UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2022
or

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from _______________ to _______________
Commission file number 1-4347

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

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $1.00 per share	**ROG**	**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 every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☐ No ☐

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

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

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

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

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

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

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

The aggregate market value of the voting common equity held by non-affiliates as of June 30, 2022, the last business day of the registrant's most recently completed second fiscal quarter, was approximately $4,882,986,050. Rogers has no non-voting common equity. The number of shares outstanding of common stock as of February 24, 2023 was 18,606,748.

ROGERS CORPORATION
FORM 10-K

December 31, 2022

TABLE OF CONTENTS

Part I

Item 1. Business

As used herein, the "Company," "Rogers," "we," "us," "our" and similar terms include Rogers Corporation and its subsidiaries, unless the context indicates otherwise.

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 (the Exchange Act). 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:

- the duration and impacts of the novel coronavirus (COVID-19) global pandemic and efforts to contain its transmission and distribute vaccines, including the effect of these factors on our business, suppliers, supply chains, customers, end users and economic conditions generally;
- failure to capitalize on, volatility within, or other adverse changes with respect to the Company's growth drivers, including advanced mobility and advanced connectivity, such as delays in adoption or implementation of new technologies;
- failure to successfully execute on the Company's long-term growth strategy as a standalone company;
- uncertain business, economic and political conditions in the United States (U.S.) and abroad, particularly in China, South Korea, Germany, Belgium, England and Hungary, where we maintain significant manufacturing, sales or administrative operations;
- the trade policy dynamics between the U.S. and China reflected in trade agreement negotiations, the imposition of tariffs and other trade restrictions, as well as the potential for U.S.-China supply chain decoupling;
- fluctuations in foreign currency exchange rates;
- our ability to develop innovative products and the extent to which they are incorporated into end-user products and systems;
- the extent to which end-user products and systems incorporating our products achieve commercial success;
- the ability and willingness of our sole or limited source suppliers to deliver certain key raw materials, including commodities, to us in a timely and cost-effective manner;
- intense global competition affecting both our existing products and products currently under development;
- business interruptions due to catastrophes or other similar events, such as natural disasters, war, terrorism or public health crises;
- the impact of sanctions, export controls and other foreign asset or investment restriction;
- 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;
- disruptions in, or breaches of, our information technology systems; and

- our terminated merger with DuPont de Nemours, Inc. (DuPont), which may cause us to incur substantial costs that may adversely affect our financial results and operations and the market price of our capital stock, including as a result of litigation.

Our forward-looking statements are expressly qualified by these cautionary statements, which you should consider carefully, along with the risks discussed under the headings “Item 1A. Risk Factors” and “Item 7. Management’s Discussion and Analysis of Results of Operations and Financial Position” and elsewhere in this report, any of which 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.

Company Background and Strategy

Rogers Corporation designs, develops, manufactures and sells high-performance and high-reliability engineered materials and components to meet our customers’ demanding challenges. We operate two strategic operating segments: Advanced Electronics Solutions (AES) and Elastomeric Material Solutions (EMS). The remaining operations, which represent our non-core businesses, are reported in our Other operating segment. We have a history of innovation and have established Innovation Centers for our research and development (R&D) activities in Chandler, Arizona; Burlington, Massachusetts; Eschenbach, Germany; and Suzhou, China. We are headquartered in Chandler, Arizona.

Our growth and profitability strategy is based upon the following principles: (1) market-driven organization, (2) innovation leadership, (3) synergistic mergers and acquisitions, and (4) operational excellence. Our priorities in executing this strategy are focused on driving near-term improvements to profitability and improving the growth outlook for the Company over the next several years by further strengthening our focus on commercial activities, expanding capacity to meet customer demand and driving innovation.

As a market-driven organization, we are focused on capitalizing on growth opportunities in the increasing electrification of vehicles, including electric and hybrid electric vehicles (EV/HEV), and increasing use of advanced driver assistance systems (ADAS) in the automotive industry, the advancement of communication systems in aerospace and defense and the growth of 5G smartphones in the portable electronics industry. In addition to our focus on these markets, we sell into a variety of other markets including general industrial, clean energy, wireless infrastructure and mass transit.

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: performance, reliability, technical service capabilities, cost, efficiency, innovation and technology. Through this strategy we expect to be able to drive further commercial wins, which provide the potential for higher growth in the future. We have also expanded our capabilities through organic investment and acquisitions and strive to ensure high quality solutions for our customers.

Our operational excellence efforts are focused on driving significant near-term improvement in our profitability. These efforts include focusing on adding strategic new hires and improving processes and tools to achieve better performance. We have also taken specific cost improvement actions in the fourth quarter of 2022 and first quarter of 2023 that will benefit subsequent quarters. These actions include optimizing our manufacturing footprint, divesting non-core product lines and reduction to manufacturing and corporate employees. We continue to review and re-align our manufacturing and engineering footprint in an effort to maintain a leading competitive position globally and to support 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.

If we are able to successfully execute on our strategy, we see an opportunity to return to historical levels of profitability and accelerate revenue growth, relative to 2022, over the next several years, led by organic growth and complemented by targeted acquisitions. This outlook is supported by our participation in a number of fast-growing markets and by our strong competitive positions in these markets. The fastest growing market opportunity is expected to be EV/HEV where third-party analysis projects that the market will grow at compound annual growth rate of more than 25% over the next several years. Within the EV/HEV market, we believe our advanced battery cell pads, ceramic substrates and power interconnects provide multiple content opportunities to capitalize on this growth. In each of these areas we have secured a number of design wins and have a strong pipeline, which provides confidence in our growth outlook. Other markets with a strong growth trajectory include ADAS, aerospace and defense, clean energy and portable electronics. Each of these markets is expected to contribute to our growth strategy.

Terminated Merger Agreement with DuPont

On November 1, 2021, we entered into a definitive merger agreement to be acquired by DuPont in an all-cash transaction at a price of $277.00 per share of the Company's capital stock. The merger agreement provided for the acquisition of Rogers Corporation by DuPont through the merger of Cardinalis Merger Sub, Inc., a wholly owned subsidiary of DuPont, with and into Rogers Corporation, with Rogers Corporation surviving the merger as a wholly owned subsidiary of DuPont. Company shareholders approved the merger agreement at a special shareholder meeting held on January 25, 2022. The merger agreement provided both Rogers Corporation and DuPont with a right to terminate the merger agreement if the merger had not closed on or before November 1, 2022. Consummation of the merger was subject to various customary closing conditions, including regulatory approval by the State Administration for Market Regulation of China (SAMR). As of November 1, 2022, the parties had not received regulatory approval from SAMR. On November 1, 2022, the Company received from DuPont a notice of termination of the merger agreement. Pursuant to the terms of the merger agreement, the Company received a regulatory termination fee from DuPont in the amount of $162.5 million, before taxes, and incurred a transaction-related fee of $20.4 million.

COVID-19 Update

The global COVID-19 pandemic has affected and continues to affect Rogers' business, operations and demand from customers with the emergence and spread of new variants of the virus. In response to the outbreak, Rogers prioritized the safety and well-being of its employees—including incentivizing vaccinations, implementing social distancing initiatives in its facilities, providing remote working arrangements for certain employees, expanding personal protective equipment usage, enhancing plant hygiene processes and extending employee benefits, while at the same time taking actions to preserve business continuity. Our non-manufacturing employees transitioned seamlessly to remote working arrangements and are effectively collaborating both internally and with our customers. Surges in COVID-19 cases in China resulted in lockdowns as well as various restrictions. These measures have not disrupted our manufacturing efforts, however, they are causing logistics challenges. Even since China ended its zero COVID policy in late 2022, although a significant percentage of our employees in Suzhou, China were diagnosed with COVID, our manufacturing was not materially disrupted and to date we have received no reports of permanent disability or death among our employees. We expect that the COVID-19 pandemic will have a continuing but uncertain impact on our business and operations in the short- and medium-term.

Operating Segments

Advanced Electronics Solutions

Our AES operating segment designs, develops, manufactures and sells circuit materials, ceramic substrate materials, busbars and cooling solutions for applications in EV/HEV, wireless infrastructure (i.e., power amplifiers, antennas and small cells), automotive (i.e., ADAS), telematics and thermal solutions, aerospace and defense (i.e., antenna systems, communication systems and phased array radar systems), mass transit, clean energy (i.e., variable frequency drives, renewable energy), connected devices (i.e., mobile internet devices and thermal solutions) and wired infrastructure (i.e., computing and internet protocol (IP) infrastructure) markets. We believe these materials have characteristics that offer performance and other functional advantages in many market applications, which serve to differentiate our products from other commonly available materials. AES products are sold globally to converters, fabricators, distributors and original equipment manufacturers (OEMs). Trade names for our AES products include: curamik®, ROLINX®, RO4000® Series, RO3000® Series, RT/duroid®, CLTE Series®, TMM®, AD Series®, DiClad® Series, CuClad® Series, Kappa®, COOLSPAN®, TC Series®, 92ML™, IsoClad® Series, MAGTREX®, XTremeSpeed™ RO1200™ Laminates, IM Series™, 2929 Bondply, SpeedWave® Prepreg, RO4400™/RO4400T™ Series and Radix™. As of December 31, 2022, our AES operating segment had manufacturing and administrative facilities in Chandler, Arizona; Rogers, Connecticut; Bear, Delaware; Eschenbach, Germany; Evergem, Belgium; Budapest, Hungary; and Suzhou, China.

