income approaches using discounted cash flow models, which have significant assumptions. Such assumptions are subject to variability from year to year and are directly impacted by global market conditions. There were no impairment charges resulting from our indefinite-lived other intangible assets impairment analysis in 2017. The curamik® reporting unit had an indefinite-lived other intangible asset of approximately $4.7 million at December 31, 2017.

Definite-lived other intangible assets are tested for recoverability whenever events or changes in circumstances indicate the carrying value may not be recoverable. The recoverability test involves comparing the estimated sum of the undiscounted cash flows for each definite-lived other intangible asset to its respective carrying value. If a definite-lived other intangible asset's carrying value is greater than the sum of its undiscounted cash flows, then the definite-lived other intangible asset's carrying value is compared to its estimated fair value and an impairment charge is recognized for the excess and charged to operations. The application of the recoverability test requires significant judgment, including the identification of the asset group and determination of undiscounted cash flows and fair value of the underlying definite-lived other intangible asset. Determination of undiscounted cash flows requires the use of significant estimates and assumptions, including certain financial projections. Fair value is primarily based on income approaches using discounted cash flow models, which have significant assumptions. Such assumptions are subject to variability from year to year and are directly impacted by global market conditions. There were no impairment charges resulting from our definite-lived other intangible assets impairment analysis in 2017. The ACS, EMS and curamik® reporting units had definite-lived other intangible assets of approximately $11.1 million, $128.1 million and $16.4 million, respectively, at December 31, 2017.

Product Liability

For product liability claims, we typically maintain insurance coverage with reasonable deductible levels to protect us from potential exposures. Any liability associated with such claims is based on management's best estimate of the potential claim value, while insurance receivables associated with related claims are not recorded until verified by the insurance carrier.

For asbestos related claims, we recognize projected asbestos liabilities and related insurance receivables, with any difference between the liability and related insurance receivable recognized as an expense in the consolidated statements of operations. Projecting future asbestos costs and related insurance coverage is subject to numerous variables that are difficult to predict, including the number of claims that might be received, the type and severity of the disease alleged by each claimant, the long latency period associated with asbestos exposure, dismissal rates, costs of medical treatment, the financial resources of other companies that are co-defendants in claims, uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, and the impact of potential changes in legislative or judicial standards, including potential tort reform.

We believe the assumptions used in our models for determining our potential exposure and related insurance coverage are reasonable at the present time, but such assumptions are inherently uncertain. Prior to 2017, due to the inherent uncertainties of the projection process and our limited amount of settlement and claims history, we utilized a ten-year projection period, which we concluded was appropriate as we did not believe we had sufficient data to justify a longer projection period.

During 2017, we reviewed the projections of our current and future asbestos claims, and determined it was appropriate to extend the liability projection period to cover all current and future claims through 2058. We based our conclusion on our history and experience with the claims data, the diminished volatility and consistency of observable claims data, the period of time that has elapsed since we stopped manufacturing products that contained encapsulated asbestos and an expectation of a downward trend in claims due to the average age of our claimants, which is approaching the average life expectancy. The year 2058 also represents the expected end of Rogers' asbestos liability exposure and no further ongoing claims are expected past that date. As a result, we believe we are now able to make a reasonable estimate of the actuarially determined liability for current and future asbestos claims through 2058.

As of December 31, 2017, the estimated liability and estimated insurance recovery for all current and future claims projected through 2058 was $76.2 million and $69.2 million, respectively.

Given the inherent uncertainty in making projections, we plan to re-examine periodically the projections of current and future asbestos claims, and we will update them if needed based on our experience, changes in the assumptions underlying our models, and other relevant factors, such as changes in the tort system. There can be no assurance that our accrued asbestos liabilities will approximate our actual asbestos-related settlement and defense costs, or that our accrued insurance recoveries will be realized. We believe that it is reasonably possible that we may incur additional charges for our asbestos liabilities and defense costs in the future, which could exceed existing reserves and insurance recovery.

Pension and Other Postretirement Benefits

We provide various defined benefit pension plans for our U.S. employees and sponsor three defined benefit health care plans and a life insurance plan. The costs and obligations associated with these plans are dependent upon various actuarial assumptions used in calculating such amounts. These assumptions include discount rates, long-term rates of return on plan assets, mortality rates, and other factors. The assumptions used were determined as follows: (i) the discount rate used is based on the PruCurve high quality corporate bond index, with comparisons against other similar indices; and (ii) the long-term rate of return on plan assets is determined based on historical portfolio results, market conditions and our expectations of future returns. We determine these assumptions based on consultation with outside actuaries and investment advisors. Any changes in these assumptions could have a significant impact on future recognized pension costs, assets and liabilities.

The rates used to determine our costs and obligations under our pension and postretirement plans are disclosed in Note 10, "Pension Benefits and Retirement Health and Life Insurance Benefits" to "Item 8 - Financial Statements and Supplementary Data." Each assumption has different sensitivity characteristics. For the year ended December 31, 2017, a 25 basis point decrease in the discount rate would have increased our total pension expense by a de minimis amount. This number represents the aggregate increase in expense for the three pension plans: Employees' Pension Plan, Defined Benefit Pension Plan and the Restoration Plan. A 25 basis point decrease in the discount rate would decrease the other post-employment benefits (OPEB) expense by a de minimis amount. A 25 basis point decrease in the expected return on assets would increase the total 2017 pension expense by approximately $0.4 million. This number represents the aggregate increase in the expense for the three qualified pension plans. Since the OPEB and non-qualified plans are unfunded, those plans would not be impacted by this assumption change.

Income Taxes

We are subject to income taxes in the U.S. and in numerous foreign jurisdictions. The Company accounts for income taxes following ASC 740 (Accounting for Income Taxes) recognizing deferred tax assets and liabilities using enacted tax rates for the effect of temporary differences between book and tax basis of recorded assets and liabilities. Deferred tax assets are reduced by a valuation allowance if it is more likely than not that some or all of a deferred tax asset will not be realized.

As a result of U.S. Tax Reform, all post-1986 undistributed foreign subsidiary E&P as of December 31, 2017 have been subjected to U.S. tax through the transition tax. Our unremitted foreign earnings could be subject to additional taxes if they are redeployed outside of their country of origin. With the exception of certain of our Chinese subsidiaries, we have historically and continue to assert that foreign earnings are indefinitely reinvested. While we have not currently changed our assertion with respect to foreign earnings compared to prior years, we are currently evaluating the impact of U.S. Tax Reform on our global structure and any associated impacts it may have on our assertion on a go forward basis and as such have not included a provisional estimate of the impact. See Note 13, "Income Taxes," to "Item 8 - Financial Statements and Supplementary Data" for additional information regarding U.S. Tax Reform.

The U.S. Tax Reform Act includes two new U.S. tax base erosion provisions, the global intangible low-taxed income (GILTI) provisions and the base-erosion and anti-abuse tax (BEAT) provisions. The GILTI provisions require the Company to include in its U.S. income tax return foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary's tangible assets. The Company has elected to account for GILTI tax in the period in which it is incurred, and therefore has not provided any deferred tax impacts of GILTI in its consolidated financial statements for the year ended December 31, 2017. The BEAT provisions in the Tax Reform Act eliminate the deduction of certain base-erosion payments made to related foreign corporations, and impose a minimum tax if greater than regular tax. Starting January 1, 2018, the Company will account for BEAT in the period in which it is incurred to the extent the Company is subject to it.

We record benefits for uncertain tax positions based on an assessment of whether it is more likely than not that the tax positions will be sustained by the taxing authorities. If this threshold is not met, no tax benefit of the uncertain position is recognized. If the threshold is met, we recognize the largest amount of the tax benefit that is more than fifty percent likely to be realized upon ultimate settlement.

We recognize interest and penalties within the income tax expense line in the accompanying consolidated statements of operations. Accrued interest and penalties are included within the related tax liability line in the consolidated statements of financial position.

Equity Compensation

Equity compensation expense associated with time-based and performance-based restricted stock units, deferred stock units, stock options and related awards is recognized in the consolidated statements of operations. Determining the amount of equity compensation expense to be recorded requires us to develop estimates to be used in calculating the grant-date fair value of equity compensation.

Forfeiture Rate – We previously estimated the forfeiture rate based on historical experience and our expectations regarding future terminations. To the extent our actual forfeiture rate was different from our estimate, equity compensation expense was adjusted accordingly. In accordance with our adoption of ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting,* on January 1, 2017, we now account for forfeitures as they occur. The adoption of this standard, with respect to treatment of forfeitures, did not have a material impact on our consolidated financial statements in the period of adoption.

- *Performance-Based Restricted Stock Units*

Compensation expense related to our performance-based restricted stock units is recognized using the straight-line method over the vesting period. We currently have awards from 2015, 2016 and 2017 outstanding.

The outstanding 2015 awards have two measurement criteria on which the final payout of the award is based - (i) the three year return on invested capital (ROIC) compared to that of a specified group of peer companies, and (ii) the three year total shareholder return (TSR) on the performance of our capital stock as compared to that of a specified group of peer companies. The outstanding 2016 and 2017 awards have one measurement criteria, the three year total shareholder return (TSR) on the performance of our

capital stock as compared to that of a specified group of peer companies. In accordance with the applicable accounting literature, the ROIC portion of the award is considered a performance condition. As such, the fair value of the ROIC portion is determined based on the market value of the underlying stock price at the grant date with cumulative compensation expense recognized to date being increased or decreased based on changes in the forecasted pay out percentage at the end of each reporting period. The TSR portion of the awards is considered a market condition. As such, the fair value of these awards was determined on the date of grant using a Monte Carlo simulation valuation model with related compensation expense fixed on the grant date and expensed on a straight-line basis over the life of the awards that ultimately vest with no changes for the final projected payout of the award. The assumptions used in the Monte Carlo are as follows:

Expected volatility – In determining expected volatility, we have considered a number of factors, including historical volatility.

Expected term – We use the vesting period of the award to determine the expected term assumption for the Monte Carlo simulation valuation model.

Risk-free interest rate – We use an implied "spot rate" yield on U.S. Treasury Constant Maturity rates as of the grant date for our assumption of the risk-free interest rate.

Expected dividend yield – We do not currently pay dividends on our capital stock; therefore, a dividend yield of 0% was used in the Monte Carlo simulation valuation model.

- *Time-Based Restricted Stock Units*

In 2011, we began granting time-based restricted stock units to certain key executives and other key members of the Company's management team. We currently have grants from 2015, 2016 and 2017 outstanding. The majority of the grants ratably vest on the first, second and third anniversaries of the original grant date. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period. The fair value of the award is determined based on the market value of the underlying stock price at the grant date.

- *Deferred Stock Units*

We grant deferred stock units to non-management directors. These awards are fully vested on the date of grant and the related shares are generally issued on the 13th month anniversary of the grant date unless the individual elects to defer the receipt of these shares. Each deferred stock unit results in the issuance of one share of Rogers' stock. The grant of deferred stock units is typically done annually in the second quarter of each year. The fair value of the award is determined based on the market value of the underlying stock price at the grant date.

- *Stock Options*

Historically, we granted stock options to certain key executives and other key members of the Company's management team and our last grant was in 2012. To value stock options, we calculated the grant-date fair values using the Black-Scholes valuation model. The use of valuation models required us to make estimates for the following assumptions:

Expected volatility - In determining expected volatility, we consider a number of factors, including historical volatility and implied volatility.

Expected term - We use historical employee exercise data to estimate the expected term assumption for the Black-Scholes valuation model.

Risk-free interest rate - We use the yield on zero-coupon U.S. Treasury securities for a period commensurate with the expected term assumption as the risk-free interest rate.

Expected dividend yield – We do not currently pay dividends on our capital stock; therefore, a dividend yield of 0% was used in the Black-Scholes model.

Forfeiture Rate – We previously estimated the forfeiture rate based on historical experience and our expectations regarding future terminations. To the extent our actual forfeiture rate was different from our estimate, equity compensation expense was adjusted accordingly. In accordance with our adoption of ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting,* on January 1, 2017, we now account for forfeitures as they occur. The adoption of this standard, with respect to treatment of forfeitures, did not have a material impact on our condensed consolidated financial statements in the period of adoption.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Market Risk

- *Foreign Currency Risk*

Our financial results are affected by changes in foreign exchange rates and economic conditions in foreign countries in which we operate. Our primary overseas markets are in Europe and Asia, thus exposing us to exchange rate risk from fluctuations in the Euro and the various currencies used in Asia. Exposure to variability in currency exchange rates is mitigated, when possible, through the use of natural hedges, whereby purchases and sales in the same foreign currency and with similar maturity dates offset one another. We further mitigate this exposure through hedging activities by entering into foreign exchange forward contracts with third parties when the use of natural hedges is not possible or desirable. We currently do not use derivative instruments for trading or speculative purposes. We monitor foreign exchange risks and at times manage such risks on specific transactions. Our risk management process primarily uses analytical techniques and sensitivity analysis. In 2017, a 10% increase/decrease in exchange rates would have resulted in an approximate increase/decrease to net sales and net income of $25.4 million and $2.0 million, respectively.

- *Interest Rate Risk*

As of December 31, 2017, we have $131.0 million in borrowings outstanding against our existing credit facilities to finance strategic acquisitions. The interest charged on this credit facility fluctuates with movements in the benchmark LIBOR. At December 31, 2017, the effective all-in rate of interest on the debt facility was 2.945%. To illustrate, based on the amount outstanding under our credit facility as of December 31, 2017 of $131.0 million, a 100 basis point increase in LIBOR would increase the amount of interest expense by $1.3 million, annually.

- *Commodity Risk*

We are subject to fluctuations in the cost of raw materials used to manufacture our materials and products. In particular, we are exposed to market fluctuations in commodity pricing as we utilize certain materials, such as copper and ceramic, that are key materials in certain of our products. In order to minimize the risk of market driven price changes in these commodities, we utilize hedging strategies to insulate us against price fluctuations of copper, the commodity most used in our manufacturing processes. We currently do not use hedging strategies to minimize the risk of price fluctuations on other commodity-based raw materials; however, we regularly review such strategies to hedge market risk on an ongoing basis.

For additional discussion, see Note 2, “Fair Value Measurements” and Note 3, “Hedging Transactions and Derivative Financial Instruments” in “Item 8 - Financial Statements and Supplementary Data.”

Item 8. Financial Statements and Supplementary Data

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Rogers Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated statements of financial position of Rogers Corporation and its subsidiaries as of December 31, 2017 and December 31, 2016, and the related consolidated statements of operations, comprehensive income, shareholders' equity and cash flows for each of the three years in the period ended December 31, 2017, including the related notes and financial statement schedule listed in the index appearing under Item 15(2) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2017 and December 31, 2016**,** and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2017, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting 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 in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. 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 audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As described in Management's Report on Internal Control over Financial Reporting, management has excluded Diversified Silicone Products, Inc. (DSP) from its assessment of internal control over financial reporting as of December 31, 2017, because the Company acquired the principal operating assets of DSP in a purchase business combination during 2017. We have also excluded DSP from our audit of internal control over financial reporting. The DSP assets are held in a wholly-owned subsidiary whose total assets and total revenues excluded from management's assessment and our audit of internal control over financial reporting represent 1.0% and 2.7%, respectively, of the related consolidated financial statement amounts as of and for the year ended December 31, 2017.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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/ PricewaterhouseCoopers LLP

Hartford, Connecticut
February 27, 2018

We have served as the Company's auditor since 2015.

ROGERS CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS
For each of the fiscal years in the three-year period ended December 31, 2017
(Dollars and shares in thousands, except per share amounts)

	2017	2016	2015
Net sales	**$ 821,043**	$ 656,314	$ 641,443
Cost of sales	**502,468**	406,829	406,081
Gross margin	**318,575**	249,485	235,362
Selling, general and administrative expenses	**160,011**	136,317	131,463
Research and development expenses	**29,547**	28,582	27,644
Restructuring and asset impairment charges	**3,567**	734	—
Gain on sale of long-lived assets	**(5,329)**	—	—
Operating income	**130,779**	83,852	76,255
Equity income in unconsolidated joint ventures	**4,898**	4,146	2,890
Other income (expense), net	**3,379**	(1,788)	(8,492)
Interest expense, net	**(6,131)**	(3,930)	(4,480)
Income before income tax expense	**132,925**	82,280	66,173
Income tax expense	**52,466**	33,997	19,853
Net income	**$ 80,459**	$ 48,283	$ 46,320
Basic earnings per share	**$ 4.43**	$ 2.68	$ 2.52
Diluted earnings per share	**$ 4.34**	$ 2.65	$ 2.48
Shares used in computing:			
Basic earnings per share	**18,154**	17,991	18,371
Diluted earnings per share	**18,547**	18,223	18,680

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

ROGERS CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
For each of the fiscal years in the three-year period ended December 31, 2017
(Dollars in thousands)

	2017	2016	2015
Net income	**$ 80,459**	$ 48,283	$ 46,320
Foreign currency translation adjustments	**28,463**	(5,081)	(27,172)
Derivative instruments designated as cash flow hedges:			
Unrealized gain (loss) on derivative instruments held at year end (net of taxes of $15 in 2017, $0 in 2016, $5 in 2015)	**26**	—	(2)
Unrealized gain reclassified into earnings	**—**	11	84
Accumulated other comprehensive income (loss) pension and post-retirement benefits:			
Actuarial net gain (loss) incurred in fiscal year, net of tax (Note 4)	**(1,481)**	1,106	2,760
Amortization of gain, net of tax (Note 4)	**99**	160	966
Other comprehensive income (loss)	**27,107**	(3,804)	(23,364)
Comprehensive income	**$ 107,566**	$ 44,479	$ 22,956

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

ROGERS CORPORATION
CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

(Dollars and share amounts in thousands, except par value of capital stock)	As of December 31,	
	2017	2016
Assets		
Current assets		
Cash and cash equivalents	**$ 181,159**	$ 227,767
Accounts receivable, less allowance for doubtful accounts of $1,525 and $1,952	**140,562**	119,604
Inventories	**112,557**	91,130
Prepaid income taxes	**3,087**	3,020
Asbestos-related insurance receivables	**5,682**	7,099
Assets held for sale	**896**	871
Other current assets	**10,580**	8,910
Total current assets	**454,523**	458,401
Property, plant and equipment, net of accumulated depreciation	**179,611**	176,916
Investments in unconsolidated joint ventures	**18,324**	16,183
Deferred income taxes	**6,008**	14,634
Goodwill	**237,107**	208,431
Other intangible assets, net of amortization	**160,278**	136,676
Asbestos-related insurance receivables	**63,511**	41,295
Other long-term assets	**5,772**	3,964
Total assets	**$ 1,125,134**	$ 1,056,500
Liabilities and Shareholders' Equity		
Current liabilities		
Accounts payable	**$ 36,116**	$ 28,379
Accrued employee benefits and compensation	**39,394**	28,953
Accrued income taxes payable	**6,408**	10,921
Current portion of long-term debt	**—**	3,653
Current portion of lease obligations	**579**	350
Current portion of asbestos-related liabilities	**5,682**	7,099
Other accrued liabilities	**25,629**	21,830
Total current liabilities	**113,808**	101,185
Borrowings under credit facility	**130,982**	235,877
Long-term lease obligations	**5,873**	4,993
Pension liability	**8,720**	8,501
Retiree health care and life insurance benefits	**1,685**	1,992
Asbestos-related liabilities	**70,500**	44,883
Non-current income tax	**12,823**	6,238
Deferred income taxes	**10,706**	13,883
Other long-term liabilities	**3,464**	3,162
Commitments and Contingencies (Note 15)		
Shareholders' Equity		
Capital Stock - $1 par value; 50,000 authorized shares; 18,255 and 18,021 shares outstanding	**18,255**	18,021
Additional paid-in capital	**128,933**	118,678
Retained earnings	**684,540**	591,349
Accumulated other comprehensive loss	**(65,155)**	(92,262)
Total shareholders' equity	**766,573**	635,786
Total liabilities and shareholders' equity	**$ 1,125,134**	$ 1,056,500

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

ROGERS CORPORATION
CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
For each of the fiscal years in the three-year period ended December 31, 2017
(Dollars in thousands)

	Capital Stock/ Capital Shares	Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Shareholders' Equity
Balance at December 31, 2014	$ 18,404	$ 137,225	$ 496,746	$ (65,094)	$ 587,281
Net income	—	—	46,320	—	46,320
Other comprehensive income (loss)	—	—	—	(23,364)	(23,364)
Stock options exercised	175	6,792	—	—	6,967
Stock issued to directors	16	(16)	—	—	—
Shares issued for employees stock purchase plan	13	714	—	—	727
Shares issued for vested restricted stock units, net of cancellations for tax withholding	77	(2,817)	—	—	(2,740)
Shares repurchased	(728)	(39,265)	—	—	(39,993)
Tax shortfalls on share-based compensation	—	(259)	—	—	(259)
Equity compensation expense	—	9,643	—	—	9,643
Balance at December 31, 2015	17,957	112,017	543,066	(88,458)	584,582
Net income	—	—	48,283	—	48,283
Other comprehensive income (loss)	—	—	—	(3,804)	(3,804)
Stock options exercised	95	4,048	—	—	4,143
Stock issued to directors	24	(24)	—	—	—
Shares issued for employees stock purchase plan	23	835	—	—	858
Shares issued for vested restricted stock units, net of cancellations for tax withholding	63	(1,440)	—	—	(1,377)
Shares repurchased	(141)	(7,854)	—	—	(7,995)
Tax adjustments on share-based compensation	—	(179)	—	—	(179)
Equity compensation expense	—	11,275	—	—	11,275
Balance at December 31, 2016	18,021	118,678	591,349	(92,262)	635,786
Net income	—	—	80,459	—	80,459
Other comprehensive income (loss)	—	—	—	27,107	27,107
Stock options exercised	83	3,002	—	—	3,085
Stock issued to directors	15	(15)	—	—	—
Shares issued for employees stock purchase plan	15	880	—	—	895
Shares issued for vested restricted stock units, net of cancellations for tax withholding	121	(5,430)	—	—	(5,309)
Cumulative-effect adjustment of change in accounting for share-based compensation	—	—	12,732	—	12,732
Equity compensation expense	—	11,818	—	—	11,818
Balance at December 31, 2017	**$ 18,255**	**$ 128,933**	**$ 684,540**	**$ (65,155)**	**$ 766,573**