Elastomeric Material Solutions

Our EMS operating segment designs, develops, manufactures and sells engineered material solutions for a wide variety of applications and markets. These include polyurethane and silicone materials used in cushioning, gasketing and sealing, and vibration management applications for EV/HEV, general industrial, portable electronics, automotive, mass transit, aerospace and defense, footwear and impact mitigation and printing markets; customized silicones used in flex heater and semiconductor thermal applications for EV/HEV, general industrial, portable electronics, automotive, mass transit, aerospace and defense and medical markets; polytetrafluoroethylene and ultra-high molecular weight polyethylene materials used in wire and cable protection, electrical insulation, conduction and shielding, hose and belt protection, vibration management, cushioning, gasketing and sealing, and venting applications for EV/HEV, general industrial, automotive and aerospace and defense markets. We believe these materials have characteristics that offer functional advantages in many market applications, which serve to differentiate our products from other commonly available materials. EMS products are sold globally to converters, fabricators, distributors and OEMs. Trade names for our EMS products include: PORON®, BISCO®, DeWAL®, ARLON®, eSorba®, XRD®, Silicone Engineering and R/bak®.

As of December 31, 2022, our EMS operating segment had manufacturing and administrative facilities in Rogers, Connecticut; Woodstock, Connecticut; Bear, Delaware; Carol Stream, Illinois; Narragansett, Rhode Island; Evergem, Belgium; Blackburn, England; Siheung, South Korea; and Suzhou, China. We also own 50% of two unconsolidated joint ventures: (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.

Other

Our Other operating segment consists of elastomer components for applications in the general industrial market, as well as elastomer floats for level sensing in fuel tanks, motors, and storage tanks applications in the general industrial and automotive markets. We sell our elastomer components under our ENDUR® trade name and our floats under our NITROPHYL® trade name.

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 approximately 3,500 customers worldwide in 2022, primarily OEMs and component suppliers. No individual customer represented more than 10% of our total net sales for 2022; however, there are concentrations of OEM customers in our AES operating segment (semiconductor and automotive manufacturers). Although the loss of any one of our larger customers would require a period of adjustment, during which the results of operations could be materially 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 relationships, 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 performance, reliability and quality of our materials and components, and our commitment to technical support and customer service.

Our sales are generally pursuant to short-term purchase orders. These purchase orders are made without deposits and may be rescheduled, canceled or modified on relatively short notice, without substantial penalty. Therefore, even though we may have a large backlog from time to time, we believe the purchase orders or backlog are not necessarily a reliable indicator of future sales.

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 R&D. We are focused on identifying technologies and innovations related to both our current product portfolio as well as initiatives targeted at further diversifying and growing our business. As part of this technology commitment, we have a Rogers Innovation Center co-located at Northeastern University in Burlington, Massachusetts, as well as Rogers Innovation Centers at our facilities in Chandler, Arizona; Eschenbach, Germany; and Suzhou, China. Our Innovation Centers focus on early stages of technical and commercial development of new high-tech materials solutions in an effort to align with market direction and needs.

Patents and Other Intellectual Property

We have many domestic and foreign patents, licenses and additional patent applications pending related to technology in 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 technologies, 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 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 AES operating segment, copper, polymer, polytetraflouroethylene, fiberglass materials and ceramic and brazing paste materials, including silver; and for our EMS operating segment, polyol, isocyanates, polytetraflouroethylene, ultra-high molecular weight polyethylene materials and silicone 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 price increases or disruptions in our supply of raw materials could have a material adverse impact on our business. For additional information, refer to “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.

Human Capital Management

The Company’s continuing success derives from our talented and dedicated employees globally, who are responsible for the innovation, operations and ethics foundational to our business and its future. In 2022, our employees navigated the challenges from COVID-19, and, with an overarching commitment to health and safety, maintained a steady flow of materials for our customers, including for critical infrastructure and health applications.

As of December 31, 2022, we employed approximately 3,800 people, of whom approximately 1,350 were employed in the U.S., 1,300 in Europe and 1,100 in China. Approximately 400 of our domestic employees are covered by collective bargaining agreements or by specific labor agreements and approximately 800 of our European employees are covered by work council arrangements.

Our approach to human capital management is based on our culture of respect, which is built on the ethical foundation of our Code of Business Ethics and our commitment to making choices that are based on what is ethically sound and not just what is easy or expedient. Additionally, we connect our day-to-day work with our organizational objectives through our Cultural Behaviors: Live Safely, Trust, Just Decide, Speak Openly, Simply Improve, Innovate and Deliver Results. Management’s principal objectives, with oversight from our Board of Directors, are Health and Safety, Employee Experience and Diversity, Equity and Inclusion.

Health and Safety

Promoting the health and safety of our employees is one of our most important objectives. We strive to minimize lost workdays and recordable incidents. To promote awareness and accountability, safety performance data is shared throughout the company and executive compensation includes safety performance factors.

As part of our efforts to promote employee safety related to COVID-19, we have taken a structured approach to control potential onsite exposures. We have global, regional and site-specific pandemic steering committees ensuring that policies and procedures are developed and implemented in accordance with recommendations put forth by the recognized health authorities in each part of the world in which we operate. All policy recommendations, new or changed, are reviewed and approved by our executive leadership team, ensuring timely communication to our employees prior to implementation.

We continue to follow the guidance issued by recognized authorities around the world and make adjustments to our global, regional, and local policies as necessary. The global committee will continue to meet regularly to provide guidance to our organization as circumstances evolve.

Employment Experience

We take a comprehensive approach to the employment experience, striving to use a fair and inclusive recruiting process to select talented individuals. Once we hire, we endeavor to provide our employees a safe and ethical work environment that includes fair compensation, opportunities for career development and employee engagement. We are proud to invest in our employees' futures through a variety of technical and other training opportunities internally, as well as education reimbursement programs globally.

Diversity, Equity and Inclusion

We continue to advance efforts to improve diversity, equity and inclusion within the Company, focusing on attracting and maintaining diverse talent within the organization and promoting awareness and acceptance globally. We believe that our diversity, equity and inclusion will make the Company a more desirable workplace and will lead to improved business performance.

Information About Our Executive Officers

Our executive officers as of March 1, 2023 were as follows:

Name	Age	Present Position	Year Appointed to Present Position	Other Relevant Positions Held
R. Colin Gouveia	59	President and Chief Executive Officer, Director, Principal Executive Officer	2022	Senior Vice President and General Manager of Elastomeric Material Solutions June 2019 to December 2022;Vice President and General Manager, Eastman Chemical Co., from December 2014 to June 2019
Ramakumar Mayampurath	58	Senior Vice President and Chief Financial Officer, Principal Financial Officer	2021	Vice President, Corporate Finance from December 2020 to May 2021; Vice President, Business Transformation from March 2020 to December 2020; Vice President, Financial Planning and Analysis from November 2014 to December 2020
Brian Larabee	56	Vice President and General Manager of Elastomeric Material Solutions	2022	Senior Director, Product Management from February 2021 to December 2022; Director, EMS New Product and Business Development from November 2016 to February 2021
Larry Schmid	61	Senior Vice President, Global Operations and Supply Chain	2023	President, Pilko & Associates, from 2020 to 2023; Global Manufacturing & Engineering Operations Director, The Dow Chemical Company, Performance Materials & Coatings, from 2018 to 2019; Global Operations Director, The Dow Chemical Company, Dow Performance Silicones,

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 by our executive officers and directors pursuant to Section 16 of the Exchange Act, and amendments to those reports filed pursuant to Section 13(a) or 15(d) of the Exchange Act 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 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, and Compensation Recovery Policy. Our website is not incorporated into or a part of this Form 10-K.

Item 1A. Risk Factors

Our business, results of operations and financial position are subject to various risks, including those discussed below, which may affect the value of our capital stock. The following risk factors, which we believe represent the most significant factors that may make an investment in our capital stock risky, may cause our actual results to differ materially from those projected in any forward-looking statement. You should carefully consider these factors, as well as the other information contained in this Annual Report on Form 10-K, including the information set forth in "Item 1. Business - Forward-Looking Statements" and "Item 7. Management's Discussion and Analysis of Results of Operations and Financial Position," when evaluating an investment in our capital stock.

Risks Relating to the COVID-19 Pandemic

The COVID-19 pandemic and global responsive measures have impacted our business and results of operations and could materially adversely affect our business, results of operations and financial position in future periods.

The COVID-19 pandemic continues to have global impacts and has resulted in governmental authorities implementing numerous responsive measures, such as travel bans and other restrictions, including quarantines, shelter-in-place and stay-home orders, transportation disruptions, closures and shutdowns. We maintain significant manufacturing and administrative operations in the U.S., China, Germany, Belgium, England, South Korea and Hungary, and each of these countries has been significantly affected by the outbreak and taken measures to try to contain it and to distribute vaccines as they are approved. In particular, the recent end to 'zero COVID' policies in China may have unpredictable impacts on our operations, suppliers, and customers. In recent months, a significant percentage of our employees in Suzhou, China were diagnosed with COVID, but to-date we have received no reports of permanent disability or death among our employees. We have also modified our business practices in an effort to ensure business continuity while promoting continued employee health and well-being. Collectively, these measures have impacted and are likely to continue to impact our workforce and operations. In addition, the outbreak and associated responsive measures have resulted in significant disruption of the global economy, including increased volatility in financial markets, supply chains and demand for certain goods and services, as well as significant intervention and stimulus measures by governments.

There is considerable uncertainty regarding the effect of COVID-19 as well as current and future responsive measures on our business, including on our workforce and operations. We may experience sustained demand reductions for our products in certain end markets, be unable to satisfy customer demand and face increased operating costs, asset impairments and cash flow reductions, all of which could have a material adverse effect on our business, results of operations and financial position.