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

ROGERS CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
For each of the fiscal years in the three-year period ended December 31, 2017

(Dollars in thousands)	**2017**	2016	2015
Operating Activities:			
Net income	**$ 80,459**	$ 48,283	$ 46,320
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation and amortization	**44,099**	37,847	34,054
Equity compensation expense	**11,818**	11,275	9,643
Deferred income taxes	**17,513**	7,382	3,668
Equity in undistributed income of unconsolidated joint ventures	**(4,898)**	(4,146)	(2,890)
Dividends received from unconsolidated joint ventures	**3,529**	2,757	3,463
Pension and postretirement benefits	**(1,561)**	(2,822)	(1,512)
Gain on the sale of property, plant and equipment	**(5,329)**	—	—
Loss from the disposal of property, plant and equipment	**175**	225	295
Asbestos-related charges	**3,400**	313	(256)
Impairment of assets/investments	**807**	—	150
Bad debt expense	**(439)**	1,321	1,085
Loss on disposition of a business	**—**	—	4,819
Proceeds from insurance related to operations	**932**	—	—
Changes in assets and liabilities:			
Accounts receivable	**(14,059)**	(13,005)	8,971
Inventories	**(14,208)**	9,689	(10,608)
Pension and postretirement benefit contributions	**(906)**	(842)	(7,737)
Other current assets	**(576)**	1,933	(1,278)
Accounts payable and other accrued expenses	**12,341**	21,472	(17,632)
Other, net	**5,885**	(4,715)	3,367
Net cash provided by operating activities	**138,982**	116,967	73,922
Investing Activities:			
Capital expenditures	**(27,215)**	(18,136)	(24,837)
Proceeds from insurance claims	**1,041**	275	2,682
Proceeds from the sale of property, plant and equipment, net	**8,095**	—	—
Other investing activities	**—**	—	(1,000)
Proceeds from the sale of a business	**—**	—	1,265
Acquisition of business, net of cash received	**(60,191)**	(133,943)	(158,407)
Net cash used in investing activities	**(78,270)**	(151,804)	(180,297)
Financing Activities:			
Proceeds from long-term borrowings	**—**	166,000	125,000
Repayment of debt principal and long-term lease obligation	**(110,689)**	(103,760)	(6,641)
Line of credit issuance costs	**(1,169)**	—	(293)
Repurchases of capital stock	**—**	(7,995)	(39,993)
Proceeds from sale of capital stock, net	**3,085**	4,143	6,967
Payments of taxes related to net share settlement of equity awards	**(5,309)**	(1,377)	(2,740)
Proceeds from issuance of shares to employee stock purchase plan	**895**	858	727
Net cash (used in) provided by financing activities	**(113,187)**	57,869	83,027
Effect of exchange rate fluctuations on cash	**5,867**	149	(9,441)
Net (decrease) increase in cash and cash equivalents	**(46,608)**	23,181	(32,789)
Cash and cash equivalents at beginning of year	**227,767**	204,586	237,375
Cash and cash equivalents at end of year	**$ 181,159**	$ 227,767	$ 204,586
Supplemental Disclosures:			
Accrued capital additions	**$ 2,376**	$ 1,081	$ 2,029
Assets obtained under leasing arrangements	**$ 883**	$ —	$ —
Cash paid during the year for:			
Interest, net of amounts capitalized	**$ 5,787**	$ 3,924	$ 4,140
Income taxes	**$ 36,918**	$ 23,952	$ 18,700

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

NOTE 1 – ORGANIZATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Principles of Consolidation

The consolidated financial statements include the accounts of the Company and our wholly-owned subsidiaries, after elimination of inter-company accounts and transactions.

In 2015, we changed our method for accounting for certain inventory items from the last in, first out (LIFO) method to the first in, first out (FIFO) method. Adjustments have been made to all periods and amounts presented to appropriately reflect the retrospective application of this accounting change. See the discussion below entitled "Inventories" for further information.

The preparation of financial statements, in conformity with accounting principles generally accepted in the United States, requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Organization

Our reporting structure is comprised of the following operating segments: Advanced Connectivity Solutions (ACS), Elastomeric Material Solutions (EMS) and Power Electronics Solutions (PES). The remaining operations are accumulated and reported as our Other operating segment.

- *Advanced Connectivity Solutions*

Our ACS operating segment designs, develops, manufactures and sells circuit materials and solutions enabling high-performance and high-reliability connectivity for applications in wireless communications infrastructure (e.g., power amplifiers, antennas, small cells and distributed antenna systems), automotive (e.g., active safety, advanced driver assistance systems, telematics and thermal management), connected devices, (e.g., mobile internet devices and Internet of Things), wired infrastructure (e.g., computing, servers and storage), consumer electronics and aerospace/defense. We sell our circuit materials under various trade names, including RO3000®, RO4000®, RT/duroid®, AD Series™ and CLTE Series™.

Our ACS operating segment has manufacturing and administrative facilities in Chandler, Arizona; Rogers, Connecticut; Bear, Delaware; Evergem, Belgium; and Suzhou, China.

- *Elastomeric Material Solutions*

Our EMS operating segment designs, develops, manufactures and sells elastomeric material solutions for critical cushioning, sealing, impact protection and vibration management applications including general industrial, portable electronics (e.g., mobile internet devices), consumer goods (e.g., protective sports equipment), automotive, mass transportation, construction and printing applications. We sell our elastomeric materials under various trade names, including DeWAL™, ARLON®, PORON®, XRD®, BISCO®, eSORBA®, HeatSORB™, and Diversified Silicone Products. In November 2016, we acquired DeWAL Industries, a leading manufacturer of polytetrafluoroethylene, ultra-high molecular weight polyethylene films, pressure sensitive tapes and specialty products, and in January 2017, we acquired the principal operating assets of Diversified Silicone Products, Inc. (DSP), a custom silicone product development and manufacturing business. The acquisitions of DeWAL and DSP, and their subsequent integration into our EMS operating segment, has enabled us to extend the product portfolio and technology capabilities with complementary high-end, high performance elastomeric materials.

As of December 31, 2017, our EMS operating segment had administrative and manufacturing facilities in Woodstock, Connecticut; Rogers, Connecticut; Bear, Delaware; Carol Stream, Illinois; Narragansett, Rhode Island; Santa Fe Springs, California; Ansan, Korea, and Suzhou, China. We also own 50% of (1) Rogers Inoac Corporation (RIC), a joint venture established in Japan to design, develop, manufacture and sell PORON products predominantly for the Japanese market and (2) Rogers INOAC Suzhou Corporation (RIS), a joint venture established in China to design, develop, manufacture and sell PORON products primarily for RIC customers in various Asian countries. INOAC Corporation owns the remaining 50% of both RIC and RIS. RIC has manufacturing facilities at INOAC facilities in Nagoya and Mie, Japan, and RIS has manufacturing facilities at Rogers' facilities in Suzhou, China.

- *Power Electronics Solutions*

Our PES operating segment designs, develops, manufactures and sells ceramic substrate materials for power module applications (e.g., variable frequency drives, vehicle electrification and renewable energy), laminated busbars for power inverter and high power interconnect applications (e.g., mass transit, hybrid-electric and electric vehicles, renewable energy and variable frequency drives), and micro-channel coolers (e.g., laser cutting equipment). We sell our ceramic substrate materials and micro channel coolers under the curamik® trade name, and our busbars under the ROLINX® trade name.

Our PES operating segment has administrative and manufacturing facilities in Ghent, Belgium; Eschenbach, Germany; Budapest, Hungary; and Suzhou, China.

- *Other*

Our Other operating segment consists of elastomer components for applications in ground transportation, office equipment, consumer and other markets; elastomer floats for level sensing in fuel tanks, motors, and storage tanks; and inverters for portable communications and automotive markets. Trade names for our elastomer components include: NITROPHYL® floats for level sensing in fuel tanks, motors, and storage tanks and ENDUR® elastomer rollers. The Arlon polyimide and thermoset laminate business was also included within our Other operating segment prior to its divestiture in December 2015.

Cash Equivalents

Highly liquid investments with original maturities of three months or less are considered cash equivalents. These investments are stated at cost, which approximates fair value.

Investments in Unconsolidated Joint Ventures

We account for our investments in and advances to unconsolidated joint ventures, all of which are 50% owned, using the equity method of accounting.

Foreign Currency

All balance sheet accounts of foreign subsidiaries are translated or remeasured at exchange rates in effect at each year end, and income statement items are translated using the average exchange rates for the year. Translation adjustments for those entities that operate under a local currency are recorded directly to a separate component of shareholders' equity, while remeasurement adjustments for those entities that operate under the parent's functional currency are recorded to the income statement as a component of "other income (expense), net." Currency transaction gains and losses are reported as income or expense, respectively, in the consolidated statements of operations as a component of "other income (expense), net." Such adjustments resulted in gains of $0.9 million in 2017 and $0.3 million in 2015. Such adjustments resulted in a loss of $2.7 million in 2016.

Allowance for Doubtful Accounts

The allowance for doubtful accounts is determined based on a variety of factors that affect the potential collectability of the related receivables, including the length of time receivables are past due, customer credit ratings, financial stability of customers, specific one-time events and past customer history. In addition, in circumstances where we are made aware of a specific customer's inability to meet its financial obligations, a specific allowance is established. The majority of accounts are individually evaluated on a regular basis and appropriate reserves are established as deemed appropriate based on the criteria previously mentioned. The remainder of the reserve is based on management's estimates and takes into consideration historical trends, market conditions and the composition of our customer base.

Inventories

Inventories are stated at the lower of cost or net realizable value. The cost of inventories is determined using the first in, first out (FIFO) method. An allowance is made for estimated losses due to obsolescence. The allowance is determined for groups of products based on purchases in the recent past and/or expected future demand and market conditions. Abnormal amounts of idle facility expense and waste are not capitalized in inventory. The allocation of fixed production overheads to the inventory cost is based on the normal capacity of the production facilities.

Inventories consisted of the following:

	As of December 31,	
(Dollars in thousands)	**2017**	2016
Raw materials	**$ 43,092**	$ 29,788
Work-in-process	**28,133**	26,440
Finished goods	**41,332**	34,902
Total inventories	**$ 112,557**	$ 91,130

Property, Plant and Equipment

Property, plant and equipment are stated on the basis of cost. For financial reporting purposes, provisions for depreciation are calculated on a straight-line basis over the following estimated useful lives of the underlying assets:

	Years
Buildings and improvements	30-40
Machinery and equipment	5-15
Office equipment	3-10

Software Costs

We capitalize certain computer software and software development costs incurred in connection with developing or obtaining computer software for internal use when both the preliminary project stage is completed and it is probable that the software will be used as intended. Capitalized software costs include only (i) external direct costs of materials and services utilized in developing or obtaining computer software, and (ii) compensation and related benefits for employees who are directly associated with the software project. Capitalized software costs are amortized on a straight-line basis when placed into service over the estimated useful lives of the software, which approximates three to five years. Net capitalized software and development costs were $4.7 million and $7.7 million for the years ended December 31, 2017 and 2016, respectively. Capitalized software is included within "Property, plant and equipment, net of accumulated depreciation" in the consolidated statements of financial position.

Goodwill and Other Intangible Assets

We have made acquisitions over the years that included the recognition of intangible assets. Intangible assets are classified into three categories: (1) goodwill; (2) other intangible assets with definite lives subject to amortization; and (3) other intangible assets with indefinite lives not subject to amortization. Other intangible assets can include items such as trademarks and trade names, licensed technology, customer relationships and covenants not to compete, among other things. Each definite-lived other intangible asset is amortized over its respective economic useful life using the economic attribution method.

Goodwill is tested for impairment annually and between annual impairment tests if events or changes in circumstances indicate the carrying value may be impaired. If it is more likely than not that our goodwill is impaired, then we compare the estimated fair value of each of our reporting units to their respective carrying value. If a reporting unit's carrying value is greater than its fair value, then an impairment is recognized for the excess and charged to operations. We currently have four reporting units with goodwill: ACS, EMS, curamik® and Elastomer Components Division (ECD). Consistent with historical practice, the annual impairment test on these reporting units was performed as of November 30, 2017.

The application of the annual goodwill impairment test requires significant judgment, including the identification of reporting units, assignment of assets and liabilities to reporting units and determination of the fair value of each reporting unit. Determining the fair value is subjective and requires the use of significant estimates and assumptions, including financial projections for net sales, gross margin and operating margin, discount rates, terminal year growth rates and future market conditions, among others. We estimated the fair value of our reporting units using an income approach based on the present value of future cash flows through a five year discounted cash flow analysis. The discounted cash flow analysis utilized the discount rates for each of the reporting units ranging from 11.0% for EMS to 12.3% for curamik®, and a terminal year growth rate of 3% for all four reporting units. We believe this approach yields the most appropriate evidence of fair value as our reporting units are not easily compared to other corporations involved in similar businesses. We further believe that the assumptions and rates used in our annual goodwill impairment test are reasonable, but inherently uncertain. There were no impairment charges resulting from our goodwill impairment analysis in 2017. The ACS, EMS, curamik® and ECD reporting units had allocated goodwill of approximately $51.7 million, $111.6 million, $71.6 million and $2.2 million, respectively, at December 31, 2017.

Indefinite-lived other intangible assets are tested for impairment annually and between annual impairment tests if events or changes in circumstances indicate the carrying value may be impaired. If it is more likely than not that an indefinite-lived other intangible asset is impaired, then we compare the estimated fair value of that indefinite-lived other intangible asset to its respective carrying value. If an indefinite-lived other intangible asset's carrying value is greater than its fair value, then the definite-lived other intangible asset's carrying value is compared to its estimated fair value and an impairment charge is recognized for the excess and charged to operations. The application of the annual indefinite-lived other intangible asset impairment test requires significant judgment, including the determination of fair value of each indefinite-lived other intangible asset. Fair value is primarily based on income approaches using discounted cash flow models, which have significant assumptions. Such assumptions are subject to variability from year to year and are directly impacted by global market conditions. There were no impairment charges resulting from our indefinite-lived other intangible assets impairment analysis in 2017. The curamik® reporting unit had an indefinite-lived other intangible asset of approximately $4.7 million at December 31, 2017.

Definite-lived other intangible assets are tested for recoverability whenever events or changes in circumstances indicate the carrying value may not be recoverable. The recoverability test involves comparing the estimated sum of the undiscounted cash flows for each definite-lived other intangible asset to its respective carrying value. If a definite-lived other intangible asset's carrying value is greater than the sum of its undiscounted cash flows, then an impairment is recognized for the excess and charged to operations. The application of the recoverability test requires significant judgment, including the identification of the asset group and determination of undiscounted cash flows and fair value of the underlying definite-lived other intangible asset. Determination of undiscounted cash flows requires the use of significant estimates and assumptions, including certain financial projections. Fair value is primarily based on income approaches using discounted cash flow models, which have significant assumptions. Such assumptions are subject to variability from year to year and are directly impacted by global market conditions. There were no impairment charges resulting from our definite-lived other intangible assets impairment analysis in 2017. The ACS, EMS and curamik® reporting units had definite-lived other intangible assets of approximately $11.1 million, $128.1 million and $16.4 million, respectively, at December 31, 2017.

Environmental and Product Liabilities

We accrue for our environmental investigation, remediation, operating and maintenance costs when it is probable that a liability has been incurred and the amount can be reasonably estimated. For environmental matters, the most likely cost to be incurred is accrued based on an evaluation of currently available facts with respect to each individual site, including existing technology, current laws and regulations and prior remediation experience. For sites with multiple potential responsible parties (PRPs), we consider our likely proportionate share of the anticipated remediation costs and the ability of the other parties to fulfill their obligations in establishing a provision for those costs. When no amount within a range of estimates is more likely to occur than another, we accrue to the low end of the range and disclose the range. When future liabilities are determined to be reimbursable by insurance coverage, an accrual is recorded for the potential liability and a receivable is recorded for the estimated insurance reimbursement amount. We are exposed to the uncertain nature inherent in such remediation and the possibility that initial estimates will not reflect the final outcome of a matter.

We periodically perform a formal analysis to determine potential future liability and related insurance coverage for asbestos-related matters. Projecting future asbestos costs is subject to numerous variables that are extremely difficult to predict, including the number of claims that might be received, the type and severity of the disease alleged by each claimant, the long latency period associated with asbestos exposure, dismissal rates, costs of medical treatment, the financial resources of other companies that are co-defendants in claims, uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, and the impact of potential changes in legislative or judicial standards, including potential tort reform. Furthermore, any predictions with respect to these variables are subject to even greater uncertainty as the projection period lengthens.

We believe the assumptions used in our models for determining our potential exposure and related insurance coverage are reasonable at the present time, but such assumptions are inherently uncertain. Prior to 2017, due to the inherent uncertainties of the projection process and our limited amount of settlement and claims history, we utilized a ten-year projection period, which we concluded was appropriate as we did not believe we had sufficient data to justify a longer projection period.

During 2017, we reviewed the projections of our current and future asbestos claims, and determined it was appropriate to extend the liability projection period to cover all current and future claims through 2058. We based our conclusion on our history and experience with the claims data, the diminished volatility and consistency of observable claims data, the period of time that has elapsed since we stopped manufacturing products that contained encapsulated asbestos and an expectation of a downward trend in claims due to the average age of our claimants, which is approaching the average life expectancy. The year 2058 also represents the expected end of Rogers' asbestos liability exposure and no further ongoing claims are expected past that date. As a result, we believe we are now able to make a reasonable estimate of the actuarially determined liability for current and future asbestos claims through 2058. As of December 31, 2017, the estimated liability and estimated insurance recovery for all current and future claims projected through 2058 was $76.2 million and $69.2 million, respectively.

Given the inherent uncertainty in making projections, we plan to re-examine periodically the projections of current and future asbestos claims, and we will update them if needed based on our experience, changes in the assumptions underlying our models, and other relevant factors, such as changes in the tort system. There can be no assurance that our accrued asbestos liabilities will approximate our actual asbestos-related settlement and defense costs, or that our accrued insurance recoveries will be realized. We believe that it is reasonably possible that we may incur additional charges for our asbestos liabilities and defense costs in the future, which could exceed existing reserves and insurance recovery.

Fair Value of Financial Instruments

Management believes that the carrying values of financial instruments, including cash and cash equivalents, short-term investments, accounts receivable, accounts payable and accrued liabilities approximate fair value based on the maturities of these instruments. The fair value of our borrowings under credit facility are determined using discounted cash flows based upon our estimated current interest cost for similar type borrowings or current market value, which falls under Level 2 of the fair value hierarchy. Based on our credit ratings at December 31, 2017, borrowings would generally bear interest at LIBOR plus 100 basis points. As the current borrowings under our Third Amended Credit Agreement bear interest at adjusted 1-month LIBOR plus 100 basis points, we believe the carrying value of our borrowings approximates fair value. See Note 2, "Fair Value Measurements" for further information on the calculation of fair value measurements.

Concentration of Credit and Investment Risk

We extend credit on an uncollateralized basis to almost all customers. Concentration of credit and geographic risk with respect to accounts receivable is limited due to the large number and general dispersion of accounts that constitute our customer base. We routinely perform credit evaluations on our customers. At December 31, 2017 and 2016, there were no customers that individually accounted for more than ten percent of total accounts receivable. We have purchased credit insurance coverage for certain accounts receivable. We did not experience significant credit losses on customers' accounts in 2017, 2016 or 2015.

We are subject to credit and market risk by using derivative instruments. If a counterparty fails to fulfill its performance obligations under a derivative contract, our credit risk will equal the fair value of the derivative instrument. We seek to minimize counterparty credit (or repayment) risk by entering into derivative transactions with major financial institutions with investment grade credit ratings.

We invest excess cash principally in investment grade government securities and time deposits. We have established guidelines relative to diversification and maturities in order to maintain safety and liquidity. These guidelines are periodically reviewed and modified to reflect changes in market conditions.

Income Taxes

We are subject to income taxes in the United States and in numerous foreign jurisdictions. The Company accounts for income taxes following ASC 740 (Accounting for Income Taxes) recognizing deferred tax assets and liabilities using enacted tax rates for the effect of temporary differences between book and tax basis of recorded assets and liabilities. Deferred tax assets are reduced by a valuation allowance if it is more likely than not that some or all of a deferred tax asset will not be realized.

As a result of the U.S. Tax Reform, all post-1986 undistributed foreign subsidiary earnings and profits (E&P) as of December 31, 2017 have been subjected to U.S. tax through the transition tax. Our unremitted foreign earnings could be subject to additional income taxes if they are redeployed outside of their country of origin. With the exception of certain of our Chinese subsidiaries, we have historically and continue to assert that foreign earnings are indefinitely reinvested. While we have not currently changed our assertion with respect to foreign earnings compared to prior years, we are currently evaluating the impact of U.S. Tax Reform on our global structure and any associated impacts it may have on our assertion on a go forward basis and as such have not included a provisional estimate of the impact. See Note 13, "Income Taxes", for additional regarding U.S. Tax Reform.

The U.S. Tax Reform Act includes two new U.S. tax base erosion provisions, the GILTI provisions and the BEAT provisions. The GILTI provisions require the Company to include in its U.S. income tax return foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary's tangible assets. The Company has elected to account for GILTI tax in the period in which it is incurred, and therefore has not provided any deferred tax impacts of GILTI in its consolidated financial statements for the year ended December 31, 2017. The BEAT provisions in the Tax Reform Act eliminate the deduction of certain base-erosion payments made to related foreign corporations, and impose a minimum tax if greater than regular tax. Starting January 1, 2018, the Company will account for BEAT in the period in which it is incurred to the extent the Company is subject to it.

We record benefits for uncertain tax positions based on an assessment of whether it is more likely than not that the tax positions will be sustained by the taxing authorities. If this threshold is not met, no tax benefit of the uncertain position is recognized. If the threshold is met, we recognize the largest amount of the tax benefit that is greater than fifty percent likely to be realized upon ultimate settlement.