Risks Relating to Our Business, Strategy and Operations

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

We derived approximately 32% and 15% of our net sales for the year ended December 31, 2022 from sales relating to the key market growth drivers of advanced mobility and advanced connectivity, respectively. These growth drivers are served by our direct and indirect customers in a variety of markets, including automotive (i.e., ADAS) and EV/HEV, 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 (including higher inflation and interest rates), demand disruptions (including third-party component availability at our customers), technology disruptions, consumer preferences and political priorities. Adverse or cyclical changes to and within these growth drivers, such as delays in adoption or implementation of new technologies, has resulted in, and may continue to result in, reduced demand for certain of our products, production overcapacity, increased inventory levels and related risks of obsolescence, as well as price erosion, ultimately leading to a decline in our operating results. Acceleration within these growth drivers and corresponding rapid increases in demand for certain products may also require us to make significant capital investments or acquisitions in facilities and information systems and significantly increase our personnel in order to increase production levels and to maintain customer relationships and market positions. However, we may not be able to increase our production levels with sufficient speed or efficiency to capitalize 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, 2022, approximately 69% of our net sales resulted from sales in foreign markets, with approximately 40% and 27% of such net sales occurring in Asia and Europe, respectively. We expect our net sales in foreign markets to continue to represent a substantial majority of our consolidated net sales. We maintain significant manufacturing and administrative operations in China, Germany, Belgium, England, South Korea and Hungary, and approximately 63% of our employees were located outside the U.S. as of December 31, 2022. Risks related to our extensive international operations include the following:

- foreign currency fluctuations, particularly in the value of the euro, the Chinese renminbi, the South Korean won, the British pound, the Japanese yen and the Hungarian forint against the U.S. dollar;
- economic and political instability due to regional or country-specific events or changes in relations between the U.S. and the countries in which we operate;
- accounts receivable practices across countries, including longer payment cycles;
- export control or customs matters, including tariffs and trade restrictions;
- changes in multilateral and bilateral trade relations
- complications in complying, and failure to comply, with a variety of laws and regulations applicable to our foreign operations, including due to 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;
- compliance with foreign employment regulations, as well as work stoppages and labor and union disputes.

The foregoing risks may be particularly acute in emerging markets such as China, 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, changes in bilateral and multilateral arrangements with the U.S. and other governments, and challenges that some multinational customers that are headquartered in emerging markets may have complying fully with U.S. and other developed market extraterritorial regulations. 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, including wireless 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, results of operations and financial position.

Deteriorating trade relations between the U.S. and China, other trade conflicts and barriers, economic sanctions, and Chinese policies to decrease dependence on foreign suppliers could limit or prevent certain existing or potential customers from doing business with us and materially adversely affect our business.

The increased trade conflicts between the U.S. and its major trading partners, evidenced by trade restrictions such as tariffs, taxes, export controls, economic sanctions, and enhanced policies designed to protect national security, could adversely impact our business. In particular, we have experienced and expect that we may in the future experience impacts on our business due to the increase in trade conflicts between the U.S. and China. The May 2019 U.S. Department of Commerce addition of Huawei Technologies Co., Ltd. (Huawei) to its "entity list," and subsequently implemented Foreign Direct Products Rules, limited the ability of U.S. and foreign companies to export products and license technologies to Huawei. Such export controls, as well as retaliatory controls and tariffs that China has imposed and which remain in place to a certain extent under the Phase 1 agreement reached between the U.S. and China on January 15, 2020, could continue to restrict our ability to do business with Chinese customers. Further U.S. government actions to protect domestic economic and security interests could lead to further restrictions. China continues to be a fast-developing market and an area of potential growth for us. Sales to customers located in China and the Asia Pacific region have typically accounted for nearly half of our total sales and a substantial majority of our overall sales to customers located outside the U.S. In addition, certain of the end products created in China that incorporate our products are ultimately sold outside of the Asia Pacific region. We expect that revenue from these sales generally, and sales to China and the Asia Pacific region specifically, will continue to be a material component of our total revenue. Therefore, any financial crisis, trade war or dispute or other major event causing business disruption in international jurisdictions generally, and China and the Asia Pacific region in particular, could negatively affect our business, results of operations and financial position.

China's stated policy of reducing its dependence on foreign manufacturers and technology companies has resulted and may continue to result in reduced demand for our products in China. These trends, combined with supply chain disruptions caused by

COVID-19, may lead to increased decoupling of the supply chains for U.S. and Chinese economies, thereby leading to reduced market opportunities and disrupted supply chains for U.S. companies with sales and operations in China. Increased geopolitical tensions between the U.S. and China would likely accelerate these trends. Both countries could pursue policies to reduce their dependence on foreign goods. Such policies could have a material adverse impact on our business, results of operations and financial position. In addition, as a consequence of such policies, there are risks that the Chinese government may, among other things, require the use of local suppliers, compel companies that do business in China to partner with local companies to conduct business, or provide incentives to government-backed local customers to buy from local suppliers rather than companies like ours, all of which could adversely impact our business, results of operations and financial position.

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 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 sufficient production quantities, the commercial success of the end 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 wins or achieve market acceptance on commercially reasonable terms could materially adversely affect our business, results of operations and financial position. 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 sales 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. Furthermore, our customers may engage in internal manufacturing of products that may result in reduced demand for 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, results of operations and financial position.

Moreover, as OEMs, particularly in the electronics and automotive markets, seek cost reductions from their supply chains, our customers may make greater demands on us with regard to pricing and other contractual terms. This may adversely affect our gross margins on certain products or exacerbate competition that we face which could ultimately result in lower potential sales.

We have engaged in transactions in the past and may in the future acquire or dispose of businesses, or engage in other transactions, which expose us to a variety of risks that could materially adversely affect our business operating results and financial position.

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 have also divested and may again 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, 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. We may spend a significant portion of available cash, incur substantial debt or issue equity securities, which would dilute current shareholders' equity ownership, to pay for the acquisitions. In addition, if we are unsuccessful in integrating any acquired company or business into our operations or if integration is more difficult than anticipated, we may experience disruptions that could harm our business and result in our failure to realize the anticipated benefits of the acquisitions. 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 have incurred, and may in the future incur, significant costs in the pursuit and evaluation of transactions that we do not consummate for a variety of reasons.

As a result, these transactions may not ultimately create value for us or our shareholders and may harm our reputation and materially adversely affect our business, results of operations and financial position.

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. In addition, we have recently appointed a new Chief Executive Officer and have undergone other management changes as we execute on our growth strategy as a standalone company. Our continued performance will depend in part on the success of our new leadership.

If we suffer loss or disruption to our facilities, supply chains, distribution systems or information technology systems due to catastrophe or other events, our business could be seriously harmed.

Our facilities, supply chains, distribution systems and information technology systems are subject to catastrophic loss or disruption due to fire, flood, earthquake, hurricane, public health crisis, war, terrorism or other natural or man-made disasters or events. If any of these facilities, supply chains or systems were to experience a catastrophic loss or disruption, it could disrupt our operations, delay production and shipments, result in defective products or services, damage customer relationships and our reputation and result in legal exposure and large repair or replacement expenses. For instance, the COVID-19 pandemic and related quarantines and work and travel restrictions have disrupted, and may continue to disrupt, production of and demand for certain of our products. Additionally, there was a fire at our UTIS manufacturing facility in Ansan, South Korea in early February 2021, which resulted in extensive damage to the manufacturing site. Commercial operations resumed in late 2021, with the launch of a replacement production line at one of our Suzhou, China facilities, and commercial production at our new location in Siheung, South Korea commenced in late-January 2023. The extent to which these events will continue to affect our results of operations and financial position remains uncertain. The third-party insurance coverage that we maintain will vary from time to time in both type and amount depending on cost, availability and our decisions regarding risk retention, and may be unavailable or insufficient to protect us against losses or disruptions.

A significant disruption in, or breach in security of, our information technology systems or violations of data protection laws could materially adversely affect our business and 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 and 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 are susceptible to damage, disruptions or shutdowns due to power outages, hardware failures, telecommunication failures, systems upgrades (including the planned implementation of a new enterprise resource planning system) and user errors. If we experience a disruption in our information technology systems, it could result in the loss of sales and customers and significant incremental costs, which could materially adversely affect our business.

We are also 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, in part because of evolving technologies, the ubiquitous use of the Internet and telecommunications technologies (including mobile devices) to conduct business transactions. 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, we have experienced and may in the future experience security breaches, including breaches that we may not be able to detect. Security breaches of our information technology systems, including through mobile devices, could result in the misappropriation or unauthorized disclosure of confidential information belonging to us or to our customers, suppliers, business partners, employees or other third parties, which could result in our suffering significant financial and reputational damage. If we are unable to protect sensitive information, our customers or governmental authorities could question the adequacy of our security processes and procedures and our compliance with applicable laws and regulations, including evolving government cyber security requirements for government contractors.

In addition, the processing and storage of certain information is increasingly subject to privacy and data security regulations, and many such regulations are country-specific. The interpretation and application of data protection laws in the U.S., Europe, and elsewhere, including the EU General Data Protection Regulation and the California Consumer Privacy Act, are uncertain, evolving and may be inconsistent among jurisdictions. Compliance with these various laws may be onerous and require us to incur substantial costs or to change our business practices in a manner that adversely affects our business, while failure to comply with such laws may subject us to substantial penalties.

Employee benefit cost increases could reduce our profitability.

Our profitability is affected by employee benefit costs, particularly medical 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 U.S. 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 position.

Legal, Compliance and Regulatory Risks

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 U.S. 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 have pursued, and may again 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 position. We may also be adversely affected by, and subject to increased competition as a result of, the normal expiration of our issued patents.

Our competitors or other third parties may also assert infringement or invalidity 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 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, results of operations and financial position.

As a multinational corporation doing business in the U.S. 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 or otherwise subject us to additional tax liability, 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;
- ability to utilize, or changes in the valuation of, deferred tax assets; and
- changes in tax laws, regulations and interpretations thereof or issuance of new interpretations of laws or regulations applicable to us.