We recognize interest and penalties within the income tax expense line in the accompanying consolidated statements of operations. Accrued interest and penalties are included within the related tax liability line in the consolidated statements of financial position.

Revenue Recognition

We recognize revenue when all of the following criteria are met: (1) we have entered into a binding agreement, (2) the product has shipped and title and risk of ownership have passed, (3) the sales price to the customer is fixed or determinable, and (4) collectability is reasonably assured. We consider that the criteria for revenue recognition have been met upon shipment of the finished product, based on the majority of our shipping terms. Some shipping terms require the goods to be through customs or be received by the customer before title passes. In those instances, revenue is not recognized until either the customer has received the goods or they have passed through customs, depending on the circumstances. As appropriate, we record estimated reductions to revenue for customer returns and allowances and warranty claims. Provisions for such allowances are made at the time of sale and are typically derived from historical trends and other relevant information. See further discussion in Note 19, "Recent Accounting Standards" to "Item 8 - Financial Statements and Supplementary Data."

Shipping and Handling Charges

Costs that we incur for shipping and handling charges are charged to "Cost of sales" and payments received from our customers for shipping and handling charges are included in "Net sales" on our consolidated statements of operations.

Pension and Retiree Health Care and Life Insurance Benefits

We provide various defined benefit pension plans for our U.S. employees and we sponsor multiple fully insured or self-funded medical plans and fully insured life insurance plans for retirees. In 2013, the defined benefit pension plans were frozen, so that future benefits no longer accrue. The costs and obligations associated with these plans are dependent upon various actuarial assumptions used in calculating such amounts. These assumptions include discount rates, long-term rate of return on plan assets, mortality rates, and other factors. The assumptions used in these models are determined as follows: (i) the discount rate used is based on the PruCurve index; (ii) the long-term rate of return on plan assets is determined based on historical portfolio results, market results and our expectations of future returns, as well as current market assumptions related to long-term return rates; and (iii) the mortality rate is based on a mortality projection that estimates current longevity rates and their impact on the long-term plan obligations. We review these assumptions periodically throughout the year and update as necessary.

In October 2017, the Company merged two of its defined benefit pension plans (collectively the merged Rogers Plan). The Company currently intends to terminate the merged Rogers Plan and has requested a determination letter from the Internal Revenue Service (IRS). The termination of the merged Rogers Plan remains subject to final approval by both management and the IRS. At this time, there are no plans to terminate the remaining pension plan. The Company lacks sufficient information as of December 31, 2017 to determine the financial impact of the proposed plan termination. See Note 10, "Pension Benefits and Retirement Health and Life Insurance Benefits" for further information.

Earnings Per Share

The following table sets forth the computation of basic and diluted earnings per share:

	Years Ended December 31,		
(In thousands, except per share amounts)	**2017**	2016	2015
Numerator:			
Net income	**$ 80,459**	$ 48,283	$ 46,320
Denominator:			
Weighted-average shares outstanding - basic	**18,154**	17,991	18,371
Effect of dilutive shares	**393**	232	309
Weighted-average shares outstanding - diluted	**18,547**	18,223	18,680
Basic earnings per share:	**$ 4.43**	$ 2.68	$ 2.52
Diluted earnings per share:	**$ 4.34**	$ 2.65	$ 2.48

Certain potential options to purchase shares were excluded from the calculation of diluted weighted-average shares outstanding because the exercise price was greater than the average market price of our capital stock during the year. For 2015, 44,350 shares were excluded. No shares were excluded in 2017 and 2016.

Hedging Activity

From time to time, we use derivative instruments to manage commodity, interest rate and foreign currency exposures. Derivative instruments are viewed as risk management tools and are not used for trading or speculative purposes. To qualify for hedge accounting treatment, derivatives used for hedging purposes must be designated and deemed effective as a hedge of the identified underlying risk exposure at the inception of the contract. Accordingly, changes in fair value of the derivative contract must be highly correlated with changes in the fair value of the underlying hedged item at inception of the hedge and over the life of the hedge contract.

Derivatives used to hedge forecasted cash flows associated with interest rates, foreign currency commitments, or forecasted commodity purchases are accounted for as cash flow hedges. For those derivative instruments that qualify for hedge accounting treatment, if the hedge is highly effective, all changes in the fair value of the derivative hedging instrument are recorded in other comprehensive income. The derivative hedging instrument will be reclassified to earnings when the hedged item impacts earnings. For those derivative instruments that do not qualify for hedge accounting treatment, any related gains and losses are recognized in the consolidated statements of operations as a component of "other income (expense), net."

Advertising Costs

Advertising is expensed as incurred and amounted to $4.4 million for 2017, $3.0 million for 2016 and $3.2 million for 2015.

Equity Compensation

Equity compensation is comprised of restricted stock units and stock options. Performance-based restricted stock unit compensation expense is based on achievement of certain performance and service conditions. The fair value of the awards is determined based on the market value of the underlying stock price at the grant date and marked to market over the vesting period based on probabilities and projections of the underlying performance measures.

Time-based restricted stock units compensation is expensed over the vesting period, which is typically three years. The fair value of the awards is determined based on the market value of the underlying stock price at the grant date.

Stock option fair value is measured at the grant date, based on the grant-date fair value of the awards ultimately expected to vest and, in most cases, is recognized as an expense on a straight-line basis over the vesting period, which is typically four years. A provision in our stock option agreements requires us to accelerate the expense for retirement eligible employees, as any unvested options would immediately vest upon retirement for such employees. We develop estimates used in calculating the grant-date fair value of stock options to determine the amount of equity compensation to be recorded. We calculate the grant-date fair value using the Black-Scholes valuation model. The use of this valuation model requires estimates of assumptions such as expected volatility, expected term, risk-free interest rate, expected dividend yield and forfeiture rates.

We previously estimated the forfeiture rate based on historical experience and our expectations regarding future terminations. To the extent our actual forfeiture rate was different from our estimate, equity compensation expense was adjusted accordingly. In accordance with our adoption of ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting,* on January 1, 2017, we now account for forfeitures as they occur. The adoption of this standard, with respect to treatment of forfeitures, did not have a material impact on our condensed consolidated financial statements in the period of adoption.

NOTE 2 – FAIR VALUE MEASUREMENTS

The accounting guidance for fair value measurements establishes a three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value.

- Level 1 – Quoted prices in active markets for identical assets or liabilities.
- Level 2 – Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3 – Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

From time to time we enter into various instruments that require fair value measurement, including foreign currency contracts, interest rate swaps and copper derivative contracts. Derivative instruments measured at fair value on a recurring basis, categorized by the level of inputs used in the valuation, include:

	Derivative Instruments at Fair Value as of December 31, 2017			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Foreign currency contracts	**$ —**	**$ (396)**	**$ —**	**$ (396)**
Copper derivative contracts	**$ —**	**$ 2,016**	**$ —**	**$ 2,016**
Interest rate swap	**$ —**	**$ 41**	**$ —**	**$ 41**

	Derivative Instruments at Fair Value as of December 31, 2016			
(Dollars in thousands)	Level 1	Level 2	Level 3	Total
Foreign currency contracts	$ —	$ (170)	$ —	**$ (170)**
Copper derivative contracts	$ —	$ 1,277	$ —	**$ 1,277**

For further discussion on our derivative contracts, see Note 3, “Hedging Transactions and Derivative Financial Instruments.”

NOTE 3 – HEDGING TRANSACTIONS AND DERIVATIVE FINANCIAL INSTRUMENTS

We are exposed to certain risks related to our ongoing business operations. The primary risks being managed through our use of derivative instruments are foreign currency exchange rate risk and commodity pricing risk (primarily related to copper). During the first quarter of 2017, we also entered into an interest rate swap to hedge interest rate risk. We do not use derivative financial instruments for trading or speculative purposes. The valuation of derivative contracts used to manage each of these risks is described below:

- *Foreign Currency* - The fair value of any foreign currency derivative is based upon valuation models applied to current market information such as strike price, spot rate, maturity date and volatility, and by reference to market values resulting from an over-the-counter market or obtaining market data for similar instruments with similar characteristics.

- *Commodity* - The fair value of copper derivatives is computed using a combination of intrinsic and time value valuation models. The intrinsic valuation model reflects the difference between the strike price of the underlying copper derivative instrument and the current prevailing copper prices in an over-the-counter market at period end. The time value valuation model incorporates the constant changes in the price of the underlying copper derivative instrument, the time value of money, the underlying copper derivative instrument’s strike price and the remaining time to the underlying copper derivative instrument’s expiration date from the period end date. Overall, fair value is a function of five primary variables: price of the underlying instrument, time to expiration, strike price, interest rate, and volatility.

- *Interest Rates* - The fair value of interest rate swap instruments is derived by comparing the present value of the interest rate forward curve against the present value of the swap rate, relative to the notional amount of the swap. The net value represents the estimated amount we would receive or pay to terminate the agreements. Settlement amounts for an “in the money” swap would be adjusted down to compensate the counterparty for cost of funds, and the adjustment is directly related to the counterparties’ credit ratings.

The guidance for the accounting and disclosure of derivatives and hedging transactions requires companies to recognize all of their derivative instruments as either assets or liabilities at fair value in the statements of financial position. The accounting for changes in the fair value (i.e., gains or losses) of a derivative instrument depends on whether it has been designated and qualifies for hedge accounting treatment as defined under the applicable accounting guidance. For derivative instruments that are designated and qualify for hedge accounting treatment as cash flow hedges (i.e., hedging the exposure to variability in expected future cash flows that is attributable to a particular risk), the effective portion of the gain or loss on the derivative instrument is reported as a component of other comprehensive income (loss). This gain or loss is reclassified into earnings in the same line item of the consolidated statements of operations associated with the forecasted transaction and in the same period or periods during which the hedged transaction affects earnings. As of December 31, 2017 only our interest rate swap qualified for hedge accounting treatment as a cash flow hedge. The Company adopted ASU 2017-12 on October 1, 2017 and recognized $0.2 million in gains in the statement of operations in the fourth quarter of 2017. This gain was recorded to reverse losses resulting from hedge ineffectiveness previously reclassified to the statement of operations from other comprehensive income during the second and third quarters of 2017. See Note 19, "Recent Accounting Standards," for more information on the adoption of ASU 2017-12. For the year ended December 31, 2017, there was hedge ineffectiveness of approximately $0.3 million. As of December 31, 2016, we did not have any contracts designated as cash flow hedges.

Foreign Currency

In 2017, we entered into Korean Won, Japanese Yen, Euro, Hungarian Forint and Chinese Renminbi forward contracts. We entered into these foreign currency forward contracts to mitigate certain global transactional exposures. These contracts do not qualify for hedge accounting treatment. As a result, any fair value adjustments required on these contracts are recorded in "other income (expense), net" in our consolidated statements of operations.

As of December 31, 2017 the notional values of these foreign currency forward contracts were:

Notional Values of Foreign Currency Derivatives

KRW/USD	₩	4,503,980,000
EUR/CNY	€	1,049,585
JPY/EUR	¥	325,000,000
EUR/USD	€	7,068,140
EUR/HUF	€	563,119
USD/CNY	$	12,828,710

Commodity

As of December 31, 2017, we had twenty-one outstanding contracts to hedge exposure related to the purchase of copper in our PES and ACS operating segments. These contracts are held with financial institutions and minimize the risk associated with a potential rise in copper prices. These contracts are intended to provide some coverage over the forecasted 2018 monthly copper exposure and do not qualify for hedge accounting treatment. As a result, any fair value adjustments required on these contracts are recorded in "other income (expense), net" in our consolidated statements of operations.

As of December 31, 2017, the volume of our copper contracts outstanding were:

Volume of Copper Derivatives

January 2018 - March 2018	140 metric tons per month
April 2018 - June 2018	153 metric tons per month
July 2018 - September 2018	153 metric tons per month
October 2018 - December 2018	119 metric tons per month

Interest Rates

In March 2017, we entered into an interest rate swap to hedge the variable interest rate on $75.0 million of our $450.0 million revolving credit facility. This transaction has been designated as a cash flow hedge and qualifies for hedge accounting treatment. See Note 12, "Debt" for further discussion regarding the credit facility.

Effects on Statements of Operations and Statements of Comprehensive Income (Loss):

(Dollars in thousands)		**The Effect of Derivative Instruments on the Financial Statements for the year ended December 31, 2017**	**Fair Values of Derivative Instruments as of December 31, 2017**
Foreign Exchange Contracts	**Location**	**Gain/(Loss)**	**Other Assets (Liabilities)**
Contracts not designated as hedging instruments	**Other income (expense), net**	**$ (7)**	**$ (396)**
Copper Derivative Instruments			
Contracts not designated as hedging instruments	**Other income (expense), net**	**$ 1,928**	**$ 2,016**
Interest Rate Swap Instrument			
Contracts designated as hedging instruments	**Other comprehensive income (loss)**	**$ 41**	**$ 41**

(Dollars in thousands)		The Effect of Derivative Instruments on the Financial Statements for the year ended December 31, 2016	Fair Values of Derivative Instruments as of December 31, 2016
Foreign Exchange Contracts	Location	Gain/(Loss)	Other Assets (Liabilities)
Contracts not designated as hedging instruments	Other income (expense), net	$ (170)	$ (170)
Copper Derivative Instruments			
Contracts not designated as hedging instruments	Other income (expense), net	$ 625	$ 1,277

NOTE 4 - ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)

The changes in accumulated other comprehensive income (loss) by component for the year ended December 31, 2017 were as follows:

(Dollars in thousands)	Foreign currency translation adjustments	Funded status of pension plans and other postretirement benefits (1)	Unrealized gain (loss) on derivative instruments (2)	Total
Beginning Balance December 31, 2016	**$ (46,446)**	**$ (45,816)**	**$ —**	**$ (92,262)**
Other comprehensive income before reclassifications	**28,463**	**—**	**26**	**28,489**
Actuarial net gain (loss) incurred in the fiscal year	**—**	**(1,481)**	**—**	**(1,481)**
Amounts reclassified from accumulated other comprehensive income	**—**	**99**	**—**	**99**
Net current-period other comprehensive income	**28,463**	**(1,382)**	**26**	**27,107**
Ending Balance December 31, 2017	**$ (17,983)**	**$ (47,198)**	**$ 26**	**$ (65,155)**

(1) Net of taxes of $9,563 and $9,160 for the years ended December 31, 2017 and December 31, 2016, respectively.
(2) Net of taxes of $15 and $0 for the years ended December 31, 2017 and December 31, 2016, respectively.

The changes in accumulated other comprehensive income (loss) by component for the year ended December 31, 2016 were as follows:

(Dollars in thousands)	Foreign currency translation adjustments	Funded status of pension plans and other postretirement benefits (1)	Unrealized gain (loss) on derivative instruments (2)	Total
Beginning Balance December 31, 2015	$ (41,365)	$ (47,082)	$ (11)	$ (88,458)
Other comprehensive income before reclassifications	(5,081)	—	—	(5,081)
Actuarial net gain (loss) incurred in the fiscal year	—	1,106	—	1,106
Amounts reclassified from accumulated other comprehensive income	—	160	11	171
Net current-period other comprehensive income	(5,081)	1,266	11	(3,804)
Ending Balance December 31, 2016	$ (46,446)	$ (45,816)	$ —	$ (92,262)

(1) Net of taxes of $9,160 and $9,879 for the years ended December 31, 2016 and December 31, 2015, respectively.
(2) Net of taxes of $0 and $5 for the years ended December 31, 2016 and December 31, 2015, respectively.

The reclassifications out of accumulated other comprehensive income (loss) for the year ended December 31, 2017 were as follows:

Details about accumulated other comprehensive income components	**Amounts reclassified to/ from accumulated other comprehensive income (loss) for the period ended December 31, 2017**	**Affected line item in the statement where net income is presented**
Unrealized gains and losses on derivative instruments:		
	$ 41	**Other income (expense), net**
	(15)	**Income tax expense**
	$ 26	**Net of tax**
Amortization of defined benefit pension and other post-retirement benefit items:		
Actuarial losses (gains)	**$ 154**	**Total before tax (1)**
	(55)	**Income tax expense**
	$ 99	**Net of tax**

(1) These accumulated other comprehensive income components are included in the computation of net periodic pension cost. See Note 10, "Pension Benefits and Retirement Health and Life Insurance Benefits" for additional details.

The reclassifications out of accumulated other comprehensive income (loss) for the year ended December 31, 2016 were as follows:

Details about accumulated other comprehensive income components	Amounts reclassified from accumulated other comprehensive income (loss) for the period ended December 31, 2016	Affected line item in the statement where net income is presented
Unrealized gains and losses on derivative instruments:		
	$ 16	Other income (expense), net
	(5)	Income tax expense
	$ 11	Net of tax
Amortization of defined benefit pension and other post-retirement benefit items:		
Actuarial losses (gains)	$ 246	Total before tax (1)
	(86)	Income tax expense
	$ 160	Net of tax

(1) These accumulated other comprehensive income components are included in the computation of net periodic pension cost. See Note 10, "Pension Benefits and Other Postretirement Benefit Plans" for additional details.

NOTE 5 - ACQUISITIONS

Diversified Silicone Products

On January 6, 2017, we acquired the principal operating assets of DSP, pursuant to the terms of the Asset Purchase Agreement by and among the Company, DSP and the principal shareholders of DSP (the Purchase Agreement). Pursuant to the terms of the Purchase Agreement, we acquired certain assets and assumed certain liabilities of DSP for a total purchase price of approximately $60.2 million.

We used borrowings of $30.0 million under our credit facility in addition to cash on hand to fund the acquisition.

DSP is a custom silicone product development and manufacturing business and expands the portfolio of the EMS operating segment in cellular sponge and specialty extruded silicone profile technologies, while strengthening existing expertise in precision-calendered silicone and silicone formulating and compounding.

The acquisition has been accounted for in accordance with applicable purchase accounting guidance. We recorded goodwill primarily related to the expected synergies from combining operations and the value of the existing workforce. We also recorded other intangible assets related to acquired customer relationships, developed technology, trademarks, and a covenant not to compete. As of the filing date of this Form 10-K, the process of valuing the net assets of the business is complete. The following table represents the fair values assigned to the acquired assets and liabilities in the transaction:

(Dollars in thousands)	January 6, 2017
Assets:	
Accounts receivable	$ 2,724
Prepaid expenses	21
Inventory	2,433
Property, plant & equipment	1,589
Other intangible assets	35,860
Goodwill	17,793
Total assets	60,420
Liabilities:	
Accounts payable	179
Accrued expenses	50
Total liabilities	229
Fair value of net assets acquired	$ 60,191

The other intangible assets consist of customer relationships valued at $30.5 million, developed technology valued at $1.8 million, trademarks valued at $3.3 million, and a covenant not to compete valued at $0.3 million. The fair value of acquired identified other intangible assets was determined by applying the income approach, using several significant unobservable inputs for projected cash flows and a discount rate. These inputs are considered Level 3 under the fair value measurements and disclosure guidance.

The weighted average amortization period for the other intangible asset classes are 11.8 years for customer relationships, 4.3 years for developed technology, 11.7 years for trademarks, and 4.1 years for a covenant not to compete, resulting in amortization expenses ranging from $1.1 million to $2.0 million annually. The estimated annual future amortization expense is $1.9 million for 2018, $1.8 million for each of 2019, 2020, and 2021 and $1.7 million for 2022.

During 2017, we incurred transaction costs of $0.5 million related to the DSP acquisition, which were recorded within selling, general and administrative expenses in the consolidated statements of operations.

The results of DSP have been included in our consolidated financial statements only for the period subsequent to the completion of the acquisition on January 6, 2017, through December 31, 2017. DSP's net sales for the three and twelve months ended December 31, 2017 totaled $5.5 million and $22.3 million, respectively.

DeWAL

On November 23, 2016, we acquired all of the membership interests in DeWAL Industries LLC (DeWAL), pursuant to the terms of the Membership Interest Purchase Agreement, dated November 23, 2016, by and among the Company and the owners of DeWAL for an aggregate purchase price of $135.5 million.

We used borrowings of $136.0 million under our credit facility to fund the acquisition.

DeWAL is a leading manufacturer of polytetrafluoroethylene and ultra-high molecular weight polyethylene films, pressure sensitive tapes and specialty products for the industrial, aerospace, automotive, and electronics markets.

The acquisition has been accounted for in accordance with applicable purchase accounting guidance. We recorded goodwill, primarily related to the expected synergies from combining operations and the value of the existing workforce. We also recorded other intangible assets primarily related to customer relationships, developed technology, trademarks, and a covenant not to compete. As of the filing date of this Form 10-K, the process of valuing the net assets of the business is complete. The following table represents the fair values assigned to the acquired assets and liabilities in the transaction:

(Dollars in thousands)	November 23, 2016
Assets:	
Cash and cash equivalents	$ 1,539
Accounts receivable	7,513
Other current assets	691
Inventory	9,915
Property, plant & equipment	9,932
Other intangible assets	73,500
Goodwill	35,985
Other long-term assets	101
Total assets	139,176
Liabilities:	
Accounts payable	2,402
Other current liabilities	1,292
Total liabilities	3,694
Fair value of net assets acquired	$ 135,482

The other intangible assets consist of customer relationships valued at $46.7 million, developed technology valued at $22.0 million, trademarks valued at $4.3 million, and a covenant not to compete valued at $0.5 million. The fair value of acquired identified other intangible assets was determined by applying the income approach, using several significant unobservable inputs for projected cash flows and a discount rate. These inputs are considered Level 3 under the fair value measurements and disclosure guidance.

The weighted average amortization period for the other intangible asset classes are 13.5 years for customer relationships, 8.6 years for developed technology, 5.2 years for trademarks, and 3.8 years for a covenant not to compete, resulting in amortization expenses ranging from $2.4 million to $4.3 million, annually. The future estimated annual amortization expense is $3.7 million for 2018, $4.1 million for 2019, and $4.3 million for 2020, 2021, and 2022.

During 2017, we incurred transaction costs of $0.1 million related to the DeWAL acquisition, which were recorded within selling, general and administrative expenses in the consolidated statements of operations. In 2016, we incurred transaction costs of $2.1 million related to this acquisition. DeWAL's net sales totaled $62.0 million and $5.4 million for the years ended December 31, 2017 and 2016, respectively.

Arlon

On January 22, 2015, we completed the acquisition of Arlon and its subsidiaries, other than Arlon India (Pvt) Limited (collectively, "Arlon"), pursuant to the terms of the Stock Purchase Agreement, dated December 18, 2014, by and among the Company, Handy & Harman Group, Ltd. and its subsidiary Bairnco Corporation, as amended, (the "Arlon Purchase Agreement").

Pursuant to the terms of the Arlon Purchase Agreement, we acquired Arlon and assumed certain liabilities related to the acquisition for an aggregate purchase price of approximately $157.0 million. We used borrowings of $125.0 million under our bank credit facility in addition to cash on hand to fund the acquisition.

Arlon manufactures high performance materials for the printed circuit board industry and silicone rubber-based materials.

The acquisition has been accounted for in accordance with applicable purchase accounting guidance. We recorded goodwill, primarily related to the expected synergies from combining operations and the value of the existing workforce. We also recorded other intangible assets related to trademarks, technology and customer relationships. As of the filing date of this Form 10-K, the process of valuing the net assets of the business is complete. The following table represents the fair values assigned to the acquired assets and liabilities in the transaction:

(Dollars in thousands)	January 22, 2015
Assets:	
Cash and cash equivalents	$ 142
Accounts receivable	17,301
Other current assets	856
Inventory	9,916
Deferred income tax assets, current	1,084
Property, plant & equipment	30,667
Other intangible assets	50,020
Goodwill	85,565
Other long-term assets	106
Total assets	195,657
Liabilities:	
Accounts payable	4,958
Other current liabilities	4,385
Deferred tax liability	23,225
Other long-term liabilities	4,540
Total liabilities	37,108
Fair value of net assets acquired	$ 158,549

The other intangible assets consist of developed technology valued at $15.8 million, customer relationships valued at $32.7 million and trademarks valued at $1.6 million. The fair value of acquired identified other intangible assets was determined by applying the income approach, using several significant unobservable inputs for projected cash flows and a discount rate. These inputs are considered Level 3 under the fair value measurements and disclosure guidance.

The weighted average amortization period for the other intangible asset classes are 5.7 years for developed technology, 6.0 years for customer relationships and 3.2 years for trademarks, resulting in amortization expenses ranging from $1.8 million to $5.8 million annually. The estimated annual future amortization expense is $5.8 million for each of the years ending 2018 and 2019.

During 2015, we incurred transaction costs of $1.5 million related to the Arlon acquisition, which were recorded within selling, general and administrative expenses on the consolidated statements of operations.

The results of Arlon have been included in our consolidated financial statements only for the period subsequent to the completion of our acquisition. During the year ended December 31, 2015, net sales attributable to Arlon totaled $100.0 million and operating income attributable to Arlon totaled $25.1 million.

On December 21, 2015 we sold an Arlon business, which makes polyimide and thermoset epoxy laminate products. This operation was acquired as part of our acquisition of Arlon. The operations were previously reported with our Other operating segment. We received proceeds of $1.3 million and recognized a loss of $4.8 million, which was recorded in “other income (expense), net” within the consolidated statements of operations.

Pro Forma Financial Information

The following unaudited pro forma financial information presents the combined results of operations of Rogers, DSP, DeWAL and Arlon as if the DSP acquisition had occurred on January 1, 2016, the DeWAL acquisition occurred on January 1, 2015, and the Arlon acquisition occurred on January 1, 2014. The unaudited pro forma financial information is not intended to represent or be indicative of our consolidated results of operations that would have been reported had the DSP, DeWAL and Arlon acquisitions been completed as of January 1, 2016, January 1, 2015 and January 1, 2014, respectively, and should not be taken as indicative of our future consolidated results of operations.

	For the Years Ended December 31,		
(Dollars in thousands)	**2017**	2016	2015
Net sales	**$ 821,043**	$ 724,877	$ 693,462
Net income	**81,184**	50,349	41,976

NOTE 6 - PROPERTY, PLANT AND EQUIPMENT

(Dollars in thousands)	As of December 31, 2017	2016
Land	**$ 14,620**	$ 15,855
Buildings and improvements	**135,191**	138,493
Machinery and equipment	**238,000**	220,238
Office equipment	**56,554**	54,013
	444,365	428,599
Accumulated depreciation	**(289,909)**	(259,178)
Property, plant and equipment, net	**154,456**	169,421
Equipment in process	**25,155**	7,495
Total property, plant and equipment, net	**$ 179,611**	$ 176,916

Depreciation expense was $29.3 million in 2017, $26.6 million in 2016 and $23.2 million in 2015.

In the first quarter of 2017, we completed the planned sale of a parcel of land in Belgium that had been classified as held for sale as of December 31, 2016 and recognized a gain on sale of approximately $0.9 million in operating income.

In the second quarter of 2017, we began actively marketing for sale unutilized property in the United States consisting of a building and an adjacent parcel of land with a net book value of $0.9 million. The asset is no longer being depreciated and is classified as held for sale as of December 31, 2017.

In the third quarter of 2017, we completed the sale of a facility located in Belgium and recognized a gain on sale of approximately $4.4 million in operating income.

NOTE 7 – GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill

On January 6, 2017, we acquired DSP. For further detail on the goodwill recorded on the acquisition date, see Note 5, "Acquisitions." The changes in the carrying amount of goodwill for the period ending December 31, 2017, by operating segment, were as follows:

(Dollars in thousands)	Advanced Connectivity Solutions	Elastomeric Material Solutions	Power Electronics Solutions	Other	Total
December 31, 2016	$ 51,693	$ 91,531	$ 62,983	$ 2,224	$ 208,431
Purchase accounting adjustment	—	346	—	—	346
DSP acquisition	—	17,793	—	—	17,793
Foreign currency translation adjustment	—	1,905	8,632	—	10,537
December 31, 2017	**$ 51,693**	**$ 111,575**	**$ 71,615**	**$ 2,224**	**$ 237,107**

Annual Impairment Testing

We perform our annual goodwill impairment testing in the fourth quarter of the year. In 2017, we estimated the fair value of our reporting units using an income approach based on the present value of future cash flows. We believe this approach yields the most appropriate evidence of fair value as our reporting units are not easily compared to other corporations involved in similar businesses. We further believe that the assumptions and rates used in our annual impairment test are reasonable, but inherently uncertain.

We currently have four reporting units with goodwill - ACS, EMS, curamik® and the Elastomer Components Division (ECD).

Other Intangible Assets

On January 6, 2017, we acquired DSP. For further detail on the other intangible assets recorded on the acquisition, see Note 5, "Acquisitions." The changes in the carrying amount of other intangible assets for the two-year period ending December 31, 2017, were as follows:

	December 31, 2017			December 31, 2016		
(Dollars in thousands)	**Gross Carrying Amount**	**Accumulated Amortization**	**Net Carrying Amount**	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Customer relationships	**$ 128,907**	**$ 22,514**	**$ 106,393**	$ 96,148	$ 14,311	$ 81,837
Technology	**73,891**	**33,491**	**40,400**	68,880	24,365	44,515
Trademarks and patents	**10,213**	**2,157**	**8,056**	6,825	1,156	5,669
Covenant not to compete	**1,799**	**1,108**	**691**	1,419	932	487
Total definite-lived other intangible assets	**214,810**	**59,270**	**155,540**	173,272	40,764	132,508
Indefinite-lived other intangible asset	**4,738**	**—**	**4,738**	4,168	—	4,168
Total other intangible assets	**$ 219,548**	**$ 59,270**	**$ 160,278**	$ 177,440	$ 40,764	$ 136,676

In the table above, gross carrying amounts and accumulated amortization may differ from prior periods due to foreign exchange rate fluctuations.

The indefinite-lived trademark other intangible asset was acquired in our acquisition of Curamik Electronics GmbH and is assessed for impairment annually or when events or changes in circumstances indicate that the carrying value may not be recoverable. The definite-lived other intangible assets are amortized using a fair value methodology that is based on the projected economic use of the related underlying asset.

In the fourth quarter of 2017, we recognized a $0.5 million impairment charge related to the remaining net book value of an other intangible asset within our ROLINX® product line in our PES operating segment.

Amortization expense was approximately $14.8 million, $11.2 million and $10.9 million in 2017, 2016 and 2015, respectively. The estimated annual future amortization expense is $15.3 million, $15.1 million, $11.8 million, $11.1 million and $10.7 million in 2018, 2019, 2020, 2021 and 2022, respectively. These amounts could vary based on changes in foreign currency exchange rates.

The weighted average amortization period as of December 31, 2017, by definite-lived other intangible asset class, is presented in the table below:

Definite-Lived Other Intangible Asset Class	Weighted Average Amortization Period
Customer relationships	9.6
Technology	5.4
Trademarks and patents	6.5
Covenant not to compete	2.5
Total definite-lived other intangible assets	**8.3**

NOTE 8 – SUMMARIZED FINANCIAL INFORMATION OF UNCONSOLIDATED JOINT VENTURES

As of December 31, 2017, we had two joint ventures, each 50% owned, which are accounted for under the equity method of accounting.

Joint Venture	Location	Operating Segment	Fiscal Year-End
Rogers INOAC Corporation (RIC)	Japan	Elastomeric Material Solutions	October 31
Rogers INOAC Suzhou Corporation (RIS)	China	Elastomeric Material Solutions	December 31

Equity income related to the joint ventures of $4.9 million, $4.1 million and $2.9 million for the years ended December 31, 2017, 2016 and 2015, respectively, is included in the consolidated statements of operations.

The summarized financial information for the joint ventures for the periods indicated was as follows:

	As of December 31,	
(Dollars in thousands)	**2017**	2016
Current assets	**$ 40,934**	$ 33,951
Noncurrent assets	**$ 4,947**	$ 5,545
Current liabilities	**$ 9,519**	$ 7,485
Shareholders' equity	**$ 36,362**	$ 32,011

	For the Years Ended December 31,		
(Dollars in thousands)	**2017**	2016	2015
Net sales	**$ 54,597**	$ 47,321	$ 43,438
Gross profit	**$ 21,462**	$ 16,829	$ 11,993
Net income	**$ 9,796**	$ 8,292	$ 5,753

Receivables from and payables to joint ventures arise during the normal course of business from transactions between us and the joint ventures. We had receivables of $3.7 million and $2.4 million as of December 31, 2017 and 2016, respectively, which were included in accounts receivable on our consolidated statements of financial position. We had payables of $2.1 million and $1.6 million as of December 31, 2017 and 2016, respectively, which were included in accounts payable on our consolidated statements of financial position.

NOTE 9 – SHARE REPURCHASE

On August 6, 2015, we initiated a share repurchase program of up to $100.0 million of the Company's capital stock. We initiated this program to mitigate potentially dilutive effects of stock options and shares of restricted stock granted by the Company, in addition to enhancing shareholder value. The share repurchase program has no expiration date, and may be suspended or discontinued at any time without notice. As of December 31, 2017, $52.0 million remained of our $100.0 million share repurchase program.

No shares of capital stock were repurchased during 2017. We repurchased the following shares of capital stock through our share repurchase program during the years presented below:

	For the Years Ended December 31,	
(Dollars in thousands)	**2017**	2016
Shares of capital stock repurchased	—	140,498
Value of capital stock repurchased	**$ —**	$ 7,995

All previous repurchases were made using cash from operations and cash on hand. Refer to "Item 5 - Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities" for further detail of the share repurchase program.

NOTE 10 – PENSION BENEFITS AND RETIREMENT HEALTH AND LIFE INSURANCE BENEFITS

During 2017, we had three qualified noncontributory defined benefit pension plans: 1) the Rogers Corporation Employee's Pension Plan for unionized hourly employees (the Union Plan); 2) the Rogers Corporation Defined Benefit Pension Plan for all other U.S. employees hired before December 31, 2007 who are salaried employees or non-union hourly employees (the Rogers Plan); and 3) the Hourly Employees Pension Plan of Arlon Inc., Microwave Material and Silicone Technologies Divisions, Bear, Delaware for employees of the acquired Arlon business (the Bear Plan). Effective October 31, 2017, the Bear Plan was merged into the Rogers Plan (the Merged Plan).

The Company also maintains the Rogers Corporation Amended and Restated Pension Restoration Plan effective as of January 1, 2004 and the Rogers Corporation Amended and Restated Pension Restoration Plan effective as of January 1, 2005 (collectively, the Nonqualified Plans). The Nonqualified Plans serve to restore certain retirement benefits that might otherwise be lost due to limitations imposed by federal law on qualified pension plans, as well as to provide supplemental retirement benefits, for certain senior executives of the Company. In addition, we sponsor multiple fully insured or self-funded medical plans and life insurance plans for certain retirees. The measurement date for all plans is December 31 for each respective plan year.

We are required, as an employer, to: (a) recognize in our consolidated statements of financial position an asset for a plan's overfunded status or a liability for a plan's underfunded status; (b) measure a plan's assets and our obligations that determine our funded status as of the end of the fiscal year; and (c) recognize changes in the funded status of a defined benefit postretirement plan in the year in which the changes occur and report these changes in accumulated other comprehensive income. In addition, actuarial gains and losses that are not immediately recognized as net periodic pension cost are recognized as a component of accumulated other comprehensive income (loss) and amortized into net periodic pension cost in future periods.

Defined Benefit Pension Plan Amendments and Retiree Medical Plan Amendments

During the fourth quarter of 2015, we changed the benefits related to the salaried and non-union hourly participants of the retirement health insurance benefits program. This program had been frozen to new participants in 2007. The 2015 amendment to the plan was approved on October 2, 2015 and resulted in a negative prior service cost, which is being amortized over the average expected remaining years of future benefit payments for this group. This change resulted in a remeasurement event requiring us to remeasure the plan liabilities, as well as the expense related to the plan, as of October 31, 2015.

All qualified noncontributory defined benefit pension plans have ceased accruing benefits. The Bear Plan was frozen previous to our acquisition of Arlon. Effective June 30, 2013, for salaried and non-union hourly employees in the United States, and effective December 31, 2013 for union employees in the United States, benefits under the Rogers Plan and the Union Plan no longer accrue.

Pension Plan Merger and Proposed Termination

The Company currently intends to terminate the Merged Plan and has requested a determination letter from the Internal Revenue Service (IRS). The termination of the Merged Plan remains subject to final approval by both management and the IRS. The Company plans to provide for lump sum distributions or annuity payments in connection with the termination of the Merged Plan and we expect the settlement process to be completed in late 2018 or early 2019. The Company lacks sufficient information as of December 31, 2017 to determine the financial impact of the proposed plan termination. At this time, there are no plans to terminate the remaining Union Plan.

(Dollars in thousands)	Pension Benefits		Retirement Health and Life Insurance Benefits	
Change in benefit obligation:	**2017**	2016	**2017**	2016
Benefit obligation at beginning of year	**$ 177,696**	$ 182,359	**$ 2,504**	$ 2,722
Service cost	**—**	—	**80**	133
Interest cost	**7,356**	7,530	**71**	75
Actuarial (gain) loss	**9,601**	(3,621)	**460**	72
Benefit payments	**(8,893)**	(8,572)	**(533)**	(498)
Plan amendment	**—**	—	**(545)**	—
Benefit obligation at end of year	**$ 185,760**	$ 177,696	**$ 2,037**	$ 2,504
Change in plan assets:	**2017**	2016	**2017**	2016
Fair value of plan assets at the beginning of the year	**$ 171,778**	$ 171,007	**$ —**	$ —
Actual return on plan assets	**16,799**	8,999	**—**	—
Employer contributions	**372**	344	**533**	498
Benefit payments	**(8,893)**	(8,572)	**(533)**	(498)
Fair value of plan assets at the end of the year	**180,056**	171,778	**—**	—
Unfunded status	**$ (5,704)**	$ (5,918)	**$ (2,037)**	$ (2,504)

Amounts included in the consolidated statements of financial position consist of:

(Dollars in thousands)	Pension Benefits		Retirement Health and Life Insurance Benefits	
	2017	2016	**2017**	2016
Noncurrent assets	**$ 3,021**	$ 2,583	**$ —**	$ —
Current liabilities	**(5)**	—	**(352)**	(512)
Noncurrent liabilities	**(8,720)**	(8,501)	**(1,685)**	(1,992)
Net amount recognized at end of year	**$ (5,704)**	$ (5,918)	**$ (2,037)**	$ (2,504)

(Dollars in thousands)	Pension Benefits		Retirement Health and Life Insurance Benefits	
	2017	2016	**2017**	2016
Net actuarial (loss) gain	**$ (59,645)**	$ (59,377)	**$ 63**	$ 523
Prior service benefit	**—**	—	**2,821**	3,878
Net amount recognized at end of year	**$ (59,645)**	$ (59,377)	**$ 2,884**	$ 4,401

The projected benefit obligation, accumulated benefit obligation, and fair value of plan assets for the pension plans with an accumulated benefit obligation in excess of plan assets were $155.8 million, $155.8 million and $147.1 million, respectively, as of December 31, 2017 and $148.6 million, $148.6 million and $140.1 million, respectively, as of December 31, 2016.

The projected benefit obligation, accumulated benefit obligation, and fair value of plan assets for the pension plans with plan assets in excess of an accumulated benefit obligation were $30.0 million, $30.0 million and $33.0 million, respectively, as of December 31, 2017. For 2016, the projected benefit obligation, accumulated benefit obligation, and fair value of plan assets for the pension plans with plan assets in excess of an accumulated benefit obligation were $29.1 million, $29.1 million and $31.7 million, respectively.

Components of Net Periodic (Benefit) Cost

(Dollars in thousands)	Pension Benefits			Postretirement Health and Life Insurance Benefits		
	2017	2016	2015	**2017**	2016	2015
Service cost	**$ —**	$ —	—	**$ 80**	$ 133	$ 411
Interest cost	**7,356**	7,530	7,523	**71**	75	216
Expected return of plan assets	**(9,221)**	(10,808)	(11,148)	**—**	—	—
Amortization of prior service cost (credit)	**—**	—	—	**(1,602)**	(1,489)	(248)
Amortization of net loss	**1,755**	1,784	1,690	**—**	(47)	(12)
Settlement charge	**—**	—	57	**—**	—	—
Net periodic benefit cost (benefit)	**$ (110)**	$ (1,494)	$ (1,878)	**$ (1,451)**	$ (1,328)	$ 367

The estimated net loss for the defined benefit pension plans that will be amortized from accumulated other comprehensive income into net periodic benefit cost over the next fiscal year is $1.8 million. The estimated net benefit for the defined benefit postretirement plans that will be amortized from accumulated other comprehensive income into net periodic benefit cost over the next fiscal year is $1.6 million.

Weighted-average assumptions used to determine benefit obligations at December 31:

	Pension Benefits		Retirement Health and Life Insurance Benefits	
	2017	2016	**2017**	2016
Discount rate	**3.70%**	4.25%	**3.25%**	3.25%

Weighted-average assumptions used to determine net benefit cost for the years ended December 31:

	Pension Benefits		Retirement Health and Life Insurance Benefits	
	2017	2016	**2017**	2016
Discount rate	**3.70%**	4.25%	**3.25%**	3.00%
Expected long-term rate of return on plan assets	**4.94%**	5.51%	**—**	—

Rate of compensation increase - An expected rate of compensation increase was not included in the weighted average assumptions as there would be no impact to the net benefit cost, as the plans have been previously frozen.

Discount rate - To determine the discount rate, we review current market indices of high quality corporate bonds, particularly the PruCurve index, to ensure that the rate used in our calculations is consistent and within an acceptable range based on these indices, which reflect current market conditions. The market-based rates are modified to be Rogers-specific, which is done by applying our pension benefit cash flow projections to the generic index rate.

Long-term rate of return on assets - To determine the expected long-term rate of return on plan assets, we review historical and projected portfolio performance, the historical long-term rate of return, and how any change in the allocation of the assets could affect the anticipated returns. Adjustments are made to the projected rate of return if it is deemed necessary based on those factors and other current market trends.

Health care cost trend rates - For measurement purposes as of December 31, 2017 we assumed annual health care cost trend rates of 7.25% and 7.25% for covered health care benefits for retirees pre-age 65 and post-age 65, respectively. The rates were assumed to decrease gradually by 0.25% annually until reaching 4.50% and 4.50%, respectively, and remain at those levels thereafter. For measurement purposes as of December 31, 2016, we assumed annual health care cost trend rates of 7.50% and 7.50% for covered health care benefits for retirees pre-age 65 and post-age 65, respectively. Assumed health care cost trend rates may have a significant effect on the amounts reported for the health care plans. A one-percentage point change in assumed health care cost trend rates would be expected to have the following effects:

(Dollars in thousands)	Increase	Decrease
Effect on total service and interest cost	$ 9	$ (9)
Effect on other postretirement benefit obligations	68	(63)

Plan Assets

Our defined benefit pension assets are invested with the objective of achieving a total rate of return over the long-term that is sufficient to fund future pension obligations. In managing these assets and our investment strategy, we take into consideration future cash contributions to the plans, as well as the potential of the portfolio underperforming the market, which is partially mitigated by maintaining a diversified portfolio of assets**.**

In order to meet our investment objectives, we set asset allocation target ranges based on current funding status and future projections in order to mitigate the risk in the plan while maintaining its funded status. In November of 2014 we implemented a pension risk reduction strategy related to our investments, which included a change in our asset mix to hold a larger amount of fixed income securities. At December 31, 2017, we held approximately 4% equity securities and 96% fixed income and short-term cash securities in our portfolio, compared to December 31, 2016 when we held approximately 27% equity securities and 73% fixed income securities.

In determining our investment strategy and calculating the net benefit cost, we utilized an expected long-term rate of return on plan assets. This rate is developed based on several factors, including the plans' asset allocation targets, the historical and projected performance on those asset classes, and on the plans' current asset composition. To justify our assumptions, we analyze certain data points related to portfolio performance. For example, we analyze the actual historical performance of our total plan assets, which has generated a return of approximately 7.4% over the past 20 year period. Based on the historical returns and the projected future returns we determined that a target return of 4.9% is appropriate for the current portfolio. Investments were stated at fair value as of the dates reported.