For instance, many foreign jurisdictions are actively considering changes to existing tax laws as a result of the base erosion and profit shifting project undertaken by the Organization for Economic Co-operation and Development (OECD). If these changes are enacted, our tax obligations could increase in countries where we do business or sell our products.

The terms of our credit agreement subject us to risks, including potential acceleration of our outstanding indebtedness if we fail to satisfy financial ratios and comply with numerous covenants.

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, financial position and results of operations.

Our credit agreement historically permitted us to borrow euro-currency loans that bear interest based on the London interbank offered rate (LIBOR), plus a specified spread. As announced in March 2021 by the United Kingdom’s Financial Conduct Authority (FCA) and LIBOR’s administrator, the publication of the one-week and two-month USD LIBOR maturities and non-USD LIBOR maturities ceased immediately after December 31, 2021, with the remaining USD LIBOR maturities ceasing immediately after June 30, 2023. Certain LIBOR borrowings may now be unavailable. Rogers Corporation and JPMorgan Chase Bank, N.A. entered into an amendment to our credit agreement that provides for a new benchmark interest rate to replace the discontinued LIBOR reference rates as necessary. There is a risk that this new reference rate may be higher than our projected future LIBOR interest rates, thereby causing the cost of our borrowings to increase.

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

Our products may contain defects that we do not detect before sale, which may lead to warranty or damage claims against us or product recalls. We are involved in various unresolved legal matters that arise in the ordinary course of our operations or otherwise, including asbestos-related product liability claims related to our operations before the 1990s. For additional information, refer to "Item 3. Legal Proceedings" and "Note 12 – Commitments and Contingencies" to "Item 8. Financial Statements and Supplementary Data." We maintain insurance coverage with respect to certain claims, but the policy coverage limits may not be adequate or cover a 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 settlements in excess of insurance coverage may adversely affect our business, results of operations and financial position. 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.

Our projections on the potential exposure and expected insurance coverage relating to our asbestos-related product liability claims 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, as well as the numerous uncertainties surrounding asbestos litigation in the U.S. 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 as well as potential environmental liabilities 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 U.S. 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 (EU), we are subject to the EU regulations (and their related national implementing legislation) including the Registration, Evaluation, Authorization and Restriction of Chemicals, the Regulation on the Classification, Labelling and Packaging of Substances and Mixtures and the Industrial Emissions Directive. 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 criminal and civil liabilities, fines, suspension of production or cessation of certain operations, any of which could have a material adverse effect on our business, results of operations and financial position. For example, governmental authorities in the U.S. and in other jurisdictions are increasingly focused on potential contamination resulting from the use of so-called "forever chemicals," most notably per- and polyfluoroalkyl, substances (PFAS). Products containing PFAS have been used in manufacturing, industrial, and consumer applications over many decades, including in some of our engineered materials and components. In 2021, the Biden Administration announced a multi-agency plan to address PFAS contamination and the U.S. Environmental Protection Agency released its PFAS Strategic Roadmap, which identified a comprehensive approach to addressing PFAS. We may incur costs in connection with any obligations to transition away from the usage of PFAS-containing products, to dispose of PFAS-containing waste or to remediate any PFAS contamination, which could have a negative effect on our financial position, results of operations and cash flows.

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. For additional information regarding our material legal proceedings, refer to "Note 12 – Commitments and Contingencies" to "Item 8. Financial Statements and Supplementary Data."

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We operate various general offices and manufacturing facilities throughout the U.S., Europe and Asia. The following table provides certain information about the material general offices and manufacturing facilities used by our operating segments:

Location	Floor Space (Square Feet)	Type of Facility	Leased / Owned	Operating Segment
United States				
Chandler, Arizona	147,000	Manufacturing	Owned	AES
Chandler, Arizona	105,100	Manufacturing	Owned	AES
Chandler, Arizona	75,000	Administrative Offices	Owned	All
Chandler, Arizona	17,000	Warehouse	Leased through 3/2026	AES
Rogers, Connecticut	388,100	Manufacturing / Administrative Offices	Owned	All
Woodstock, Connecticut	150,600	Manufacturing	Owned	EMS
Carol Stream, Illinois	216,600	Manufacturing	Owned	EMS
Bear, Delaware	125,000	Manufacturing / Administrative Offices	Owned	All
Narragansett, Rhode Island	84,600	Manufacturing	Owned	EMS
Burlington, Massachusetts	6,000	R&D Lab / Administrative Offices	Leased through 2/2024	All
Europe				
Eschenbach, Germany	149,000	Manufacturing / Administrative Offices	Owned	AES
Eschenbach, Germany	13,000	Warehouse / Administrative Offices	Leased through 12/2024	AES
Eschenbach, Germany	24,100	Warehouse / Administrative Offices	Leased through 8/2023	AES
Evergem, Belgium	116,500	Manufacturing / Administrative Offices	Owned	All
Evergem, Belgium	88,200	Warehouse / Administrative Offices	Leased through 6/2027	AES
Ghent, Belgium	56,700	Warehouse	Leased through 3/2024	All
Budapest, Hungary	46,800	Manufacturing	Leased through 2/2027	AES
Blackburn, England	58,000	Manufacturing / Warehouse /Administrative Offices	Owned	EMS
Blackburn, England	9,000	Warehouse	Leased through 8/2029	EMS
Asia				
Suzhou, China	821,000	Manufacturing / Administrative Offices	Owned	All
Suzhou, China	77,000	Manufacturing / Administrative Offices	Leased through 12/2031	EMS
Suzhou, China	75,000	Manufacturing / Administrative Offices	Leased through 1/2033	EMS
Siheung, South Korea	17,500	Manufacturing / Administrative Offices	Leased though 2/2025	EMS

Item 3. Legal Proceedings

Asbestos Products Litigation

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 were a defendant in 537 asbestos-related product liability cases as of December 31, 2022, compared to 543 cases as of December 31, 2021, 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 Maryland, Illinois, Missouri and New York; 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, 2022, the estimated liability and estimated insurance recovery for all current and future indemnity and defense costs projected through 2064 was $65.0 million and $59.8 million, respectively.

The indemnity and defense costs of our asbestos-related product liability litigation to date have been substantially covered by insurance. As of December 31, 2022, our consolidated statements of financial position include a $5.2 million net accrual of estimated asbestos-related expenses that exceed asbestos-related insurance coverage for all current and future indemnity and defense costs projected through 2064. For additional information regarding our asbestos-related product liability litigation, refer to “Note 12 – Commitments and Contingencies” to “Item 8. Financial Statements and Supplementary Data.”

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, results of operations, cash flows or financial position. In addition, we are involved in certain environmental matters, which we do not view as material legal proceedings, either pending or known to be contemplated. For additional information regarding certain of these matters, refer to “Note 12 – Commitments and Contingencies” to “Item 8. Financial Statements and Supplementary Data.”

Item 4. **Mine Safety Disclosures**

Not applicable.

Part II

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

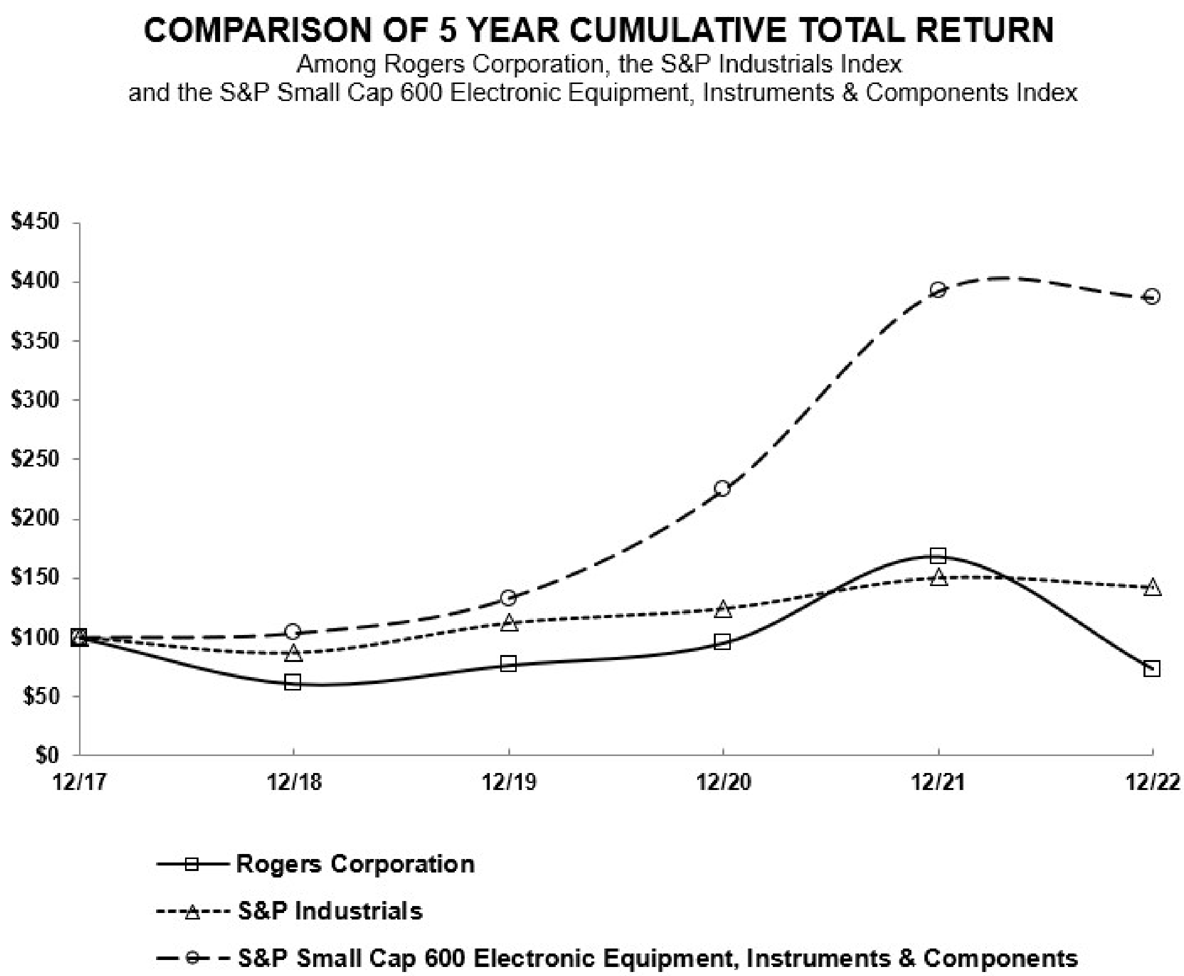
Capital Stock Market Prices and Dividend Policy

Our capital stock is traded on the New York Stock Exchange under the symbol "ROG". As of the end of business on February 24, 2023, we had 282 shareholders of record.