The following table presents the fair value of the pension plan net assets by asset category as of December 31, 2017 and 2016:

(Dollars in thousands)	**2017**	2016
Pooled separate accounts	**$ 4,610**	$ 7,587
Fixed income bonds	**162,934**	111,070
Mutual funds	**6,223**	44,054
Guaranteed deposit account	**6,289**	9,067
Total assets at fair value	**$ 180,056**	$ 171,778

Securities traded on a national securities exchange are valued at the last reported sales price on the last business day of the plan year. The fair value of the guaranteed deposit account was determined through discounting expected future investment cash flow from both investment income and repayment of principal for each investment purchased.

The estimated fair values of the participation units owned by the plan in pooled separate accounts were based on quoted redemption values and adjusted for management fees and asset charges, as determined by the record keeper, on the last business day of the Plan year. Pooled separate accounts are accounts established solely for the purpose of investing the assets of one or more plans. Funds in a separate account are not commingled with other assets of the Company for investment purposes.

The following tables set forth by level, within the fair value hierarchy, the assets carried at fair value as of December 31, 2017 and 2016.

	Assets at Fair Value as of December 31, 2017			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Pooled separate accounts	**$ —**	**$ 4,610**	**$ —**	**$ 4,610**
Fixed income bonds	**—**	**162,934**	**—**	**162,934**
Mutual funds	**6,223**	**—**	**—**	**6,223**
Guaranteed deposit account	**—**	**—**	**6,289**	**6,289**
Total assets at fair value	**$ 6,223**	**$ 167,544**	**$ 6,289**	**$ 180,056**

	Assets at Fair Value as of December 31, 2016			
(Dollars in thousands)	Level 1	Level 2	Level 3	Total
Pooled separate accounts	$ —	$ 7,587	$ —	$ 7,587
Fixed income bonds	—	111,070	—	111,070
Mutual funds	44,054	—	—	44,054
Guaranteed deposit account	—	—	9,067	9,067
Total assets at fair value	$ 44,054	$ 118,657	$ 9,067	$ 171,778

The table below sets forth a summary of changes in the fair value of the guaranteed deposit account's Level 3 assets for the year ended December 31, 2017:

(Dollars in thousands)	Guaranteed Deposit Account
Balance at beginning of year	$ 9,067
Unrealized gains relating to instruments still held at the reporting date	216
Purchases, sales, issuances and settlements (net)	(2,994)
Balance at end of year	**$ 6,289**

Cash Flows

Contributions

We made required contributions of $0.4 million and $0.3 million to our qualified defined benefit pension plans in 2017 and 2016, respectively. We did not make any voluntary contributions to our defined benefit pension plans in 2017 or 2016. As there is no funding requirement for the nonqualified defined benefit pension plans nor the Retiree Health and Life Insurance benefit plans, we fund the amount of benefit payments made during the year.

Estimated Future Payments

The following pension benefit payments are expected to be paid through the utilization of plan assets for the funded plans and from the Company's operating cash flows for the unfunded plans. The Retiree Health and Life Insurance benefits, for which no funding has been made, are expected to be paid from the Company's operating cash flows. The benefit payments are based on the same assumptions used to measure our benefit obligation at the end of fiscal 2017.

(Dollars in thousands)	Pension Benefits	Retiree Health and Life Insurance Benefits
2018	$ 9,261	$ 352
2019	$ 9,335	$ 316
2020	$ 9,423	$ 267
2021	$ 9,644	$ 174
2022	$ 9,956	$ 128
2023-2027	$ 52,676	$ 795

NOTE 11 – EMPLOYEE SAVINGS AND INVESTMENT PLANS

We sponsor the Rogers Employee Savings and Investment Plan (RESIP), a 401(k) plan for domestic employees. Employees can defer an amount they choose, up to the yearly IRS limit of $18,000. Certain eligible participants are also allowed to contribute the maximum catch-up contribution per IRS regulations. Our matching contribution is 6% of an eligible employee's annual pre-tax contribution at a rate of 100% for the first 1% and 50% for the next 5% for a total match of 3.5%. Unless otherwise indicated by the participant, the matching dollars are invested in the same funds as the participant's contributions. RESIP related expense amounted to $4.0 million in 2017, $3.0 million in 2016 and $3.2 million in 2015, which related solely to our matching contributions.

We acquired DSP in January 2017 and eligible DSP employees were included in the RESIP as of the third quarter of 2017. Compensation expense related to the additional DSP employees was de minimis in 2017.

We acquired DeWAL in November 2016. Eligible DeWAL employees are covered under the DeWAL Industries, Inc. 401k Profit Sharing Plan (DeWAL Plan). The DeWAL Plan matching contribution is 100% of the first 3% of employee pre-tax contributions. Compensation expense related to the DeWAL Plan was de minimis in 2017 and for the period in 2016 subsequent to the acquisition.

NOTE 12 - DEBT

On June 18, 2015, we entered into a secured five year credit agreement with JPMorgan Chase Bank, N.A, as administrative agent, and the lenders party thereto (the "Second Amended Credit Agreement"). The Second Amended Credit Agreement provided (1) a $55.0 million term loan; (2) up to $295.0 million of revolving loans, with sublimits for multicurrency borrowings, letters of credit and swing-line notes; and (3) a $50.0 million expansion feature.

On February 17, 2017, we entered into a secured five year credit agreement with JPMorgan Chase Bank, N.A., as administrative agent, and the lenders party thereto (the "Third Amended Credit Agreement"), which amended and restated the Second Amended Credit Agreement. The Third Amended Credit Agreement refinanced the Second Amended Credit Agreement, eliminated the term loan under the Second Amended Credit Agreement, increased the principal amount of the revolving credit facility to up to $450.0 million borrowing capacity, with sublimits for multicurrency borrowings, letters of credit and swing-line notes, and provided an additional $175.0 million accordion feature. Borrowings may be used to finance working capital needs, for letters of credit and for general corporate purposes in the ordinary course of business, including the financing of permitted acquisitions (as defined in the Third Amended Credit Agreement).

Borrowings under the Third Amended Credit Agreement can be made as alternate base rate loans or euro-currency loans. Alternate base rate loans bear interest that includes a base reference rate plus a spread of 37.5 to 75.0 basis points, depending on our leverage ratio. The base reference rate is the greater of the prime rate; federal funds effective rate (or the overnight bank funding rate, if greater) plus 50 basis points; or adjusted 1-month LIBOR plus 100 basis points. Euro-currency loans bear interest based on adjusted LIBOR plus a spread of 137.5 to 175.0 basis points, depending on our leverage ratio.

We incurred interest expense on our outstanding debt of $5.2 million, $3.1 million, and $3.5 million for the years ended 2017, 2016 and 2015, respectively.

In addition to interest payable on the principal amount of indebtedness outstanding from time to time under the Third Amended Credit Agreement, we were required to pay a quarterly fee of 20 to 30 basis points (based upon our leverage ratio) of the unused amount of the lenders' commitments under the Third Amended Credit Agreement. We incurred an unused commitment fee of $0.6 million, $0.4 million and $0.3 million for the years ended December 31, 2017, 2016 and 2015, respectively.

The Third Amended Credit Agreement contains customary representations, warranties, covenants, mandatory prepayments and events of default under which our payment obligations may be accelerated. If an event of default occurs, the lenders may, among other things, terminate their commitments and declare all outstanding borrowings to be immediately due and payable together with accrued interest and fees. The financial covenants include requirements to maintain (1) a leverage ratio of no more than 3.25 to 1.00, subject to an election to increase the maximum leverage ratio to 3.50 to 1.00 for one fiscal year in connection with a permitted acquisition, and (2) an interest coverage ratio of no less than 3.00 to 1.00.

All obligations under the Third Amended Credit Agreement are guaranteed by each of our existing and future material domestic subsidiaries, as defined in the Third Amended Credit Agreement (the Guarantors). The obligations are also secured by a Third Amended and Restated Pledge and Security Agreement, dated as of February 17, 2017, entered into by us and the Guarantors which grants to the administrative agent, for the benefit of the lenders, a security interest, subject to certain exceptions, in substantially all of the non-real estate assets of the Guarantors. These assets include, but are not limited to, receivables, equipment, intellectual property, inventory, and stock in certain subsidiaries.

All revolving loans under the Third Amended Credit Agreement are due on the maturity date, February 17, 2022. We are not required to make any quarterly principal payments under the Third Amended Credit Agreement, however, during 2017, we made discretionary principal payments of $110.2 million in aggregate to reduce the amount outstanding on our credit facility. As of December 31, 2017 we have $131.0 million in outstanding borrowings under the Third Amended Credit Agreement.

At December 31, 2017, we have $2.3 million of outstanding line of credit issuance costs that will be amortized over the life of the Third Amended Credit Agreement, which will terminate in February 2022. We incurred amortization expense of $0.5 million in the years ended December 31, 2017, 2016 and 2015 related to these deferred costs.

In March 2017, we entered into an interest rate swap to hedge the variable interest rate on $75.0 million of our $450.0 million revolving credit facility. See further discussion in Note 3, "Hedging Transactions and Derivative Financial Instruments."

Restriction on Payment of Dividends

Our Third Amended Credit Agreement generally permits us to pay cash dividends to our shareholders, provided that (i) no default or event of default has occurred and is continuing or would result from the dividend payment and (ii) our leverage ratio does not exceed 2.75 to 1.00. If our leverage ratio exceeds 2.75 to 1.00, we may nonetheless make up to $20.0 million in restricted payments, including cash dividends, during the fiscal year, provided that no default or event of default has occurred and is continuing or would result from the payments. As of December 31, 2017, our leverage ratio did not exceed 2.75 to 1.00.

Capital Lease

We have a capital lease obligation related to our manufacturing facility in Eschenbach, Germany. Under the terms of the leasing agreement, we have an option to purchase the property upon the expiration of the lease in 2021 at a price which is the greater of (i) the then-current market value or (ii) the residual book value of the land including the buildings and installations thereon. The total obligation recorded for this lease as of December 31, 2017 and 2016 was $5.7 million and $5.3 million, respectively. Depreciation expense related to this capital lease was $0.3 million for each of the years ending December 31, 2017, 2016 and 2015. These expenses are included as depreciation expense in cost of sales on our consolidated statements of operations. Accumulated depreciation as of December 31, 2017 and 2016 was $3.3 million and $3.4 million, respectively.

We also incurred interest expense on this capital lease of $0.1 million, $0.3 million and $0.4 million for the years ended December 31, 2017, 2016 and 2015, respectively. Interest expense related to the debt recorded on the capital lease is included in interest expense, net on the consolidated statements of operations.

In 2017, we entered into two additional capital lease agreements for office related equipment in various worldwide locations. The total obligation recorded for the capital leases as of December 31, 2017 was $0.8 million. Depreciation expense related to the capital leases was $0.1 million for the year ended December 31, 2017. These expenses are included as depreciation expense in selling, general and administrative expenses on our consolidated statements of operations. Accumulated depreciation as of December 31, 2017 was $0.1 million.

NOTE 13 – INCOME TAXES

Consolidated income before income taxes consisted of:

(Dollars in thousands)	**2017**	2016	2015
Domestic	**$ 39,751**	$ 10,888	$ 14,832
International	**93,174**	71,392	51,341
Total	**$ 132,925**	$ 82,280	$ 66,173

The income tax expense in the consolidated statements of operations consisted of:

(Dollars in thousands)	Current	Deferred	Total
2017			
Domestic	**$ 7,535**	**$ 21,936**	**$ 29,471**
International	**27,418**	**(4,423)**	**22,995**
Total	**$ 34,953**	**$ 17,513**	**$ 52,466**
2016			
Domestic	$ 2,078	$ 3,376	$ 5,454
International	24,537	4,006	28,543
Total	$ 26,615	$ 7,382	$ 33,997
2015			
Domestic	$ 993	$ 4,272	$ 5,265
International	15,192	(604)	14,588
Total	$ 16,185	$ 3,668	$ 19,853

Deferred tax assets and liabilities as of December 31, 2017 and 2016, were comprised of the following:

(Dollars in thousands)	**2017**	2016
Deferred tax assets		
Accrued employee benefits and compensation	**8,410**	9,899
Postretirement benefit obligations	**—**	3,335
Tax loss and credit carryforwards	**7,905**	7,146
Reserves and accruals	**4,699**	6,361
Other	**2,977**	2,792
Total deferred tax assets	**23,991**	29,533
Less deferred tax asset valuation allowance	**(8,754)**	(6,388)
Total deferred tax assets, net of valuation allowance	**15,237**	23,145
Deferred tax liabilities		
Depreciation and amortization	**14,300**	14,965
Postretirement benefit obligations	**2,311**	—
Unremitted earnings	**3,100**	7,239
Other	**224**	190
Total deferred tax liabilities	**19,935**	22,394
Net deferred tax asset	**$ (4,698)**	$ 751

At December 31, 2017, the Company had state net operating loss carryforwards ranging from $0.4 million to $6.6 million in various state taxing jurisdictions, which expire between 2021 and 2037. We also had approximately $8.6 million of credit carryforwards in Arizona, which will expire between 2018 and 2032. We believe that it is more likely than not that the benefit from the state net operating loss carryforwards and state credits will not be realized. In recognition of this risk, we have provided a valuation allowance of $7.6 million relating to these carryforwards.

We currently have approximately $2.3 million of research and development credits that begin to expire in 2026, and $0.5 million of minimum tax credits that can be carried forward indefinitely.

We adopted ASU 2016-09 on January 1, 2017. Upon adoption, we recognized excess tax benefits of approximately $12.7 million in deferred tax assets associated with research and development and foreign tax credit carryforwards that were previously not recognized in a cumulative-effect adjustment to retained earnings. In addition, the new guidance requires that all of the tax effects related to share-based payments at settlement or expiration be recorded through the statement of operations which resulted in a $3.9 million income tax benefit in 2017.

We had a valuation allowance of $8.8 million at December 31, 2017 and $6.4 million at December 31, 2016, against certain of our deferred tax assets, primarily carryforwards expected to expire unused and deferred tax assets that are capital in nature. No valuation allowance has been provided on our other deferred tax assets, as we believe it is more likely than not that all such assets will be realized in the applicable jurisdictions. We reached this conclusion after considering the availability of taxable income in prior carryback years, tax planning strategies, and the likelihood of future taxable income exclusive of reversing temporary differences and carryforwards in the respective jurisdictions or entities. Differences between forecasted and actual future operating results or changes in carryforward periods could adversely impact the amount of deferred tax asset considered realizable.

In appropriate circumstances we have the opportunity to undertake a tax planning strategy to ensure that our tax credit carryforwards do not expire unutilized. This strategy is based upon our ability to make a federal tax election to capitalize certain expenses that will result in generating taxable income to allow us to utilize our tax credit carryforwards before they expire. We would undertake such a strategy to realize these tax credit carryforwards prior to expiration as it is reasonable, prudent, and feasible.

Income tax expense differs from the amount computed by applying the United States federal statutory income tax rate to income before income taxes. The reasons for this difference were as follows:

(Dollars in thousands)	**2017**	2016	2015
Tax expense at Federal statutory income tax rate	**$ 46,529**	$ 28,798	$ 23,161
International tax rate differential	**(9,603)**	(2,260)	(4,792)
Foreign source income, net of tax credits (excluding U.S. Tax Reform)	**1,087**	1,215	2,449
State tax, net of federal	**279**	(200)	**(416)**
Unrecognized tax benefits	**2,874**	(5,555)	148
U.S. Tax Reform	**13,683**	—	—
Equity compensation excess tax deductions	**(3,867)**	—	—
General business credits	**(1,080)**	(1,125)	(908)
Acquisition related expenses	**—**	—	453
Distribution related foreign taxes	**2,173**	12,433	—
Valuation allowance change (excluding U.S. Tax Reform)	**1,393**	171	(1,489)
Other	**(1,002)**	520	1,247
Income tax expense (benefit)	**$ 52,466**	$ 33,997	$ 19,853

Withholding taxes related to distributions from China of $6.3 million, previously reported in the table above as Foreign source income, net of tax credits, have been reclassified in 2016 to distribution related foreign taxes to conform to the current year presentation.

Our effective tax rate for 2017 was 39.5%, including the impact of U.S. Tax Reform, compared to 41.3% in 2016. The 2017 rate decrease was primarily due to lower foreign tax impact on remitted and unremitted foreign earnings and profits, equity compensation excess tax deductions recognized in 2017 and increased international tax rate benefits due to earnings mix. This was substantially offset by the impact of U.S. Tax Reform provisional estimates, a decrease in reversal of reserves associated with uncertain tax positions and a change in valuation allowance associated with deferred tax assets that are capital in nature. Excluding the impact of U.S. Tax Reform, our effective tax rate for 2017 was 29.2%.

Historically our intention was to permanently reinvest the majority of our foreign earnings indefinitely or to distribute them only when it is tax efficient to do so. As a result of certain internal restructuring transactions effectuated to more closely align our subsidiaries from an operational, legal and geographic perspective and improve management of financial resources, with respect to offshore distributions, we modified our assertion of certain accumulated foreign subsidiary earnings considered permanently reinvested during 2016. This change resulted in accrual of a deferred tax liability of $6.1 million associated with distribution related foreign taxes on undistributed earnings of our Chinese subsidiaries that are no longer considered permanently reinvested. In the event that we distributed these funds to other offshore subsidiaries, these taxes would become due. In addition, we incurred $6.3 million of withholding taxes related to distributions from China.

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 was signed into law in the United States, making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a U.S. corporate tax rate decrease from 35% to 21% effective for tax years beginning after December 31, 2017, the transition of U.S international taxation from a worldwide tax system to a

territorial system, and a one-time transition tax on the mandatory deemed repatriation of cumulative foreign earnings as of December 31, 2017. We have calculated our best estimate of the impact of U.S. Tax Reform in our year-end income tax provision in accordance with our current understanding of U.S. Tax Reform and guidance available as of the date of this filing. As a result, we have recorded $13.7 million as an additional income tax expense in the fourth quarter of 2017, the period in which the legislation was enacted. The provisional amount related to the remeasurement of certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future was $1.7 million. The provisional amount related to the one-time transition tax on the mandatory deemed repatriation of foreign earnings was $12.0 million based on cumulative foreign earnings of $314.8 million. We had sufficient tax credit carryforwards to cover the impact of the transition tax, and as a result do not have any long term liability on our balance sheet at December 31, 2017 associated with the transition tax.

On December 22, 2017, Staff Accounting Bulletin No. 118 (SAB 118) was issued to address the application of US GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of U.S. Tax Reform. In accordance with SAB 118, we have determined that the $1.7 million of the deferred tax expense recorded in connection with the remeasurement of certain deferred tax assets and liabilities and the $12.0 million of tax expense recorded in connection with the transition tax on the mandatory deemed repatriation of foreign earnings, both referred to above, were provisional amounts and reasonable estimates at December 31, 2017. Management will subject these estimates to further analysis related to certain matters, such as federal and state interpretations of U.S. Tax Reform, U.S. Treasury regulations, administrative interpretations or court decisions, a more detailed analysis of post-1986 undistributed foreign subsidiary E&P that may require further adjustments and changes to certain estimates as well as potential correlative adjustments. Any subsequent adjustment to these amounts will be recorded to tax expense in the quarter of 2018 when the analysis is complete.

As a result of U.S. Tax Reform, all post-1986 unremitted foreign E&P as of December 31, 2017 have been subjected to U.S. tax through the transition tax. Our foreign unremitted earnings could be subject to additional taxes if they are redeployed outside of their country of origin. With the exception of certain of our Chinese subsidiaries, we have historically and continue to assert that foreign earnings are indefinitely reinvested. While we have not currently changed our assertion with respect to foreign earnings, compared to prior years, we are currently evaluating the impact of U.S. Tax Reform on our global structure and any associated impacts it may have on our assertion on a go forward basis and as such have not included a provisional estimate of the impact.

Unrecognized tax benefits, excluding potential interest and penalties, for the years ended December 31, 2017 and December 31, 2016, were as follows:

(Dollars in thousands)	**2017**	2016
Beginning balance	**$ 5,883**	$ 10,571
Gross increases - current period tax positions	**7,056**	520
Gross increases - tax positions in prior periods	**3,243**	—
Gross decreases - tax positions in prior periods	**(375)**	(498)
Foreign currency exchange	**467**	(137)
Lapse of statute of limitations	**(1,709)**	(4,573)
Ending balance	**$ 14,565**	$ 5,883

Included in the balance of unrecognized tax benefits as of December 31, 2017 were $10.6 million of tax benefits that, if recognized, would impact the effective tax rate. Also included in the balance of unrecognized tax benefit as of December 31, 2017 were $4.0 million of tax benefits that, if recognized, would result in adjustments to other tax accounts; primarily deferred taxes.

We recognize interest accrued related to unrecognized tax benefit as income tax expense. Related to the unrecognized tax benefits noted above, at December 31, 2017 and 2016, we had accrued potential interest and penalties of approximately $0.6 million and $0.4 million, respectively. We have recorded a net tax expense of $0.2 million during 2017, net income tax benefit of $0.9 million during 2016 and $0.1 million tax expense during 2015. It is possible that up to $8.1 million of our currently unrecognized tax benefits could be recognized within 12 months as a result of projected resolutions of worldwide tax disputes or the expiration of the statute of limitations.

We are subject to taxation in the U.S. and various state and foreign jurisdictions. Our tax years from 2013 through 2017 are subject to examination by the tax authorities. With few exceptions, we are no longer subject to U.S. federal, state, local and foreign examinations by tax authorities for the years before 2013.

NOTE 14 - SHAREHOLDERS' EQUITY AND EQUITY COMPENSATION

Capital Stock and Equity Compensation Awards

Under the Rogers Corporation 2009 Long-Term Equity Compensation Plan, we may grant stock options to officers, directors, and other key employees at exercise prices that are at least equal to the fair market value of our stock on the date of grant. Under our older plans, stock options to officers, directors, and other key employees could be granted at exercise prices that were as low as 50% of the fair market value of our stock as of the date of grant. However, in terms of these older plans, virtually all such options were granted at exercise prices equal to the fair market value of our stock as of the date of grant. Stock options granted to employees in the United States generally become exercisable over a four-year period from the grant date and expire ten years after such grant.

We award each non-management director deferred stock units, which permit non-management directors to receive, at a later date, one share of Rogers stock for each deferred stock unit with no payment of any consideration by the director at the time the shares are received. For director stock options, the exercise price was equal to the fair market value of our stock as of the grant date, were immediately exercisable, and expire ten years after the date of grant. Our 2005 Equity Compensation Plan and our 2009 Long-Term Equity Compensation Plan also permit the granting of restricted stock units and certain other forms of equity awards to officers and other key employees, although no new equity awards have been made pursuant to the 2005 plan since shareholder approval of our 2009 Long-Term Equity Compensation Plan.

Shares of capital stock reserved for possible future issuance were as follows:

	As of December 31,	
	2017	2016
Shares reserved for issuance under the stock acquisition program [1]	**120,883**	120,883
Shares reserved for issuance under outstanding stock options and restricted stock unit awards	**545,018**	659,302
Additional shares reserved for issuance under Rogers Corporation 2009 Long-Term Equity Compensation Plan	**793,603**	892,163
Shares reserved for issuance under the Rogers Employee Savings and Investment Plan [2]	**169,044**	169,044
Shares reserved for issuance under the Rogers Corporation Global Stock Ownership Plan for Employees	**117,987**	133,113
Deferred compensation to be paid in stock, including deferred stock units	**17,100**	22,752
Total	**1,763,635**	1,997,257

[1] As of December 31, 2017, the Company no longer offers capital stock under the stock acquisition program.

[2] As of December 31, 2017, the Company no longer offers its capital stock as an investment option under the Rogers Employee Savings and Investment Plan.

Stock Options

Stock options have been granted under various equity compensation plans. While we may grant options to employees that become exercisable at different times or within different periods, we have generally granted options to employees that vest and become exercisable in one-third increments on the second, third and fourth anniversaries of the grant dates. The maximum contractual term for all options is normally ten years. We use the Black-Scholes option-pricing model to calculate the grant-date fair value of an option. We have not granted any stock options since the first quarter of 2012.

In most cases, we recognize expense using the straight-line attribution method for stock option grants. The amount of equity compensation recognized during a period is based on the value of the portion of the awards that are ultimately expected to vest. We previously estimated the forfeiture rate based on historical experience and our expectations regarding future terminations. To the extent our actual forfeiture rate was different from our estimate, equity compensation expense was adjusted accordingly. In accordance with our adoption of ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting,* on January 1, 2017, we now account for forfeitures as they occur. The adoption of this standard, with respect to treatment of forfeitures, did not have a material impact on our condensed consolidated financial statements in the period of adoption.

Our employee stock option agreements contain a retirement provision, which results in the vesting of any unvested options immediately upon retirement. This provision affects the timing of option expense recognition for options meeting the criteria for retirement. We recognize compensation expense over the period from the date of grant to the date retirement eligibility is met, if it is shorter than the required service period, or upon grant if the employee is eligible for retirement on that date.

As of December 31, 2017, there was no unrecognized compensation cost related to unvested stock option awards.

The first quarter of 2016 was the final quarter in which we recognized stock based compensation expense related to previously issued stock option grants, and the amount of such expense recorded in 2016 was de minimis. We recognized $0.2 million of compensation expense related to stock options for the year ended December 31, 2015.

A summary of the activity under our stock option plans as of December 31, 2017 and changes during the year then ended, is presented below:

	Options Outstanding	Weighted- Average Exercise Price Per Share	Weighted-Average Remaining Contractual Life in Years	Aggregate Intrinsic Value
Options outstanding at December 31, 2016	116,575	$ 37.76	3.2	4,552,580
Options exercised	(83,292)	37.04		
Options forfeited	—	—		
Options outstanding at December 31, 2017	33,283	36.40	2.2	4,177,655
Options exercisable at December 31, 2017	33,283	36.40	2.2	4,177,655
Options vested at December 31, 2017	33,283	36.40	2.2	4,177,655

During the years ended December 31, 2017 and 2016, the total intrinsic value of options exercised (i.e., the difference between the market price at time of exercise and the price paid by the individual to exercise the options) was $6.0 million and $2.1 million, respectively. The total amount of cash received from the exercise of these options was $3.1 million and $4.1 million, during the years ended December 31, 2017 and 2016, respectively. The total grant-date fair value of stock options that vested during 2016 was de minimis and in 2015 was $0.2 million.

A summary of the activity under our stock option plans for the fiscal years ended 2017, 2016 and 2015, is presented below:

	2017		2016		2015	
	Options Outstanding	**Weighted-Average Exercise Price Per Share**	Options Outstanding	Weighted-Average Exercise Price Per Share	Options Outstanding	Weighted-Average Exercise Price Per Share
Outstanding at beginning of year	**116,575**	**$ 37.76**	212,038	$ 40.47	393,347	$ 40.72
Options exercised	**(83,292)**	**37.04**	(95,113)	43.56	(178,759)	40.90
Options forfeited	**—**	**—**	(350)	44.32	(2,550)	40.09
Outstanding at year-end	**33,283**	**36.40**	116,575	37.76	212,038	40.47
Options exercisable at year-end	**33,283**		116,575		204,394	

Performance-Based Restricted Stock Units

We currently have performance-based restricted stock unit awards from 2015, 2016 and 2017 outstanding. These awards generally cliff vest at the end of a three year measurement period. However, employees whose employment terminates during the measurement period due to death, disability, or, in certain cases, retirement may receive a pro-rata payout based on the number of days they were employed during the vesting period. Participants are eligible to be awarded shares ranging from 0% to 200% of the original award amount, based on certain defined performance measures. Compensation expense is recognized using the straight line method over the vesting period, unless the employee has an accelerated vesting schedule.

The 2015 awards have two measurement criteria on which the final payout of each award is based - (i) the three year return on invested capital (ROIC) compared to that of a specified group of peer companies, and (ii) the three year total shareholder return (TSR) on the performance of our capital stock as compared to that of a specified group of peer companies. The 2016 and 2017 awards have one measurement criteria, the three year total shareholder return (TSR) on the performance of our capital stock as compared to that of a specified group of peer companies. In accordance with the applicable accounting literature, the ROIC portion of the award is considered a performance condition. As such, the fair value of the ROIC portion is determined based on the market value of the underlying stock price at the grant date with cumulative compensation expense recognized to date being increased or decreased based on changes in the forecasted pay out percentage at the end of each reporting period. The TSR portion of the award is considered a market condition. As such, the fair value of this award was determined on the date of grant using a Monte Carlo simulation valuation model with related compensation expense fixed on the grant date and expensed on a straight-line basis over the life of the awards that ultimately vest with no changes for the final projected payout of the award.

Below were the assumptions used in the Monte Carlo calculation:

	2017	2016
Expected volatility	**33.6%**	29.6%
Expected term (in years)	**3**	3
Risk-free interest rate	**1.38%**	0.93%

Expected volatility – In determining expected volatility, we have considered a number of factors, including historical volatility.

Expected term – We use the vesting period of the award to determine the expected term assumption for the Monte Carlo simulation valuation model.

Risk-free interest rate – We use an implied "spot rate" yield on U.S. Treasury Constant Maturity rates as of the grant date for our assumption of the risk-free interest rate.

Expected dividend yield – We do not currently pay dividends on our capital stock; therefore, a dividend yield of 0% was used in the Monte Carlo simulation valuation model.

Forfeiture Rate – We previously estimated the forfeiture rate based on historical experience and our expectations regarding future terminations. To the extent our actual forfeiture rate was different from our estimate, equity compensation expense was adjusted accordingly. In accordance with our adoption of ASU 2016-09, *Improvements to Employee Share-Based Payment Accounting,* on January 1, 2017, we now account for forfeitures as they occur. The adoption of this standard, with respect to treatment of forfeitures, did not have a material impact on our condensed consolidated financial statements in the period of adoption.

A summary of activity under the performance-based restricted stock units plans for the fiscal years ended 2017, 2016 and 2015 is presented below:

	2017		2016		2015	
	Awards Outstanding	**Weighted-Average Grant Date Fair Value**	Awards Outstanding	Weighted-Average Grant Date Fair Value	Awards Outstanding	Weighted-Average Grant Date Fair Value
Non-vested awards outstanding at beginning of year	**151,769**	**$ 89.72**	107,229	$ 66.13	92,437	$ 52.75
Awards granted	**56,147**	**110.77**	84,443	69.01	51,475	78.01
Stock issued	**(34,442)**	**86.59**	(25,397)	72.68	(20,910)	41.27
Awards forfeited or expired	**(4,272)**	**99.35**	(14,506)	104.83	(15,773)	59.45
Non-vested awards outstanding at end of year	**169,202**	**$ 97.16**	151,769	$ 89.72	107,229	$ 66.13

We recognized $4.7 million, $4.6 million and $3.2 million of compensation expense related to performance-based restricted stock units for the years ended December 31, 2017, 2016 and 2015, respectively. As of December 31, 2017, there was $5.9 million of total unrecognized compensation cost related to unvested performance-based restricted stock units. That cost is expected to be recognized over a weighted-average period of 1.4 years.

Time-Based Restricted Stock Units

We currently have time-based restricted stock unit grants from 2015, 2016 and 2017 outstanding. These grants all ratably vest on the first, second and third anniversaries of the original grant date. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period. The fair value of the award is determined based on the market value of the underlying stock price at the grant date.

	2017		2016		2015	
	Awards Outstanding	**Weighted-Average Grant Date Fair Value**	Awards Outstanding	Weighted-Average Grant Date Fair Value	Awards Outstanding	Weighted-Average Grant Date Fair Value
Non-vested awards outstanding at beginning of year	**239,189**	**$ 57.71**	208,318	$ 64.27	238,386	$ 53.80
Awards granted	**80,535**	**83.17**	118,660	51.70	75,160	77.15
Stock issued	**(140,208)**	**58.18**	(60,326)	64.03	(93,813)	48.35
Awards forfeited or expired	**(6,185)**	**60.70**	(27,463)	64.60	(11,415)	61.32
Non-vested awards outstanding at end of year	**173,331**	**$ 69.10**	239,189	$ 57.71	208,318	$ 64.27

We recognized $5.7 million, $5.6 million and $5.0 million of compensation expense related to time-based restricted stock units for years ended December 31, 2017, 2016 and 2015, respectively. As of December 31, 2017, there was $7.3 million of total unrecognized compensation cost related to unvested time-based restricted stock units. That cost is expected to be recognized over a weighted-average period of 1.5 years.

Deferred Stock Units

We grant deferred stock units to non-management directors. These awards are fully vested on the date of grant and the related shares are generally issued on the 13th month anniversary of the grant date unless the individual elects to defer the receipt of these shares. Each deferred stock unit results in the issuance of one share of Rogers' stock. The grant of deferred stock units is typically done annually in the second quarter of each year. The fair value of the award is determined based on the market value of the underlying stock price at the grant date.

	2017		2016		2015	
	Awards Outstanding	**Weighted-Average Grant Date Fair Value**	Awards Outstanding	Weighted-Average Grant Date Fair Value	Awards Outstanding	Weighted-Average Grant Date Fair Value
Awards outstanding at beginning of year	**11,900**	**$ 58.82**	23,950	$ 27.22	30,150	$ 24.43
Awards granted	**9,250**	**109.48**	11,900	58.82	10,300	73.79
Stock issued	**(11,900)**	**109.36**	(23,950)	52.69	(16,500)	51.20
Awards outstanding at end of year	**9,250**	**$ 109.48**	11,900	$ 58.82	23,950	$ 27.22

We recognized compensation expense related to deferred stock units of $1.0 million, $0.7 million and $0.8 million, for the years ended December 31, 2017, 2016 and 2015, respectively.

Employee Stock Purchase Plan

We have an employee stock purchase plan (ESPP) that allows eligible employees to purchase, through payroll deductions, shares of our capital stock at a discount to fair market value. The ESPP has two 6 month offering periods each year, the first beginning in January and ending in June and the second beginning in July and ending in December. The ESPP contains a look-back feature that allows the employee to acquire stock at a 15% discount from the underlying market price at the beginning or end of the applicable period, whichever is lower. We recognize compensation expense on this plan ratably over the offering period based on the fair value of the anticipated number of shares that will be issued at the end of each offering period. Compensation expense is adjusted at the end of each offering period for the actual number of shares issued. Fair value is determined based on two factors: (i) the 15% discount amount on the underlying stock's market value on the first day of the applicable offering period, and (ii) the fair value of the look-back feature determined by using the Black-Scholes model. We recognized approximately $0.5 million of compensation expense associated with the plan for the years ended December 31, 2017, 2016 and 2015, respectively.

NOTE 15 – COMMITMENTS AND CONTINGENCIES

Leases

Our principal noncancellable operating lease obligations are for building space and vehicles. The leases generally provide that we pay maintenance costs. The lease periods typically range from one to five years and include purchase or renewal provisions. We have leases that are cancellable with minimal notice. Additionally, we have capital leases for our manufacturing facility in Eschenbach, Germany as well as office related equipment in various worldwide locations.

The following table includes future minimum lease payments under capital leases together with the present value of the net minimum lease payments as of December 31, 2017:

(Dollars in thousands)	
Year Ending December 31,	
2018	$ 756
2019	756
2020	737
2021	4,669
2022	76
Thereafter	—
Total	6,994
Less: Interest	(542)
Present Value of Net Future Minimum Lease Payments	$ 6,452

The following table includes future minimum lease payments required under operating leases that have initial or remaining non-cancelable lease terms in excess of one year as of December 31, 2017:

(Dollars in thousands)	
Year Ending December 31,	
2018	$ 3,833
2019	3,152
2020	2,461
2021	2,022
2022	1,527
Thereafter	474
Total	$ 13,469

The following table includes lease expense for the three years ended December 31, 2017:

	For the Year Ended December 31,		
(Dollars in thousands)	**2017**	2016	2015
Operating leases	**$ 3,819**	$ 3,567	$ 3,531
Capital lease	**$ 608**	$ 564	$ 667

Environmental & Legal

We are currently engaged in the following environmental and legal proceedings:

Voluntary Corrective Action Program

The Rogers corporate headquarters located in Rogers, Connecticut is part of the Connecticut Voluntary Corrective Action Program (VCAP). As part of this program, we partnered with the Connecticut Department of Energy and Environmental Protection (CT DEEP) to determine the corrective actions to be taken at the site related to contamination issues. We evaluated this matter and completed internal due diligence work related to the site in the fourth quarter of 2015. We recorded an accrual of $3.2 million as of December 31, 2015 for remediation costs expected to be incurred based on the facts and circumstances known to us at that time. During the third quarter of 2016, the CT DEEP approved a change to our remediation plan for the site that will reduce our overall expected costs. Accordingly, we reduced the accrual by $0.9 million as a result of change in the level of remediation that needs to take place as an offset to selling, general, and administrative expenses in the consolidated financial statements. Remediation activities on the site continued during 2017 and as of December 31, 2017, the remaining accrual for future remediation efforts was $1.7 million.

Superfund Sites

We are currently involved as a potentially responsible party (PRP) in one active case involving a waste disposal site, the Chatham Superfund Site. The costs incurred since inception for this claim have been immaterial and have been primarily covered by insurance policies, for both legal and remediation costs. In this matter we have been assessed a cost sharing percentage of approximately 2% in relation to the range for estimated total cleanup costs of $18.8 million to $29.6 million. We believe we are a de minimis participant and, as such, have been allocated an insignificant percentage of the total PRP cost sharing responsibility. We believe that we have sufficient insurance coverage to fully cover this liability and have recorded a liability and related insurance receivable of approximately $0.4 million as of December 31, 2017, which approximates our share of the low end of the estimated range. Based on facts presently known to us, we believe that the potential for the final results of this case having a material adverse effect on our results of operations, financial position or cash flows is remote. This case has been ongoing for many years and we believe that it will continue on for the indefinite future. No time frame for completion can be estimated at the present time.

PCB Contamination

We have been working with the Connecticut Department of Energy and Environmental Protection (CT DEEP) and the United States Environmental Protection Agency, Region I, in connection with certain polychlorinated biphenyl (PCB) contamination at our facility in Woodstock, Connecticut. The issue was originally discovered in the soil at the facility in the late 1990s, and this initial issue was remediated in 2000. Further contamination was later found in the groundwater beneath the property, which was addressed with the installation of a pump and treat system in 2011. Additional PCB contamination at this facility was found in the facility's original buildings, courtyards and surrounding areas including an on-site pond. Remediation costs related to this contamination were expected to approximate $0.7 million. Remediation activities of the affected buildings and courtyards were completed in 2014 at a total cost of $0.5 million. Currently, we have an accrual of $0.2 million for the pond remediation recorded on our consolidated statements of financial position. We believe this accrual will be adequate to cover the remaining remediation work related to the soil and pond contamination based on the information known at this time. However, if additional contamination is found, the cost of the remaining remediation may increase.

Overall, we have spent approximately $2.3 million in remediation and monitoring costs related to these PCB contamination issues. The future costs related to the maintenance of the groundwater pump and treat system now in place at the site are expected to be minimal. We believe that the remaining remediation activity will continue for several more years and no time frame for completion can be estimated at the present time.

Asbestos

We, like many other industrial companies, have been named as a defendant in a number of lawsuits filed in courts across the country by persons alleging personal injury from exposure to products containing asbestos. We have never mined, milled, manufactured or marketed asbestos; rather, we made and provided to industrial users a limited number of products that contained encapsulated asbestos, but we stopped manufacturing these products in the late 1980s. Most of the claims filed against us involve numerous defendants, sometimes as many as several hundred.

The following table presents information about our recent asbestos claims activity:

	For the Year Ended December 31,	
	2017	2016
Claims outstanding at beginning of year	**605**	489
New claims filed	**362**	288
Pending claims concluded*	**(280)**	(172)
Claims outstanding at end of year	**687**	605

* For the year ended December 31, 2017, 258 claims were dismissed and 22 claims were settled. For the year ended December 31, 2016, 155 claims were dismissed and 17 claims were settled. Settlements totaled approximately $5.0 million for the year ended December 31, 2017, compared to $4.4 million for the year ended December 31, 2016.

We recognize a liability for asbestos-related contingencies that are probable of occurrence and reasonably estimable. In connection with the recognition of liabilities for asbestos related matters, we record asbestos-related insurance receivables that are deemed probable. Our estimates of asbestos-related contingent liabilities and related insurance receivables are based on an independent actuarial analysis and an independent insurance usage analysis prepared annually by third parties. The actuarial analysis contains numerous assumptions, including general assumptions regarding the asbestos-related product liability litigation environment and company-specific assumptions regarding claims rates (including diseases alleged), dismissal rates, average settlement costs and average defense costs. The insurance usage analysis considers, among other things, applicable deductibles, retentions and policy limits, the solvency and historical payment experience of various insurance carriers, the likelihood of recovery as estimated by external legal counsel and existing insurance settlements. We review our asbestos-related forecasts annually in the fourth quarter of each year unless facts and circumstances materially change during the year, at which time we would analyze these forecasts.

Prior to 2017, due to the inherent uncertainties of the projection process and our limited amount of settlement and claims history, we utilized a ten-year projection period, which we concluded was appropriate as we did not believe we had sufficient data to justify a longer projection period. During 2017, we reviewed the projections of our current and future asbestos claims, and determined it was appropriate to extend the liability projection period to cover all current and future claims through 2058. We based our conclusion on our history and experience with the claims data, the diminished volatility and consistency of observable claims data, the period of time that has elapsed since we stopped manufacturing products that contained encapsulated asbestos and an expectation of a downward trend in claims due to the average age of our claimants which is approaching the average life expectancy. As a result, we believe we are now able to make a reasonable estimate of the actuarially determined liability for current and future asbestos claims through 2058.

For the years ended December 31, 2017 and 2016, our forecasted asbestos-related claims and insurance receivables for the 40 year projection period and 10 year projection period, respectively, were as follows:

(Dollars in millions)	**2017**	2016
Asbestos-related claims	**$ 76.2**	$ 52.0
Asbestos-related insurance receivables	**$ 69.2**	$ 48.4

To date, the defense and settlement costs of our asbestos-related product liability litigation have been substantially covered by insurance. We have identified continuous coverage for primary, excess and umbrella insurance from the 1950s through the mid-1980s, except for a period in the early 1960s, with respect to which we have entered into an agreement for primary, but not excess or umbrella, coverage. In addition, we have entered into a cost sharing agreement with most of our primary, excess and umbrella insurance carriers to facilitate the ongoing administration and payment of claims by the carriers. The cost sharing agreement may be terminated by any party, but will continue until a party elects to terminate it. As of the filing date for this report, the agreement has not been terminated. We expect to exhaust individual primary, excess and umbrella coverages over time, and there is no assurance that such exhaustion will not accelerate due to additional claims, damages and settlements or that coverage will be available as expected. We believe that it is reasonably possible that we may incur additional charges for our asbestos liabilities and defense costs in the future, which could exceed existing reserves and insurance recovery.

Impact on Financial Statements

Projections on the potential exposure and expected insurance coverage are based numerous assumptions. We believe the assumptions made are reasonable at the present time, but are subject to uncertainty based on the actual future outcome of our asbestos litigation. Prior to 2017, due to the inherent uncertainties of the projection process and our limited amount of settlement and claims history, we utilized a ten-year projection period, which we concluded was appropriate as we did not believe we had sufficient data to justify a longer projection period.