We currently retain all of our earnings for use in the operation and expansion of our business, to repurchase or redeem capital stock, and in the repayment of our debt. We have never declared or paid any cash dividends on our capital stock and may not pay any cash dividends in the foreseeable future. Whether or not dividends will be paid in the future will depend on, among other things, our results of operations, financial condition, level of indebtedness, cash requirements, covenants in our financings, contractual restrictions and other factors that our board of directors and our shareholders may deem relevant.

Performance Graph

The following graph compares the cumulative total return on Rogers' capital stock over the past five fiscal years with the cumulative total return on the Standard & Poor's Industrials Index (S&P Industrials) and the S&P Small Cap 600 Electronic Equipment, Instruments & Components Index. The graph tracks the performance of a $100 investment in the Company's common stock and in each of the indexes (with the reinvestment of all dividends) on the date specified.



Issuer Purchases of Equity Securities

In 2015, we initiated a share repurchase program (the Program) of up to $100.0 million of the Company's capital stock. We initiated the Program to mitigate the dilutive effects of stock option exercises and vesting of restricted stock units granted by the Company, in addition to enhancing shareholder value. The Program has no expiration date and may be suspended or discontinued at any time without notice. In 2022, we made $25.0 million of share repurchases using cash from operations and cash on hand.

There were no share repurchases in 2021 or 2020. As of December 31, 2022, $24.0 million remained available to purchase under the Program. For additional information regarding share repurchases, refer to “Note 8 – Capital Stock and Equity Compensation” to “Item 8. Financial Statements and Supplementary Data.”

(Dollars in thousands, except shares and per share amounts)

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet be Purchased under the Plans or Programs
October 1, 2022 to October 31, 2022	—	$ —	—	$ 49,014
November 1, 2022 to November 30, 2022	140,501	$ 103.45	140,501	$ 34,480
December 1, 2022 to December 31, 2022	97,305	$ 107.55	97,305	$ 24,015

We did not repurchase any shares in the months prior to November 2022.

Item 6. [Reserved]

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

The following discussion and analysis of our results of operations and financial position should be read together with our consolidated financial statements and accompanying notes, which are contained in "Item 8. Financial Statements and Supplementary Data."

The discussion of the comparison of our 2021 and 2020 results was previously disclosed within the Management's Discussion & Analysis in Part II, Item 7 of the Company's Annual Report on Form 10-K filed with the SEC on February 22, 2022, and has been omitted from this section pursuant to Instruction 1 to Item 303(b) of Regulation S-K.

Company Background and Strategy

Rogers Corporation designs, develops, manufactures and sells high-performance and high-reliability engineered materials and components to meet our customers' demanding challenges. We operate two strategic operating segments: Advanced Electronics Solutions (AES) and Elastomeric Material Solutions (EMS). The remaining operations, which represent our non-core businesses, are reported in our Other operating segment. We have a history of innovation and have established Innovation Centers for our research and development (R&D) activities in Chandler, Arizona; Burlington, Massachusetts; Eschenbach, Germany; and Suzhou, China. We are headquartered in Chandler, Arizona.

Our growth and profitability strategy is based upon the following principles: (1) market-driven organization, (2) innovation leadership, (3) synergistic mergers and acquisitions, and (4) operational excellence. Our priorities in executing this strategy are focused on driving near-term improvements to profitability and improving the growth outlook for the Company over the next several years by further strengthening our focus on commercial activities, expanding capacity to meet customer demand and driving innovation.

As a market-driven organization, we are focused on capitalizing on growth opportunities in the increasing electrification of vehicles, including electric and hybrid electric vehicles (EV/HEV), and increasing use of advanced driver assistance systems (ADAS) in the automotive industry, the advancement of communication systems in aerospace and defense and the growth of 5G smartphones in the portable electronics industry. In addition to our focus on these markets, we sell into a variety of other markets including general industrial, clean energy, wireless infrastructure and mass transit.

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: performance, reliability, technical service capabilities, cost, efficiency, innovation and technology. Through this strategy we expect to be able to drive further commercial wins, which provide the potential for higher growth in the future. We have also expanded our capabilities through organic investment and acquisitions and strive to ensure high quality solutions for our customers.

Our operational excellence efforts are focused on driving significant near-term improvement in our profitability. These efforts include focusing on adding strategic new hires and improving processes and tools to achieve better performance. We have also taken specific cost improvement actions in the fourth quarter of 2022 and first quarter of 2023 that will benefit subsequent quarters. These actions include optimizing our manufacturing footprint, divesting non-core product lines and reduction to manufacturing and corporate employees. We continue to review and re-align our manufacturing and engineering footprint in an effort to maintain a leading competitive position globally and to support 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.

If we are able to successfully execute on our strategy, we see an opportunity to return to historical levels of profitability and accelerate revenue growth, relative to 2022, over the next several years, led by organic growth and complemented by targeted acquisitions. This outlook is supported by our participation in a number of fast-growing markets and by our strong competitive positions in these markets. The fastest growing market opportunity is expected to be EV/HEV where third-party analysis projects that the market will grow at compound annual growth rate of more than 25% over the next several years. Within the EV/HEV market, we believe our advanced battery cell pads, ceramic substrates and power interconnects provide multiple content opportunities to capitalize on this growth. In each of these areas we have secured a number of design wins and have a strong pipeline, which provides confidence in our growth outlook. Other markets with a strong growth trajectory include ADAS, aerospace and defense, clean energy and portable electronics. Each of these markets is expected to contribute to our growth strategy.

Terminated Merger with DuPont

On November 1, 2021, we entered into a definitive merger agreement to be acquired by DuPont de Nemours, Inc. (DuPont) in an all-cash transaction at a price of $277.00 per share of the Company's capital stock. The merger agreement provided for the acquisition of Rogers Corporation by DuPont through the merger of Cardinalis Merger Sub, Inc., a wholly owned subsidiary of DuPont, with and into Rogers Corporation, with Rogers Corporation surviving the merger as a wholly owned subsidiary of DuPont. Company shareholders approved the merger agreement at a special shareholder meeting held on January 25, 2022. The merger agreement provided both Rogers Corporation and DuPont with a right to terminate the merger agreement if the merger had not closed on or before November 1, 2022. Consummation of the merger was subject to various customary closing conditions, including regulatory approval by the State Administration for Market Regulation of China (SAMR). As of November 1, 2022, the parties had not received regulatory approval from SAMR. On November 1, 2022, the Company received from DuPont a notice of termination for the merger agreement. Pursuant to the terms of the merger agreement, the Company received a regulatory termination fee from DuPont in the amount of $162.5 million, before taxes, and incurred a transaction-related fee of $20.4 million.

Executive Summary

The following key highlights and factors should be considered when reviewing our results of operations, financial position and liquidity:

- In 2022 as compared to 2021, our net sales increased by 4.1% to $971.2 million, our gross margin decreased 430 basis points to 33.1% from 37.4%, and operating income as a percentage of net sales increased 230 basis points to 14.9% from 12.6%.
- With respect to other operating (income) expense, net, we recognized income of $144.0 million and expense of $5.3 million in 2022 and 2021, respectively, primarily related to the financial impacts from the regulatory termination fee net of a transaction-related fee, as well as the impacts from the fire at our UTIS manufacturing facility in Ansan, South Korea.
- We recognized $1.5 million and $3.1 million of restructuring charges in 2022 and 2021, respectively, related to the manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations, primarily impacting our AES operating segment.
- We recognized $65.1 million of impairment charges in 2022, primarily related to certain AES operating segment equipment-in-process and certain EMS operating segment intangibles and fixed assets in the U.S.
- We incurred $21.7 million of expenses related to the terminated merger with DuPont, mainly associated with retention awards, a discretionary RESIP contribution and professional services expenses in 2022.
- We borrowed $100.0 million on the revolver to fund our operations, and made a $75.0 million repayment at the end of 2022.
- On February 16, 2023, we announced a reduction in force plan of our global workforce that is expected to be completed in the first half of 2023. The plan is expected to significantly reduce our manufacturing costs and operating expenses, and are being done in conjunction with other previously announced cost reduction initiatives. We estimate that we will incur approximately $10 million to $13 million in pre-tax restructuring charges related to this plan, all of which are expected to be in the form of cash-based expenditures and substantially all of which are expected to be related to employee severance and other termination benefits.
- On February 17, 2023 we entered into an asset purchase agreement to sell our high-performance engineered cellular elastomer business for a net purchase price of $1.8 million. The business disposition is scheduled to be completed in early March.