During 2017, we reviewed the projections of our current and future asbestos claims, and determined it was appropriate to extend the liability projection period to cover all current and future claims through 2058. We based our conclusion on our history and experience with the claims data, the diminished volatility and consistency of observable claims data, the period of time that has elapsed since we stopped manufacturing products that contained encapsulated asbestos and an expectation of a downward trend in claims due to the average age of our claimants, which is approaching life expectancy. The year 2058 also represents the expected end of Rogers' asbestos liability exposure and no further ongoing claims are expected past that date. As a result, we believe we are now able to make a reasonable estimate of the actuarially determined liability for current and future asbestos claims through 2058. As of December 31, 2017, the estimated liability and estimated insurance recovery for all current and future claims projected through 2058 was $76.2 million and $69.2 million, respectively. Each year we evaluate the changes in the estimated liability and estimated insurance recovery based on the projections of asbestos litigation and corresponding insurance coverage for that litigation

and record the resulting expense or income. For the years ended December 31, 2017 and 2016, we recognized expense of $3.4 million and $0.3 million, respectively, and for the year ended December 31, 2015 we recorded income of $0.3 million. The increase in expense recognized in 2017 compared to the prior year is primarily related to the new forecast period of 40 years, which is substantially covered by insurance.

The amounts recorded for the asbestos-related liability and the related insurance receivables described above were based on facts known at the time and a number of assumptions. However, projecting future events, such as the number of new claims to be filed each year, the average cost of disposing of such claims, the length of time it takes to dispose of such claims, coverage issues among insurers and the continuing solvency of various insurance companies, as well as the numerous uncertainties surrounding asbestos litigation in the United States, could cause the actual liability and insurance recoveries for us to be higher or lower than those projected or recorded.

There can be no assurance that our accrued asbestos liabilities will approximate our actual asbestos-related settlement and defense costs, or that our accrued insurance recoveries will be realized. We believe that it is reasonably possible that we may incur additional charges for our asbestos liabilities and defense costs in the future, which could exceed existing reserves and insurance recovery. We will continue to vigorously defend ourselves and believe we have substantial unutilized insurance coverage to mitigate future costs related to this matter.

General

In addition to the above issues, the nature and scope of our business brings us in regular contact with the general public and a variety of businesses and government agencies. Such activities inherently subject us to the possibility of litigation, including environmental and product liability matters that are defended and handled in the ordinary course of business. We have established accruals for matters for which management considers a loss to be probable and reasonably estimable. It is the opinion of management that facts known at the present time do not indicate that such litigation, after taking into account insurance coverage and the aforementioned accruals, will have a material adverse impact on our results of operations, financial position or cash flows.

NOTE 16 – OPERATING SEGMENTS AND GEOGRAPHIC INFORMATION

Our reporting structure is comprised of the following operating segments: ACS, EMS and PES. Our non-core businesses are reported in the Other operating segment.

- *Advanced Connectivity Solutions*

The ACS operating segment includes circuit materials and solutions enabling high-performance and high-reliability connectivity for applications in wireless communications infrastructure (e.g., power amplifiers, antennas, small cells and distributed antenna systems), automotive (e.g., active safety, advanced driver assistance systems, telematics and thermal management), connected devices, (e.g., mobile internet devices and Internet of Things), wired infrastructure (e.g., computing, servers and storage), consumer electronics and aerospace/defense. These products have characteristics that offer performance and other functional advantages in many market applications and serve to differentiate our products from other commonly available materials. These products are sold principally to independent and captive printed circuit board fabricators that convert our laminates to custom printed circuits.

The polymer-based dielectric layers of our circuit board laminates are proprietary materials that provide highly specialized electrical and mechanical properties. We sell our circuit materials under various trade names, including RO3000®, RO4000®, RT/duroid®, AD Series™ and CLTE Series™. All of these laminates are used for making circuitry that receive, transmit, and process high frequency communications signals, yet each laminate has varying properties that address specific needs and applications within the communications market.

- *Elastomeric Material Solutions*

The EMS operating segment includes elastomeric material solutions for critical cushioning, sealing, impact protection and vibration management applications including general industrial, portable electronics (e.g., mobile internet devices), consumer goods (e.g., protective sports equipment), automotive, mass transportation, construction and printing applications. These materials have characteristics that offer functional advantages in many market applications which serve to differentiate Rogers' products from other commonly available materials.

EMS products are sold globally to converters, fabricators, distributors and original equipment manufacturers (OEMs) for use in general industrial applications, portable electronics including mobile internet devices, consumer goods, mass transportation, construction, printing applications and other markets. Trade names for our EMS products include: DeWAL™, ARLON®, PORON®, XRD®, BISCO®, HeatSORB™, eSORBA® and Diversified Silicone Products.

In November 2016, we acquired DeWAL Industries, a leading manufacturer of polytetrafluoroethylene, ultra-high molecular weight polyethylene films, pressure sensitive tapes and specialty products, and in January 2017, we acquired the principal operating assets of Diversified Silicone Products, Inc. (DSP), a custom silicone product development and manufacturing business. The acquisitions of DeWAL and DSP, and their subsequent integration into our EMS operating segment, has enabled us to extend the product portfolio and technology capabilities with complementary high-end, high performance elastomeric materials.

We have two 50% owned joint ventures that extend and complement our worldwide business in the EMS operating segment. Rogers INOAC Corporation (RIC), a joint venture with Japan-based INOAC Corporation, manufactures high performance polyurethane foam materials in Mie and Taketoyo, Japan to predominantly serve the Japanese and Taiwanese markets. Rogers INOAC Suzhou Corporation (RIS) is a joint venture in China that was established with INOAC Corporation and provides polyurethane foam materials primarily to the Asian marketplace.

- *Power Electronics Solutions*

The PES operating segment is comprised of direct bond copper (DBC) ceramic substrate products and busbar power distribution products. We believe that our advanced, customized components enable the performance and reliability of today's growing array of power electronic devices and serve to increase the efficiency of applications by managing heat and ensuring the reliability of these critical devices used in converting raw energy into controlled and regulated power that can be used and managed.

Trade names for our PES products include curamik® ceramic substrates and ROLINX® products. Our curamik® ceramic substrates are used in the design of intelligent power management devices, such as insulated gate bipolar transistor (IGBT) modules, which enable a wide range of products including highly efficient industrial motor drives, wind and solar converters and electric and hybrid electric vehicle drive systems. ROLINX® products are used in high power electrical inverter and converter systems for use in mass transit (e.g. high speed trains); clean technology applications (e.g. wind turbines, solar farms and electric vehicles) and variable frequency drives for high to mid power applications.

- *Other*

The remainder of operations are accumulated and reported as our Other operating segment, which consists of elastomer components, floats and inverter distribution activities. Elastomer components are sold to OEMs for applications in ground transportation, office equipment, consumer and other markets. Trade names for our elastomer components include: NITROPHYL® floats for level sensing in fuel tanks, motors, and storage tanks and ENDUR® elastomer rollers and belts for document handling in copiers, printers, mail sorting machines and automated teller machines. Inverters are sold primarily to OEMs and fabricators that in turn sell to various other third parties primarily serving the portable communication and automotive markets. The Arlon polyimide and thermoset laminate business was also included within our Other operating segment prior to its divestiture in December 2015.

The following table sets forth the information about our operating segments for the periods indicated:

(Dollars in thousands)	Advanced Connectivity Solutions	Elastomeric Material Solutions	Power Electronics Solutions	Other	Total
2017					
Net sales	**$ 301,092**	**$ 312,661**	**$ 184,954**	**$ 22,336**	**$ 821,043**
Operating income	**$ 56,186**	**$ 51,404**	**$ 16,036**	**$ 7,153**	**$ 130,779**
Total assets	**$ 353,786**	**$ 489,456**	**$ 261,034**	**$ 20,858**	**$ 1,125,134**
Capital expenditures	**$ 9,900**	**$ 7,563**	**$ 9,238**	**$ 514**	**$ 27,215**
Depreciation & amortization	**$ 16,351**	**$ 16,270**	**$ 10,572**	**$ 906**	**$ 44,099**
Investment in unconsolidated joint ventures	**$ —**	**$ 18,324**	**$ —**	**$ —**	**$ 18,324**
Equity income in unconsolidated joint ventures	**$ —**	**$ 4,898**	**$ —**	**$ —**	**$ 4,898**
2016					
Net sales	$ 277,787	$ 203,181	$ 152,367	$ 22,979	$ 656,314
Operating income	$ 43,965	$ 26,593	$ 5,965	$ 7,329	$ 83,852
Total assets	$ 361,746	$ 421,011	$ 247,187	$ 26,556	$ 1,056,500
Capital expenditures	$ 7,569	$ 4,051	$ 6,009	$ 507	$ 18,136
Depreciation & amortization	$ 15,654	$ 10,141	$ 11,208	$ 844	$ 37,847
Investment in unconsolidated joint ventures	$ —	$ 16,183	$ —	$ —	$ 16,183
Equity income in unconsolidated joint ventures	$ —	$ 4,146	$ —	$ —	$ 4,146
2015					
Net sales	$ 267,630	$ 180,898	$ 150,288	$ 42,627	$ 641,443
Operating income	$ 45,115	$ 19,979	$ 3,750	$ 7,411	$ 76,255
Total assets	$ 315,358	$ 264,982	$ 320,755	$ 29,260	$ 930,355
Capital expenditures	$ 15,532	$ 4,103	$ 4,185	$ 1,017	$ 24,837
Depreciation & amortization	$ 15,403	$ 9,280	$ 7,855	$ 1,516	$ 34,054
Investment in unconsolidated joint ventures	$ —	$ 15,348	$ —	$ —	$ 15,348
Equity income in unconsolidated joint ventures	$ —	$ 2,890	$ —	$ —	$ 2,890

The following table sets forth the operating income reconciliation to the consolidated statements of operations for the periods indicated:

(Dollars in thousands)	**2017**	2016	2015
Operating income	**$ 130,779**	$ 83,852	$ 76,255
Equity income in unconsolidated joint ventures	**4,898**	4,146	2,890
Other income (expense), net	**3,379**	(1,788)	(8,492)
Interest expense, net	**(6,131)**	(3,930)	(4,480)
Income before income taxes	**$ 132,925**	$ 82,280	$ 66,173

Information relating to our operations by geographic area was as follows:

	Net Sales [1]			Long-lived Assets [2]		
(Dollars in thousands)	**2017**	2016	2015	**2017**	2016	2015
United States	**$ 225,621**	$ 158,136	$ 164,478	**$ 370,964**	$ 326,199	$ 218,439
China	**272,184**	236,961	227,993	**57,404**	62,728	65,994
Germany	**89,203**	79,480	76,569	**114,497**	101,725	110,240
Other	**234,035**	181,737	172,403	**34,131**	32,242	34,460
Total	**$ 821,043**	$ 656,314	$ 641,443	**$ 576,996**	$ 522,894	$ 429,133

[1] Net sales are allocated to countries based on the location of the customer. Countries with 10% or more of net sales have been disclosed.

[2] Long-lived assets are based on the location of the asset and are comprised of goodwill and other intangible assets and property, plant and equipment. Countries with 10% of more of long-lived assets have been disclosed.

NOTE 17 – RESTRUCTURING AND IMPAIRMENT CHARGES

- *2017*

In 2017, we completed the physical relocation of our global headquarters from Rogers, Connecticut to Chandler, Arizona. We recorded $2.8 million of expense related to this project in 2017 including severance expense and other costs associated with relocating employees to the new location. Severance activity related to the headquarters relocation is presented in the table below for the year ended December 31, 2017.

In the third quarter of 2017, we recognized a $0.3 million charge related to the impairment of our remaining investment in BrightVolt, Inc. (formerly known as Solicore, Inc.). As this investment does not relate to a specific operating segment, we allocated it ratably among the three operating segments.

In the fourth quarter of 2017, we recognized a $0.5 million impairment charge related to the remaining net book value of an other intangible asset within our ROLINX® product line in our PES operating segment.

- *2016*

In 2016, we recorded $0.7 million of expense related to the headquarters relocation.

- *2015*

There were no restructuring or impairment charges in 2015.

The following table summarizes changes in the severance accrual from December 31, 2016 through December 31, 2017:

(Dollars in thousands)	Severance related to headquarters relocation
Balance at December 31, 2016	$ 470
Provisions	397
Payments	(684)
Balance at December 31, 2017	**$ 183**

The following table summarizes the restructuring and impairment charges recorded in our operating results in 2017 and 2016:

(Dollars in thousands)	**2017**	2016
Advanced Connectivity Solutions		
Severance and other related costs	**1,305**	375
Allocated asset impairment charges	**161**	—
Elastomeric Material Solutions		
Severance and other related costs	**834**	176
Allocated asset impairment charges	**103**	—
Power Electronics Solutions		
Severance and other related costs	**621**	183
Allocated asset impairment charges	**543**	—
Total Charges for Restructuring and Impairment	**$ 3,567**	$ 734

NOTE 18 – QUARTERLY RESULTS OF OPERATIONS (UNAUDITED)

(Dollars in thousands, except per share amounts)	**2017**			
	First Quarter	**Second Quarter**	**Third Quarter**	**Fourth Quarter**
Net sales	**$ 203,828**	**$ 201,424**	**$ 206,783**	**$ 209,008**
Gross margin	**$ 80,350**	**$ 80,546**	**$ 82,188**	**$ 75,491**
Net income	**$ 27,032**	**$ 20,896**	**$ 25,532**	**$ 6,999**
Net income per share:				
Basic	**$ 1.50**	**$ 1.15**	**$ 1.40**	**$ 0.38**
Diluted	**$ 1.47**	**$ 1.13**	**$ 1.37**	**$ 0.37**

(Dollars in thousands, except per share amounts)	2016			
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net sales	$ 160,566	$ 157,489	$ 165,259	$ 173,000
Gross margin	$ 60,508	$ 60,199	$ 61,929	$ 66,849
Net income	$ 14,928	$ 5,377	$ 16,065	$ 11,913
Net income per share:				
Basic	$ 0.83	$ 0.30	$ 0.89	$ 0.66
Diluted	$ 0.82	$ 0.29	$ 0.88	$ 0.65

NOTE 19 – RECENT ACCOUNTING STANDARDS

In February 2018, the Financial Accounting Standards Board (FASB) issued ASU No. 2018-02, "Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income". This ASU allows for reclassification of stranded tax effects resulting from the Tax Cuts and Jobs Act from accumulated other comprehensive income to retained earnings. This ASU is effective for fiscal years beginning after December 15, 2018, with early adoption permitted. The Company is currently evaluating the method and impact the adoption of ASU 2018-02 will have on the Company's consolidated financial statements and disclosures.

In January 2018, the FASB released guidance on the accounting for tax on the global intangible low-taxed income (GILTI) provisions of the Tax Cuts and Jobs Act. The GILTI provisions impose a tax on foreign income in excess of a deemed return on tangible assets of foreign corporations. The guidance indicates that either accounting for deferred taxes related to GILTI inclusions or to treat any taxes on GILTI inclusions as period cost are both acceptable methods subject to an accounting policy election. Effective in the first quarter of 2018, the Company will elect to treat any potential GILTI inclusions as a period cost as we are not projecting any material impact from GILTI inclusions and any deferred taxes related to any inclusion would be immaterial.

On December 22, 2017, Staff Accounting Bulletin No. 118 (SAB 118) was issued to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Act. In accordance with SAB 118, we have determined that the $1.7 million of the deferred tax expense recorded in connection with the remeasurement of certain deferred tax assets and liabilities and the $12.0 million of tax expense recorded in connection with the transition tax on the mandatory deemed repatriation of foreign earnings was a provisional amount and a reasonable estimate at December 31, 2017. Management will subject these estimates to further analysis related to certain matters, such as federal and state interpretations of the provisions of U.S. Tax Reform, U.S. Treasury regulations, administrative interpretations or court decisions, a more detailed analysis of post-1986 undistributed foreign subsidiary earnings and profits (E&P) that may require further adjustments and changes to certain estimates as well as potential correlative adjustments. Any subsequent adjustment to these amounts will be recorded to tax expense in the quarter of 2018 when the analysis is complete.

In August 2017, the FASB issued ASU 2017-12, *Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities*. These improvements expand and refine hedge accounting for both non-financial and financial risk components. Also, this amendment aligns the recognition and presentation of the effects of a hedging instrument and the hedged item in the financial statements. Additionally, this update includes certain targeted improvements to simplify the application of current guidance related to the assessment of hedge effectiveness. This update is effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018 with early adoption permitted. The Company adopted this standard on October 1, 2017. Upon adoption, the Company recognized $0.2 million in gains in its statement of operations. This gain was recorded to reverse previously recognized losses resulting from hedge ineffectiveness reclassified to the statement of operations from other comprehensive income during 2017.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation - Stock Compensation (Topic 718): Scope of Modification Accounting.* This ASU clarifies which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting. ASU No. 2017-09 is effective for interim and annual reporting periods beginning after December 15, 2017. Adoption of this standard will be applied prospectively to awards modified on or after the adoption date. The impact of this new standard will depend on the extent and nature of future changes to the terms and conditions of the Company's share-based payment awards. Historically, the Company has not had significant changes to its share-based payment awards and therefore does not expect adoption of this guidance to have a material effect on the financial statements upon its adoption in 2018.

In March 2017, the FASB issued ASU No. 2017-05 and ASU No. 2017-07, *Compensation - Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Post-Retirement Benefit Cost*. The changes to the standard require employers to report the service cost component in the same line item as other compensation costs arising from services rendered by employees during the reporting period. The other components of net periodic pension benefit costs will be presented in the statement of operations separately from the service cost and outside of a subtotal of operating income from operations. In addition, only the service cost component may be eligible for capitalization where applicable. ASU No. 2017-05 and ASU 2017-07 are effective for annual periods beginning after December 15, 2017. The Company expects to adopt this guidance when effective and the adoption is not expected to have a material effect on the financial statements.

In January 2017, the FASB issued ASU No. 2017-04, *Intangibles-Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*, in an effort to simplify the subsequent measurement of goodwill and the associated procedures to determine fair value. The amendments of this ASU are effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted. The Company adopted this standard in the fourth quarter of 2017, which did not have a material impact on the financial statements.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments*, with the intention to reduce diversity in practice, as well as simplify elements of classification within the statement of cash flows for certain transactions. The update was effective for interim and annual reporting periods beginning after December 15, 2016. The accounting update was to be adopted using a retrospective approach. The Company adopted ASU 2016-15 effective January 1, 2017, and it did not have a material impact on our financial statements.

In March 2016, the FASB issued ASU No. 2016-09, *Improvements to Employee Share-Based Payment Accounting*, which contains amendments intended to simplify various aspects of share-based payment accounting and presentation in the financial statements, including the income tax consequences, classification of awards as either equity or liabilities, treatment of forfeitures and statutory tax withholding requirements, and classification in the statement of cash flows. The update was effective for interim and annual reporting periods beginning after December 15, 2016. The new standard required a modified retrospective transition through a cumulative-effect adjustment as of the beginning of the period of adoption, with certain provisions requiring either a prospective or retrospective transition. The Company adopted ASU 2016-09 on January 1, 2017. Upon adoption, the Company recognized excess tax benefits of approximately $12.7 million in deferred tax assets that were previously not recognized in a cumulative-effect adjustment to retained earnings. In addition, the new guidance requires that all of the tax effects related to share-based payments at settlement or expiration be recorded through the statement of operations. The Company also adopted the standard with respect to treatment of forfeitures, which did not have a material impact on our financial statements.

In February 2016, the FASB issued ASU No. 2016-02, *Leases*, which sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e., lessees and lessors). The new standard requires lessees to classify leases as either finance or operating leases and record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. An accounting policy election may be made to account for leases with a term of 12 months or less similar to existing guidance for operating leases today. ASU No. 2016-02 supersedes the existing guidance on accounting for leases. The standard is effective for interim and annual reporting periods for fiscal years beginning after December 15, 2018. Early adoption of this standard is permitted and it is to be adopted using a modified retrospective approach. The Company has initiated its implementation plan, which includes evaluating the classification of our lease agreements and quantifying the accounting impact in accordance with the new accounting standard. The Company expects to adopt this accounting standard beginning in fiscal year 2019.

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers*, to achieve a consistent application of revenue recognition within the United States, resulting in a single revenue model to be applied by reporting companies under U.S. generally accepted accounting principles. Under the new model, recognition of revenue occurs when a customer obtains control of promised goods or services in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. In addition, the new standard requires that reporting companies disclose the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. On July 9, 2015, the FASB agreed to delay the effective date by one year. In accordance with the agreed upon delay, the updated standard is effective for us beginning in the first quarter of 2018. Early adoption is permitted, but not before the original effective date of the standard. During 2016, the FASB issued new accounting standards updates regarding principal versus agent considerations in determining revenue recognition identifying performance obligations and licensing, collectability, sales tax, non-cash considerations, completed contracts, contract modifications and effect of accounting change. During 2017, the FASB issued new accounting standards updates regarding clarification of determining the customer in a service concession arrangement. The new standard is required to be applied retrospectively to each prior reporting period presented or retrospectively with the cumulative effect of initially applying the standard recognized at the date of initial implementation, without restatement of comparative periods. The Company plans to adopt this standard using the modified retrospective approach with the cumulative effect recognized at January 1, 2018. The Company has established a cross-functional coordinated implementation team and engaged a third party service provider to assist with the project. The Company has completed its evaluation of contracts. A substantial portion of the business will continue to recognize revenue on a “point in time” basis. The adoption of the new standard is estimated to increase Retained Earnings by approximately $4.0 million, net of tax as of January 1, 2018. The financial impact of adoption primarily relates to recognizing revenue on an “over time” basis due to performance obligations to deliver products that do not have an alternative use to the company whereby the company has an enforceable right to payment evidenced by contractual termination clauses. The cost incurred method will be used to measure the progress to completion as it is the best depiction of the transferring of goods to the customer. The Company has implemented changes to its systems, processes and internal controls, as necessary, to meet the reporting and disclosure requirements of the new standard.

NOTE 20 – SUBSEQUENT EVENTS

Sale of Property

On February 26, 2018, we signed an agreement for the planned sale of a building and parcel of land in Chandler, Arizona, for a sales price of $1.1 million. We expect the transaction to close in the second quarter of 2018. The asset has been classified as held for sale as of December 31, 2017 with a net book value of approximately $0.5 million.