Results of Operations

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

	2022	2021
Net sales	**100.0 %**	100.0 %
Gross margin	**33.1 %**	37.4 %
Selling, general and administrative expenses	**22.5 %**	20.6 %
Research and development expenses	**3.6 %**	3.2 %
Restructuring and impairment charges	**6.9 %**	0.4 %
Other operating (income) expense, net	**(14.8)%**	0.6 %
Operating income	**14.9 %**	12.6 %
Equity income in unconsolidated joint ventures	**0.5 %**	0.7 %
Pension settlement charges	**— %**	(0.1)%
Other income (expense), net	**0.1 %**	0.6 %
Interest expense, net	**(1.0)%**	(0.3)%
Income before income tax expense	**14.5 %**	13.5 %
Income tax expense	**2.5 %**	1.9 %
Net income	**12.0 %**	11.6 %

Net Sales and Gross Margin

(Dollars in thousands)	**2022**	2021
Net sales	**$ 971,171**	$ 932,886
Gross margin	**$ 321,015**	$ 349,139
Percentage of net sales	**33.1 %**	37.4 %

Net sales increased by 4.1% in 2022 compared to 2021. Our AES and EMS operating segments had a net sales decrease of 0.8% and and a net sales increase of 11.1%, respectively. $32.0 million of the increase in net sales, or 3.4%, primarily reflects the impact of increased net sales from our Silicone Engineering subsidiary. The increase was further due to higher net sales in the EV/HEV and mass transit markets in our AES operating segment and higher net sales in the general industrial, mass transit and EV/HEV markets in our EMS operating segment, partially offset by lower net sales in the wireless infrastructure, aerospace and defense, ADAS and clean energy markets in our AES operating segment and lower net sales in portable electronics market in our EMS operating segment. Net sales was unfavorably impacted from foreign currency impacts of $36.9 million, or 4.0%, due to the depreciation in value of the euro, Chinese renminbi and British pound relative to the U.S. dollar.

Gross margin as a percentage of net sales decreased 430 basis points to 33.1% in 2022 compared to 37.4% in 2021. Gross margin in 2022 was impacted by unfavorable factory utilization, unfavorable yield performance, higher freight, duties and tariffs expenses and a higher inventory reserves provision in our AES and EMS operating segments, as well as lower volume in our AES operating segment and unfavorable changes in raw material costs in our EMS operating segment. This was partially offset by the favorable impacts of commercial actions taken in our AES and EMS operating segments, as well as favorable changes in raw material costs in our AES operating segment and higher volume in our EMS operating segment.

Supply constraints on raw material and labor availability moderated production levels, creating operational headwinds, which negatively impacted our gross margin. Further, the recent COVID-19 outbreaks, particularly in Asia, adversely impacted our customers' ability to continue manufacturing operations, which in turn negatively impacted our net sales in 2022.

Selling, General and Administrative Expenses

(Dollars in thousands)	**2022**	2021
Selling, general and administrative expenses	**$ 218,828**	$ 193,153
Percentage of net sales	**22.5 %**	20.6 %

Selling, general and administrative (SG&A) expenses increased 13.3% in 2022 from 2021, primarily due to an $11.2 million increase in professional services expenses, a $5.0 million increase in total compensation and benefits, a $2.5 million increase in software expenses, a $2.4 million increase in travel expenses and a $2.1 million increase in other intangible asset amortization expense.

The increase in total compensation and benefits was primarily due to an $8.6 million impact for retention awards issued in connection with the terminated DuPont merger, and a $6.5 million discretionary RESIP contribution, partially offset by lower incentive compensation expense. The increase in professional services expense is primarily due to $6.4 million of expenses incurred related to the terminated merger with DuPont and $0.8 million of expense incurred related to our acquisition of Silicone Engineering.

Research and Development Expenses

(Dollars in thousands)		**2022**		2021
Research and development expenses	**$**	**35,207**	$	29,904
Percentage of net sales		**3.6 %**		3.2 %

R&D expenses increased 17.7% in 2022 from 2021, primarily due to a $2.3 million increase in total compensation and benefits, a $2.0 million increase in laboratory expenses and a $0.4 million increase in travel expenses.

Restructuring and Impairment Charges and Other Operating (Income) Expense, Net

(Dollars in thousands)		**2022**		2021
Restructuring and impairment charges	**$**	**66,562**	$	3,570
Other operating (income) expense, net	**$**	**(144,014)**	$	5,330

We recognized $1.5 million and $3.1 million of restructuring charges 2022 and 2021, respectively, primarily related to the manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations.

We recognized $65.1 million and $0.5 million of impairment charges in 2022 and 2021, respectively. The impairment charges in 2022 were primarily related to certain AES operating segment equipment-in-process in the U.S. as well as certain EMS operating segment intangibles and fixed assets related to our high-performance engineered cellular elastomer business in the U.S.

For additional information, refer to "Note 15 – Supplemental Financial Information" to "Item 8. Financial Statements and Supplementary Data."

With respect to other operating (income) expense, net, we recognized income of $144.0 million and expense of $5.3 million in 2022 and 2021, respectively, primarily related to the financial impacts from the regulatory termination fee net of a transaction-related fee, as well as the impacts from the fire at our UTIS manufacturing facility in Ansan, South Korea.

Equity Income in Unconsolidated Joint Ventures

(Dollars in thousands)		**2022**		2021
Equity income in unconsolidated joint ventures	**$**	**4,437**	$	7,032

As of December 31, 2022, we had two unconsolidated joint ventures, each 50% owned: Rogers INOAC Corporation (RIC) and Rogers INOAC Suzhou Corporation (RIS). Equity income in those unconsolidated joint ventures decreased 36.9% in 2022 from 2021 due to lower net sales for RIC and RIS and unfavorable productivity performance for RIC.

Pension Settlement Charges and Other Income (Expense), Net

(Dollars in thousands)		**2022**		2021
Pension settlement charges	**$**	**—**	$	(534)
Other income (expense), net	**$**	**1,058**	$	5,136

In 2021, we recorded $0.5 million of pre-tax settlement charges related to the termination of the Rogers Corporation Defined Benefit Pension Plan (following its merger with the Hourly Employees Pension Plan of Arlon LLC, Microwave Material and Silicone Technologies Divisions, Bear, Delaware (collectively, the Merged Plan)).

Other income (expense), net decreased to $1.1 million of income in 2022 compared to $5.1 million of income in 2021. The decrease was due to unfavorable impacts from our copper derivative contracts and unfavorable impacts from our foreign currency transactions, partially offset by favorable impacts from our foreign currency derivatives.

Interest Expense, Net

(Dollars in thousands)		**2022**		2021
Interest expense, net	**$**	**(9,547)**	$	(2,536)

Interest expense, net, increased by $7.0 million in 2022 from 2021, primarily due to a higher weighted-average outstanding balance for our borrowings under our revolving credit facility.

Income Tax Expense

(Dollars in thousands)		**2022**		2021
Income tax expense	**$**	**23,751**	$	18,147
Effective tax rate		**16.9 %**		14.4 %

Our effective income tax rate for 2022 was 16.9% compared to 14.4% for 2021. The increase from 2021 was primarily due to the decrease in the current year benefit from the reversal of unrecognized tax benefits.

Operating Segment Net Sales and Operating Income

Advanced Electronics Solutions

(Dollars in thousands)		**2022**		2021
Net sales	**$**	**530,215**	$	534,429
Operating income	**$**	**77,163**	$	50,198

Our AES operating segment net sales decreased by 0.8% in 2022 compared to 2021. The decrease in net sales was primarily driven by lower net sales in the wireless infrastructure, aerospace and defense, ADAS, and clean energy markets, partially offset by higher net sales in the EV/HEV and mass transit markets. Net sales were unfavorably impacted from foreign currency fluctuations of $25.3 million, or 4.7%, due to the depreciation in value of the euro and Chinese renminbi relative to the U.S. dollar.

Operating income increased by 53.7% in 2022 from 2021. The increase in operating income was primarily due to favorable year-over-year changes in shared service operating expense allocations driven by the merger termination fee less costs incurred related to the terminated DuPont merger, partially offset by $41.5 million in restructuring and impairment charges. Additionally, operating income also increased due to commercial actions taken and favorable changes in raw material costs, partially offset by unfavorable factory utilization, lower volume, unfavorable yield performance, higher freight, duties and tariffs expenses and a higher inventory reserves provision. As a percentage of net sales, operating income in 2022 was 14.6%, an approximately 520 basis point increase as compared to 9.4% in 2021.

In 2022 and 2021, our AES operating segment recognized impairment charges of $40.5 million and $0.5 million, respectively, and recognized restructuring charges and related expenses of $1.1 million and $3.0 million, respectively. For additional information related to restructuring and impairment charges, refer to “Note 15 – Supplemental Financial Information” to “Item 8. Financial Statements and Supplementary Data.”

Supply constraints on raw material and labor availability moderated production levels, creating operational headwinds, which negatively impacted our gross margin. Further, the recent COVID-19 outbreaks, particularly in Asia, adversely impacted our customers’ ability to continue manufacturing operations, which in turn negatively impacted our net sales in 2022.

Elastomeric Material Solutions

(Dollars in thousands)		**2022**		2021
Net sales	**$**	**420,006**	$	378,017
Operating income	**$**	**60,351**	$	60,051

Our EMS operating segment net sales increased by 11.1% in 2022 compared to 2021. The increase in net sales was primarily driven by $32.0 million in net sales, or 8.5%, reflecting the impact of increased net sales from our Silicone Engineering subsidiary, as well as higher net sales in the general industrial and EV/HEV, partially offset by lower net sales in the portable electronics market. Net sales were unfavorably impacted by foreign currency fluctuations of $11.2 million, or 3.0%, due to the depreciation in value of the British pound, euro and Chinese renminbi relative to the U.S. dollar.

Operating income increased by 0.5% in 2022 from 2021. The increase in operating income was primarily due to favorable year-over-year changes in shared service operating expense allocations driven by the merger termination fee less costs incurred related to the terminated DuPont merger, and an $8.6 million favorable change in charges/benefits related to the UTIS fire, partially offset by $25.0 million in restructuring and impairment charges. Additionally, operating income also increased due the favorable impacts of commercial actions taken and higher volume, partially offset by unfavorable factory utilization, unfavorable changes in raw material costs, unfavorable yield performance, higher freight, duties and tariffs expenses and a higher inventory reserves provision. As a percentage of net sales, operating income in 2022 was 14.4%, an approximately 150 basis point decrease as compared to 15.9% in 2021.

In 2022 and 2021, our EMS operating segment recognized impairment charges of $24.6 million and no charges, respectively, and recognized restructuring charges and related expenses of $0.4 million and $0.1 million, respectively. For additional information related to restructuring and impairment charges, refer to "Note 15 – Supplemental Financial Information" to "Item 8. Financial Statements and Supplementary Data."

Supply constraints on raw material and labor availability moderated production levels, creating operational headwinds, which negatively impacted our gross margin. Further, the recent COVID-19 outbreaks, particularly in Asia, adversely impacted our customers' ability to continue manufacturing operations, which in turn negatively impacted our net sales in 2022.

Other

(Dollars in thousands)		**2022**		2021
Net sales	**$**	**20,950**	$	20,440
Operating income	**$**	**6,918**	$	6,933

Net sales in our Other operating segment increased by 2.5% in 2022 from 2021. Our Other operating segment operating income decreased by 0.2% in 2022 from 2021. Net sales were unfavorably impacted by foreign currency fluctuations of $0.5 million, or 2.5%, due to the depreciation in value of the Chinese renminbi and euro relative to the U.S. dollar. The decrease in operating income was primarily driven by unfavorable product mix and lower volume, partially offset by favorable yield performance. As a percentage of net sales, operating income in 2022 was 33.0%, an approximately 90 basis point decrease as compared to 33.9% in 2021.

Liquidity, Capital Resources and Financial Position

We believe that our existing sources of liquidity and cash flows that are expected to be generated from our operations, together with our available credit facilities, will be sufficient to fund our operations, currently planned capital expenditures, R&D efforts and our debt service commitments, for at least the next 12 months. We regularly review and evaluate the adequacy of our cash flows, borrowing facilities and banking relationships, seeking to ensure that we have the appropriate access to cash to fund both our near-term operating needs and our long-term strategic initiatives. 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)		**2022**		2021
United States	**$**	**119,931**	$	76,621
Europe		**69,877**		56,034
Asia		**46,042**		99,641
Total cash and cash equivalents	**$**	**235,850**	$	232,296

Approximately $115.9 million of our cash and cash equivalents were held by non-U.S. subsidiaries as of December 31, 2022. We did not make any changes in 2022 to our position on the permanent reinvestment of our historical earnings from foreign operations. With the exception of certain of our Chinese subsidiaries, where a substantial portion of our Asia cash and cash equivalents are held, we continue to assert that historical foreign earnings are indefinitely reinvested.

Net working capital was $517.3 million and $420.1 million as of December 31, 2022 and 2021, respectively.

(Dollars in thousands)	As of December 31,	
Key Financial Position Accounts:	**2022**	2021
Cash and cash equivalents	**$ 235,850**	$ 232,296
Accounts receivable, net	**177,413**	163,092
Inventories	**182,402**	133,384
Borrowings under revolving credit facility	**215,000**	190,000

Significant changes in our statement of financial position accounts from December 31, 2021 to December 31, 2022 were as follows:

- Accounts receivable, net increased 8.8% to $177.4 million as of December 31, 2022, from $163.1 million as of December 31, 2021. The increase was primarily due to a $13.3 million increase in our income taxes receivable, as well as an increase in days sales outstanding, partially offset by the receipt or settlement of $6.3 million in recognized UTIS fire insurance receivables and lower net sales at the end of 2022 compared to the end of 2021.

- Inventories increased 36.7% to $182.4 million as of December 31, 2022, from $133.4 million as of December 31, 2021, primarily driven by raw material cost increases as well as the ramp up of raw material purchases and production efforts to meet anticipated demand.

- Borrowings under revolving credit facility increased to $215.0 million as of December 31, 2022, from $190.0 million as of December 31, 2021. The increase reflects $100.0 million in borrowings under our revolving credit facility throughout 2022. This was partially offset by a $75.0 million of discretionary principal payment at the end of 2022. For additional information regarding this facility, as well as the Fourth Amended Credit Agreement, refer to "Note 9 – Debt" to "Item 8. Financial Statements and Supplementary Data."

(Dollars in thousands)	Year Ended December 31,	
Key Cash Flow Measures:	**2022**	2021
Net cash provided by operating activities	**$ 129,461**	$ 124,363
Net cash used in investing activities	**(113,117)**	(238,615)
Net cash (used in) provided by financing activities	**(10,104)**	159,057

In 2022, cash and cash equivalents increased $3.6 million, primarily due to $100.0 million in borrowings under our revolving credit facility and cash flows generated by operations, partially offset by $116.8 million in capital expenditures, a $75.0 million of principal payment made on our outstanding borrowings under our revolving credit facility, $25.0 million in share repurchases, as well as $10.8 million in tax payments related to net share settlement of equity awards.

In 2021, cash and cash equivalents increased $40.5 million, primarily due to $190.0 million in borrowings under our revolving credit facility and cash flows generated by operations, partially offset by $71.1 million in capital expenditures, a $25.0 million of principal payment made on our outstanding borrowings under our revolving credit facility, as well as $2.9 million in tax payments related to net share settlement of equity awards.

In 2023, we expect capital spending to be in the range of approximately $65.0 million to $75.0 million, of which we are contractually committed to $16.7 million as of December 31, 2022. We plan to fund our capital spending in 2023 with cash from operations and cash on-hand, as well as our existing revolving credit facility, if necessary.

Excluding $3.9 million of inventory purchase commitments, there are no contractual obligations requiring material cash requirements in 2022 and beyond, excluding those already noted, including those related to our outstanding borrowings under our revolving credit facility, our operating and finance lease obligations and our pension benefit and other postretirement benefit obligations, which are discussed in Note 9 – Debt, Note 10 – Leases and Note 11 – Pension Benefits, Other Postretirement Benefits and Employee Savings and Investment Plan, to Item 8. Financial Statements and Supplementary Data, respectively.

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 results of operations or financial position.

Restriction on Payment of Dividends

The Fourth 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 total net leverage ratio does not exceed 2.75 to 1.00. If our total net 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 total net leverage ratio did not exceed 2.75 to 1.00 as of December 31, 2022. For additional information regarding the Fourth Amended Credit Agreement, refer to "Note 9 – Debt" to "Item 8. Financial Statements and Supplementary Data."

Critical Accounting Estimates

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 using 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. Certain accounting policies may require a choice between acceptable accounting methods or may require substantial judgment or estimation in their application. A summary of our critical accounting estimates is presented below:

Product Liabilities

We endeavor to maintain insurance coverage with reasonable deductible levels to protect us from potential exposures to product liability claims. 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. Our estimates of asbestos-related contingent liabilities and related insurance receivables are based on a claim projection analysis and an insurance usage analysis prepared annually by third parties. The claim projection analysis contains numerous assumptions, including 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, average indemnity costs, average defense costs, 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 assumptions are subject to even greater uncertainty as the projection period lengthens. 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.

The liability projection period covers all current and future indemnity and defense costs through 2064, which represents the expected end of our asbestos liability exposure with no further ongoing claims expected beyond that date. This conclusion was based 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 expected downward trend in claims due to the average age of our claimants, which is approaching the average life expectancy.

Our accrued asbestos liabilities may not approximate our actual asbestos-related indemnity and defense costs, and our accrued insurance recoveries may not be realized. We believe it is reasonably possible that we may incur additional charges for our asbestos liabilities and defense costs in the future that could exceed existing reserves and insurance recoveries. We plan to continue to vigorously defend ourselves and believe we have substantial unutilized insurance coverage to mitigate future costs related to this matter.

We review our asbestos-related projections annually in the fourth quarter of each year unless facts and circumstances materially change during the year, at which time we would analyze these projections. We believe the assumptions made on the potential exposure and expected insurance coverage are reasonable at the present time, but are subject to uncertainty based on the actual future outcome of our asbestos litigation.

As of December 31, 2022, the estimated liabilities and estimated insurance recoveries for all current and future indemnity and defense costs projected through 2064 were $65.0 million and $59.8 million, respectively.

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, the Chinese renminbi, British pound, Korean won and certain other currencies. We seek to mitigate exposure to variability in currency exchange rates, 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 seek to 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 2022, a 10% strengthening of the U.S. dollar relative to other currencies would have resulted in a decrease to net sales and net income of approximately $38 million and $2 million, respectively, while a 10% weakening of the U.S. dollar relative to other currencies would have resulted in an increase to net sales and net income of approximately $46 million and $3 million, respectively.

- *Interest Rate Risk*

As of December 31, 2022, we had $215.0 million in borrowings outstanding under our revolving credit facility. The interest charged on these borrowings fluctuates with movements in the benchmark LIBOR. As of December 31, 2022, the interest rate on our revolving credit facility was 4.87%, and a 100 basis point increase in LIBOR would have increased the amount of interest expense by approximately $2.2 million for the year ended December 31, 2022.

- *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, which 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 most frequently used commodity 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, refer to “Note 2 – Fair Value Measurements” and “Note 3 – Hedging Transactions and Derivative Financial Instruments” to “Item 8. Financial Statements and Supplementary Data.”