SCHEDULE II

Valuation and Qualifying Accounts

(Dollars in thousands)	Balance at Beginning of Period	Charged to (Reduction of) Costs and Expenses	Taken Against Allowance	Other (Deductions) Recoveries	Balance at End of Period
Allowance for Doubtful Accounts					
December 31, 2017	$ 1,952	$ (275)	$ (152)	$ —	$ 1,525
December 31, 2016	$ 695	$ 1,321	$ (64)	$ —	$ 1,952
December 31, 2015	$ 476	$ 1,085	$ (866)	$ —	$ 695

(Dollars in thousands)	Balance at Beginning of Period	Charged to (Reduction of) Costs and Expenses	Taken Against Allowance	Other (Deductions) Recoveries	Balance at End of Period
Valuation on Allowance for Deferred Tax Assets					
December 31, 2017	$ 6,388	$ 2,366	$ —	$ —	$ 8,754
December 31, 2016	$ 6,202	$ 186	$ —	$ —	$ 6,388
December 31, 2015	$ 7,691	$ (1,484)	$ —	$ (5)	$ 6,202

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

EVALUATION OF DISCLOSURE CONTROLS AND PROCEDURES

The Company, with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d- 15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as of December 31, 2017. The Company's disclosure controls and procedures are designed (i) to ensure that information required to be disclosed by it 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) to ensure that information required to be disclosed in the reports the Company files or submits under the Exchange Act is accumulated and communicated to its management, including its Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure. Based on their evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that the Company's disclosure controls and procedures were effective as of December 31, 2017.

CHANGES IN INTERNAL CONTROL OVER FINANCIAL REPORTING

There were no changes in the Company's internal control over financial reporting during the fourth quarter of the fiscal year ended December 31, 2017 that have materially affected or are reasonably likely to materially affect its internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. This evaluation excluded the operations of Diversified Silicone Products (DSP), which we acquired on January 6, 2017. As part of the ongoing integration activities, we will complete an assessment of DSP's existing controls and incorporate our controls and procedures into the acquired operations, as appropriate.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Exchange Act Rules 13a-15(f) and 15d-15(f). The Company's internal control over financial reporting was designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the Company's financial statements for external purposes in accordance with accounting principles generally accepted in the United States. Our internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with accounting principles generally accepted in the United States, and that receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our 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.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2017. In making its assessment of internal control over financial reporting, management used the criteria issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control-Integrated Framework* (2013). Based on the results of this assessment, management, including our Chief Executive Officer and our Chief Financial Officer, has concluded that, as of December 31, 2017, our internal control over financial reporting was effective.

The Company's independent registered public accounting firm, PricewaterhouseCoopers, LLP, has audited the effectiveness of the Company's internal control over financial reporting as of December 31, 2017.

On January 6, 2017, the Company acquired the principal operating assets of Diversified Silicone Products, Inc. (DSP). As a result, management has excluded DSP from its assessment of internal control over financial reporting. The DSP assets are held in a wholly-owned subsidiary whose total assets and total net sales represent 1.0% and 2.7%, respectively, of the Company's total assets and net sales as of and for the year ended December 31, 2017.

Item 9B. Other Information

None.

Part III

Item 10. Directors, Executive Officers and Corporate Governance

Pursuant to General Instruction G to Form 10-K, there is hereby incorporated by this reference the information with respect to the Directors, Executive Officers and Corporate Governance set forth under the captions "Nominees for Director", "Director Qualifications and Experience", "Section 16(a) Beneficial Ownership Reporting Compliance" and "Board of Directors - Meetings of the Board and Committees" in our Definitive Proxy Statement for our 2018 Annual Meeting of Shareholders that will be filed within 120 days after the end of our fiscal year pursuant to Section 14(a) of the Exchange Act. Information with respect to Executive Officers of the Company is presented in Part I, Item 1 of this report and is hereby incorporated into this Item 10 by reference.

Code of Ethics

We have adopted a code of business conduct and ethics policy, which applies to all employees, officers and directors of Rogers Corporation. The Rogers Corporation Code of Business Conduct and Ethics Policy is posted on our website at http://www.rogerscorp.com. We intend to satisfy the disclosure requirements regarding any amendment to, or waiver of, a provision of the Code of Business Conduct and Ethics Policy for the Principal Executive Officer, Principal Financial Officer or Principal Accounting Officer (or others performing similar functions) by posting such information on our website. Our website is not incorporated into or a part of this Form 10-K.

Item 11. Executive Compensation

Pursuant to General Instruction G to Form 10-K, there is hereby incorporated by this reference the information with respect to Executive Compensation set forth under the captions "Board of Directors - Directors' Compensation", "Board of Directors - Meetings of the Board and Committees", "Compensation Discussion and Analysis", "Compensation and Organization Committee Report" and "2017 Compensation" in our Definitive Proxy Statement for our 2018 Annual Meeting of Shareholders that will be filed within 120 days after the end of our fiscal year pursuant to Section 14(a) of the Exchange Act.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The table and footnotes below describe those equity compensation plans approved and not approved by security holders of Rogers Corporation as of December 31, 2017.

EQUITY COMPENSATION PLANS AS OF DECEMBER 31, 2017

Plan Category	*(a)* *Number of securities to be issued upon exercise of outstanding options, warrants and rights*	*(b)* *Weighted average exercise price of outstanding options, warrants and rights (1)*	*(c)* *Number of securities remaining available for future issuance under each equity compensation plan excluding securities referenced in column (a)*
Equity Compensation Plans Approved by Security Holders			
Rogers Corporation 2009 Long-Term Equity Compensation Plan	542,285 (2)	$37.04	793,603
Rogers 2005 Equity Compensation Plan	11,081 (3)	38.29	—
Rogers 1998 Stock Incentive Plan	4,706 (4)	—	—
Rogers 1990 Stock Option Plan	3,025	22.19	—
Rogers Corporation Global Stock Ownership Plan For Employees (5)	—		117,987
Equity Compensation Plans Not Approved by Security Holders			
Rogers Corporation Stock Acquisition Program (6)	797	—	120,883
Total	561,894	$36.03	1,032,473

(1) Weighted average exercise price does not take into account outstanding awards of deferred stock units, restricted stock units or phantom stock units.

(2) Consists of 21,300 shares for stock options, 511,735 shares for restricted stock unit awards and 9,250 shares for deferred stock unit awards.

(3) Consists of 8,958 shares for stock options and 2,123 shares for phantom stock unit awards.

(4) Consists of 4,706 shares for phantom stock unit awards.

(5) This is an employee stock purchase plan within the meaning of Section 432(b) of the Internal Revenue Code of 1986, as amended.

(6) The purpose of the Stock Acquisition Program was to enable non-management directors to acquire shares of Rogers' common stock in lieu of cash compensation, on either a current or deferred basis at the then current fair market value of such common stock. As of December 31, 2017, the Company no longer offers capital stock to its directors under the Stock Acquisition Program.

Pursuant to General Instruction G to Form 10-K, there is hereby incorporated by this reference the information with respect to Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters set forth under the captions "Stock Ownership of Management and Directors" and "Beneficial Ownership of More Than Five Percent of Rogers Stock" in our Definitive Proxy Statement for our 2018 Annual Meeting of Shareholders that will be filed within 120 days after the end of our fiscal year pursuant to Section 14(a) of the Exchange Act.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Pursuant to General Instruction G to Form 10-K, there is hereby incorporated by this reference the information with respect to Certain Relationships and Related Transactions and Director Independence as set forth under the captions "Related Party Transactions" and "Board of Directors-Director Independence" in our Definitive Proxy Statement for our 2018 Annual Meeting of Shareholders that will be filed within 120 days after the end of our fiscal year pursuant to Section 14(a) of the Exchange Act.

Item 14. Principal Accountant Fees and Services

Pursuant to General Instruction G to Form 10-K, there is hereby incorporated by this reference the information with respect to Accountant Fees and Services set forth under the caption "Fees of Independent Registered Public Accounting Firm" in our Definitive

Proxy Statement for our 2018 Annual Meeting of Shareholders that will be filed within 120 days after the end of our fiscal year pursuant to Section 14(a) of the Exchange Act.

Part IV

Item 15. Exhibits, Financial Statement Schedules

(1) Financial Statements and Schedules.

The following consolidated financial statements of the Company are included in Item 8 of this Form 10-K:

Report of Independent Registered Public Accounting Firm

Consolidated Statements of Operations

Consolidated Statements of Comprehensive Income (Loss)

Consolidated Statements of Financial Position

Consolidated Statements of Shareholders' Equity

Consolidated Statements of Cash Flows

Notes to Consolidated Financial Statements

(2) Financial Statement Schedules.

Schedule II - Valuation and Qualifying Accounts

Other than as set forth above, schedules are omitted because they are not applicable, or are not required, or because the information is included in the consolidated financial statements and notes thereto.

(3) Exhibits.

The following list of exhibits includes exhibits submitted with this Form 10-K as filed with the SEC and those incorporated by reference to other filings.

2.1 Stock Purchase Agreement, dated as of December 18, 2014, by and among Handy & Harman Group, Ltd., Bairnco, LLC and Rogers Corporation, incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed on December 22, 2014.

2.2 Amendment No. 1 to Stock Purchase Agreement, dated January 22, 2015, by and among Handy & Harman Group, Ltd., Bairnco, LLC and Rogers Corporation, incorporated by reference to Exhibit 2.1 to the Registrant's Current Report on Form 8-K filed on January 26, 2015.

3.1 Restated Articles of Organization of Rogers Corporation, as amended, incorporated by reference to Exhibit 3a to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2006 (the 2006 Form 10-K) (File No. 001-04347).

3.2 Amended and Restated Bylaws of Rogers Corporation, effective February 11, 2016, incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K filed on February 26, 2016.

10.1 The Restated Rogers Corporation 1990 Stock Option Plan, incorporated by reference to Exhibit 99.1 to the Registrant's Registration Statement on Form S-8 dated October 18, 1996.**

10.1.1 First Amendment to Rogers Corporation 1990 Stock Option Plan, dated December 21, 1999, incorporated by reference to Exhibit 10e to the Registrant's Annual Report on Form 10-K for the fiscal year ended January 2, 2000 (the 1999 Form 10-K) (File No. 001-04347).**

10.1.2 Second Amendment to Rogers Corporation 1990 Stock Option Plan, dated October 7, 2002, incorporated by reference to Exhibit 10e to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 29, 2002 (the 2002 Form 10-K) (File No. 001-04347).**

10.1.3 Amendment to Plans, dated April 18, 2000, June 21, 2001, August 22, 2002 and December 5, 2002, incorporated by reference to Exhibits 10e through 10e-iii to the Registrant's 2003 Form 10-K (File No. 001-04347).**

10.1.4 Amendments to Certain Stock Option Plans and Certain Other Employee Benefit or Compensation Plans, dated October 27, 2006, incorporated by reference to Exhibit 10aab to the 2006 Form 10-K (File No. 001-04347).**

10.2 Rogers Corporation 1998 Stock Incentive Plan, incorporated by reference to Exhibit A to the Definitive Proxy Statement dated March 17, 1998 (File No. 001-04347).**

10.2.1 First Amendment and Second Amendment to Rogers Corporation 1998 Stock Incentive Plan, dated September 9, 1999 and December 21, 1999, incorporated by reference to Exhibit 10l to the 1999 Form 10-K (File No. 001-04347).**

10.2.2 Fifth Amendment and Sixth Amendment to Rogers Corporation 1998 Stock Incentive Plan, dated October 10, 2001 and November 7, 2002, incorporated by reference to Exhibit 10l to the 2002 Form 10-K (File No. 001-04347).**

10.2.3 Amendment to Plans, dated April 18, 2000, June 21, 2001, August 22, 2002 and December 5, 2002, incorporated by reference to Exhibits 10l through 10l-iii to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 28, 2003 (the 2003 Form 10-K) (File No. 001-04347).**

10.2.4 Seventh Amendment to Rogers Corporation 1998 Stock Incentive Plan, dated February 19, 2004, incorporated by reference to Exhibit 10l-iv to the 2003 Form 10-K (File No. 001-04347).**

10.2.5 Eighth Amendment to Rogers Corporation 1998 Stock Incentive Plan, dated April 28, 2005, incorporated by reference to Exhibit 10.8 to the Registrant's Current Report on Form 8-K filed on May 2, 2005 (File No. 001-04347).**

10.2.6 Amendments to Certain Stock Option Plans and Certain Other Employee Benefit or Compensation Plans, dated October 27, 2006, incorporated by reference to Exhibit 10aab to the 2006 Form 10-K (File No. 001-04347).**

10.3 Rogers Corporation 2005 Equity Compensation Plan, incorporated by reference to Exhibit 10.1 to the Registrant's Registration Statement on Form S-8 filed on April 29, 2005.**

10.3.1 First Amendment to Rogers Corporation 2005 Equity Compensation Plan, dated August 25, 2006, incorporated by reference to Exhibit 10aj-1 to the Registrant's Quarterly Report on Form 10-Q filed November 20, 2006 (File No. 001-04347).**

10.3.2 Second Amendment to Rogers Corporation 2005 Equity Compensation Plan, dated October 27, 2006, incorporated by reference to Exhibit 10aj-2 to the Registrant's Quarterly Report on Form 10-Q filed November 20, 2006 (File No. 001-04347).**

10.3.3 Third Amendment to Rogers Corporation 2005 Equity Compensation Plan, dated May 9, 2008, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on May 9, 2008 (File No. 001-04347).**

10.3.4 Fourth Amendment to Rogers Corporation 2005 Equity Compensation Plan, dated October 3, 2008, incorporated by reference to Exhibit 10aj-4 to the Registrant's Quarterly Report on Form 10-Q filed on November 5, 2008 (File No. 001-04347).**

10.4 The Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Non-Management Directors, incorporated by reference to Exhibit 10i to the Registrant's Quarterly Report on Form 10-Q filed November 8, 2007 (File No. 001-04347).**

10.4.1 First Amendment to the Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Non-Management Directors, incorporated by reference to Exhibit 10.5 to the Registrant's Quarterly Report on Form 10-Q filed November 3, 2009 (File No. 001-04347).**

10.4.2 Second Amendment to the Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Non-Management Directors, incorporated by reference to Exhibit 10.5 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2010 (the 2010 Form 10-K) (File No. 001-04347).**

10.5 The Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Key Employees, incorporated by reference to Exhibit 10j to the Registrant's Quarterly Report on Form 10-Q filed November 8, 2007 (File No. 001-04347).**

10.5.1 First Amendment to the Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Key Employees, incorporated by reference to Exhibit 10j to the Registrant's Quarterly Report on Form 10-Q filed August 7, 2008 (File No. 001-04347).**

10.5.2 Second Amendment to the Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Key Employees, incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q filed November 3, 2009 (File No. 001-04347).**

10.5.3 Third Amendment to the Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Key Employees, incorporated by reference to Exhibit 10.4 to the Registrant's Current Report on Form 8-K filed February 17, 2010 (File No. 001-04347).**

10.5.4 Fourth Amendment to the Amended and Restated Rogers Corporation Voluntary Deferred Compensation Plan for Key Employees, incorporated by reference to Exhibit 10.6 to the 2010 Form 10-K (File No. 001-04347).**

10.6 Rogers Corporation Amended and Restated Pension Restoration Plan, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed December 17, 2008 (File No. 001-04347).**

10.6.1 First Amendment to Rogers Corporation Amended and Restated Pension Restoration Plan, incorporated by reference to Exhibit 10.4 to the Registrant's Quarterly Report on Form 10-Q filed November 3, 2009 (File No. 001-04347).**

10.6.2 Second Amendment to Rogers Corporation Amended and Restated Pension Restoration Plan, incorporated by reference to Exhibit 10.10 to the 2010 Form 10-K (File No. 001-04347).**

10.7 Form of Indemnification Agreement between the Registrant and each of its executive officers, incorporated by reference to Exhibit 99.2 to the Registrant's Current Report on Form 8-K on December 14, 2004 (File No. 001-04347).**

10.8 Form of Indemnification Agreement between the Registrant and each of its directors, incorporated by reference to Exhibit 99.1 to the Registrant's Current Report on Form 8-K on December 14, 2004 (File No. 001-04347).**

10.9 Rogers Compensation Recovery Policy, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed October 19, 2009 (File No. 001-04347).**

10.10 Rogers Corporation 2009 Long-Term Equity Compensation Plan, as amended, incorporated by reference to Exhibit B to the Registrant's Definitive Proxy Statement filed on March 24, 2014.**

10.11 Form of Performance-Based Restricted Stock Award Agreement under the 2009 Plan, incorporated by reference to Exhibit 10.14 to the Registrant's 2016 Form 10-K.**

10.12 Form of Time-Based Restricted Stock Unit Award Agreement under the 2009 Plan, incorporated by reference to Exhibit 10.16 to the Registrant's 2016 Form 10-K.**

10.13 Form of Non-Qualified Stock Option Agreement (for officers and employees) under the 2009 Plan, incorporated by reference to Exhibit 10.6 to the Registrant's Quarterly Report on Form 10-Q filed August 4, 2009 (File No. 001-04347).**

10.14 Form of Non-Qualified Stock Option Agreement (for officers and employees) under the 2009 Plan, incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed November 3, 2009 (File No. 001-04347).**

10.15 Second Amended and Restated Credit Agreement, dated as of June 18, 2015, with each of the lenders party thereto, JPMorgan Chase Bank, N.A. as administrative agent, HSBC Bank USA, National Association and Citizens Bank, N.A. as co-syndication agents, Fifth Third Bank and Citibank, N.A. as co-documentation agents and JPMorgan Securities LLC and HSBC Bank USA, National Association as joint bookrunners and joint lead arrangers, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed June 24, 2015.

10.15.1 Amendment No. 1, dated as of October 29, 2015, to the Second Amended and Restated Credit Agreement, by and among the Registrant, JPMorgan Chase Bank, N.A. as an Issuing Bank and Administrative Agent, HSBC Bank USA, National Association as a Lender and an Issuing Bank, and Citizens Bank, N.A., Fifth Third Bank, Citibank, N.A., incorporated by reference to Exhibit 10.22 to the Registrant's 2015 Form 10-K.

10.16 Letter Agreement between the Registrant and Bruce D. Hoechner, dated September 15, 2011 and accepted on September 20, 2011, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed September 26, 2011 (File No. 001-04347).**

10.17 Non-Qualified Stock Option Agreement between the Registrant and Bruce D. Hoechner, incorporated by reference to Exhibit 10.2 to the Registrant's Registration Statement on Form S-8 filed May 7, 2012.**

10.18 Time-Based Restricted Stock Unit Award Agreement between the Registrant and Bruce D. Hoechner, incorporated by reference to Exhibit 10.3 to the Registrant's Registration Statement on Form S-8 filed May 7, 2012.**

10.19 Time-Based Restricted Stock Unit Award Agreement (4 Year Cliff Vested) between the Registrant and Bruce D. Hoechner, incorporated by reference to Exhibit 10.4 to the Registrant's Registration Statement on Form S-8 filed May 7, 2012.**

10.20 Letter Agreement between the Company and Janice Stipp, dated October 1, 2015 and accepted on October 5, 2015, incorporated by reference to Exhibit 10.28 to the Registrant's 2015 Form 10-K.**

10.21 Rogers Corporation 2009 Long-Term Equity Compensation Plan, as amended, incorporated by reference to Exhibit B to the Company's Definitive Proxy Statement filed March 24, 2014.**

10.22 Rogers Corporation Deferred Compensation Plan, incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed June 26, 2014.**

10.23 Form of Officer Special Severance Agreement between the Company and each of its executive officers, incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed July 30, 2015.**

10.24 Third Amended and Restated Credit Agreement, dated as of February 17, 2017 among Rogers Corporation, the lenders party thereto, JPMorgan Chase Bank, N.A., as administrative agent, HSBC Bank USA, National Association and Citizens Bank, N.A. as co-syndication agents, and Citibank, N.A. as documentation agent, incorporated by reference to Exhibit 10.24 to the Registrant's Form 10-K for the fiscal year ended December 31, 2016.

21 Subsidiaries of the Registrant, filed herewith.

23.1 Consent of PricewaterhouseCoopers, LLP, Independent Registered Public Accounting Firm, filed herewith.

31.1 Certification of President and Chief Executive Officer Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.

31.2 Certification of Senior Vice President, Finance and Chief Financial Officer Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002, filed herewith.

32 Certification of President and Chief Executive Officer and Senior Vice President, Finance and Chief Financial Officer Pursuant to Rule 13a-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, filed herewith.

101 The following materials from Rogers Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2017, formatted in XBRL (eXtensible Business Reporting Language): (i) Consolidated Statements of Financial Position for the fiscal years ended December 31, 2017 and 2016; (ii) Consolidated Statements of Operations for the fiscal years ended December 31, 2017, 2016 and 2015; (iii) Consolidated Statements of Shareholders' Equity for the fiscal years ended December 31, 2017, 2016 and 2015; and (iv) Consolidated Statements of Cash Flows for the fiscal years ended December 31, 2017, 2016 and 2015; and (v) Notes to Consolidated Financial Statements.

** Management contract or compensatory plan or arrangement.

Item 16. Form 10-K Summary

Not Applicable.

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

ROGERS CORPORATION
(Registrant)

/s/ Bruce D. Hoechner

Bruce D. Hoechner

President and Chief Executive Officer
Principal Executive Officer

Dated: February 27, 2018

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on February 27, 2018, by the following persons on behalf of the Registrant and in the capacities indicated.

/s/ Bruce D. Hoechner

Bruce D. Hoechner
President and Chief Executive Officer
Director
Principal Executive Officer

/s/ Carol R. Jensen

Carol R. Jensen
Director

/s/ Janice E. Stipp

Janice E. Stipp
Senior Vice President, Finance and Chief Financial Officer, Principal Financial Officer and Principal Accounting Officer

/s/ Jeffrey J. Owens

Jeffrey J. Owens
Director

/s/ Michael F. Barry

Michael F. Barry
Director

/s/ Ganesh Moorthy

Ganesh Moorthy
Director

/s/ Helene Simonet

Helene Simonet
Director

/s/ Peter C. Wallace

Peter C. Wallace
Director

/s/ Keith L. Barnes

Keith L. Barnes
Director