Item 8. Financial Statements and Supplementary Data

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM (PCAOB ID 238)

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 (the "Company") as of December 31, 2022 and 2021, 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, 2022, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2022 appearing under Item 8 (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2022, 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, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 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, 2022, 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.

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.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Asbestos-Related Liabilities and Insurance Receivables

As described in Notes 1 and 12 to the consolidated financial statements, the Company's consolidated asbestos-related liabilities and asbestos-related insurance receivables balances were $65.0 million and $59.8 million, respectively, as of December 31, 2022. Management reviews the asbestos-related projections annually in the fourth quarter of each year unless facts and circumstances materially change during the year, at which time management would analyze these projections. Management recognizes 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, management records asbestos- related insurance receivables that are deemed probable. Management's estimates of asbestos-related contingent liabilities and related insurance receivables are based on a claim projection analysis and an insurance usage analysis, respectively, prepared annually by third parties. The claim projection analysis contains numerous assumptions, 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, average indemnity costs, average defense costs, 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. 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.

The principal considerations for our determination that performing procedures relating to asbestos- related liabilities and insurance receivables is a critical audit matter are (i) the significant judgment by management when determining the asbestos-related liabilities and insurance receivables; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to the number of claims that might be received, type and severity of the disease alleged by each claimant, average indemnity costs, average defense costs, and dismissal rates used in the claim projection analysis; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the analyses of the asbestos-related liabilities and insurance receivables. These procedures also included, among others (i) testing management's process for determining the asbestos-related liabilities and insurance receivables estimates; (ii) evaluating the appropriateness of the claim projection and insurance usage analyses; (iii) testing the completeness and accuracy of the underlying data used in the analyses; and (iv) evaluating the reasonableness of significant assumptions used by management related to the number of claims that might be received, type and severity of the disease alleged by each claimant, average indemnity costs, average defense costs, and dismissal rates. Professionals with specialized skill and knowledge were used to assist in evaluating management's analyses and significant assumptions related to the number of claims that might be received, type and severity of the disease alleged by each claimant, average indemnity costs, average defense costs, and dismissal rates.

/s/ PricewaterhouseCoopers LLP

Phoenix, Arizona
March 1, 2023

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, 2022

(Dollars and shares in thousands, except per share amounts)	**2022**	2021	2020
Net sales	**$ 971,171**	$ 932,886	$ 802,583
Cost of sales	**650,156**	583,747	510,763
Gross margin	**321,015**	349,139	291,820
Selling, general and administrative expenses	**218,828**	193,153	182,283
Research and development expenses	**35,207**	29,904	29,320
Restructuring and impairment charges	**66,562**	3,570	12,987
Other operating (income) expense, net	**(144,014)**	5,330	(104)
Operating income	**144,432**	117,182	67,334
Equity income in unconsolidated joint ventures	**4,437**	7,032	4,877
Pension settlement charges	**—**	(534)	(55)
Other income (expense), net	**1,058**	5,136	3,513
Interest expense, net	**(9,547)**	(2,536)	(7,135)
Income before income tax expense	**140,380**	126,280	68,534
Income tax expense	**23,751**	18,147	18,544
Net income	**$ 116,629**	$ 108,133	$ 49,990
Basic earnings per share	**$ 6.21**	$ 5.77	$ 2.68
Diluted earnings per share	**$ 6.15**	$ 5.73	$ 2.67
Shares used in computing:			
Basic earnings per share	**18,784**	18,731	18,681
Diluted earnings per share	**18,953**	18,863	18,706

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, 2022

(Dollars in thousands)	**2022**	2021	2020
Net income	**$ 116,629**	$ 108,133	$ 49,990
Foreign currency translation adjustment	**(39,934)**	(25,070)	24,907
Pension and other postretirement benefits:			
Pension settlement (benefits) charges, net of tax (Note 4)	**—**	—	(48)
Actuarial net gain (loss) incurred, net of tax (Note 4)	**(244)**	(823)	1,255
Amortization of loss, net of tax (Note 4)	**157**	225	244
Derivative instrument designated as cash flow hedge:			
Change in unrealized loss before reclassifications, net of tax (Note 4)	**—**	—	(1,504)
Unrealized loss (gain) reclassified into earnings, net of tax (Note 4)	**—**	—	2,476
Other comprehensive income (loss)	**(40,021)**	(25,668)	27,330
Comprehensive income	**$ 76,608**	$ 82,465	$ 77,320

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, 2022	2021
Assets		
Current assets		
Cash and cash equivalents	**$ 235,850**	$ 232,296
Accounts receivable, less allowance for credit losses of $1,007 and $1,223	**177,413**	163,092
Contract assets	**38,853**	36,610
Inventories	**182,402**	133,384
Prepaid income taxes	**4,042**	1,921
Asbestos-related insurance receivables, current portion	**3,881**	3,176
Other current assets	**17,426**	13,586
Total current assets	**659,867**	584,065
Property, plant and equipment, net of accumulated depreciation of $381,584 and $367,850	**358,415**	326,967
Investments in unconsolidated joint ventures	**14,082**	16,328
Deferred income taxes	**50,649**	32,671
Goodwill	**352,365**	370,189
Other intangible assets, net of amortization	**133,724**	176,353
Pension assets	**5,251**	5,123
Asbestos-related insurance receivables, non-current portion	**55,926**	59,391
Other long-term assets	**15,935**	27,479
Total assets	**$ 1,646,214**	$ 1,598,566
Liabilities and Shareholders' Equity		
Current liabilities		
Accounts payable	**$ 57,342**	$ 64,660
Accrued employee benefits and compensation	**34,158**	48,196
Accrued income taxes payable	**5,504**	9,632
Asbestos-related liabilities, current portion	**4,968**	3,841
Finance lease obligations, current portion	**498**	198
Other accrued liabilities	**40,067**	37,422
Total current liabilities	**142,537**	163,949
Borrowings under revolving credit facility	**215,000**	190,000
Pension and other postretirement benefits liabilities	**1,501**	1,618
Asbestos-related liabilities, non-current portion	**60,065**	64,491
Finance lease obligations, non-current portion	**1,295**	209
Non-current income tax	**9,985**	7,131
Deferred income taxes	**23,557**	29,451
Other long-term liabilities	**19,808**	22,822
Commitments and contingencies (Note 10 and Note 12)		
Shareholders' equity		
Capital stock - $1 par value; 50,000 authorized shares; 18,574 and 18,730 shares issued and outstanding, respectively	**18,574**	18,730
Additional paid-in capital	**140,702**	163,583
Retained earnings	**1,098,454**	981,825
Accumulated other comprehensive loss	**(85,264)**	(45,243)
Total shareholders' equity	**1,172,466**	1,118,895
Total liabilities and shareholders' equity	**$ 1,646,214**	$ 1,598,566

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, 2022

(Dollars and share amounts in thousands)	**2022**	2021	2020
Capital Stock			
Balance, beginning of period	**$ 18,730**	$ 18,677	$ 18,577
Shares issued for vested restricted stock units, net of shares withheld for taxes	**69**	29	82
Shares issued for employee stock purchase plan	**6**	14	13
Shares issued to directors	**7**	10	5
Shares repurchased	**(238)**	—	—
Balance, end of period	**18,574**	18,730	18,677
Additional Paid-In Capital			
Balance, beginning of period	**163,583**	147,961	138,526
Shares issued for vested restricted stock units, net of shares withheld for taxes	**(10,852)**	(2,910)	(5,439)
Shares issued for employee stock purchase plan	**944**	1,548	1,347
Shares issued to directors	**(7)**	(10)	(5)
Equity compensation expense	**11,796**	16,994	13,532
Shares repurchased	**(24,762)**	—	—
Balance, end of period	**140,702**	163,583	147,961
Retained Earnings			
Balance, beginning of period	**981,825**	873,692	823,702
Net income	**116,629**	108,133	49,990
Balance, end of period	**1,098,454**	981,825	873,692
Accumulated Other Comprehensive Loss			
Balance, beginning of period	**(45,243)**	(19,575)	(46,905)
Other comprehensive income (loss)	**(40,021)**	(25,668)	27,330
Balance, end of period	**(85,264)**	(45,243)	(19,575)
Total Shareholders' Equity	**$ 1,172,466**	$ 1,118,895	$ 1,020,755

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, 2022

(Dollars in thousands)	**2022**	2021	2020
Operating Activities:			
Net income	**$ 116,629**	$ 108,133	$ 49,990
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation and amortization	**45,879**	43,284	71,425
Equity compensation expense	**11,796**	16,994	13,532
Deferred income taxes	**(20,556)**	(3,195)	(13,406)
Equity in undistributed income of unconsolidated joint ventures	**(4,437)**	(7,032)	(4,877)
Dividends received from unconsolidated joint ventures	**4,677**	4,965	7,075
Pension settlement charges	**—**	534	(63)
Pension and other postretirement benefits	**21**	(471)	(160)
Asbestos-related provision (benefit)	**30**	(220)	(682)
Loss (gain) on sale or disposal of property, plant and equipment	**460**	(880)	41
Impairment charges	**65,085**	455	639
UTIS fire fixed asset and inventory write-offs	**200**	1,947	—
Provision (benefit) for credit losses	**208**	(279)	223
Changes in assets and liabilities:			
Accounts receivable	**(32,251)**	(26,197)	(8,934)
Proceeds from insurance/government subsidies related to operations	**1,153**	400	—
Contract assets	**(3,895)**	(10,035)	(4,120)
Inventories	**(51,610)**	(34,413)	34,687
Pension and postretirement benefit contributions	**(94)**	(160)	(253)
Other current assets	**(6,295)**	1,723	(217)
Accounts payable and other accrued expenses	**(8,700)**	36,688	10,084
Other, net	**11,161**	(7,878)	10,072
Net cash provided by operating activities	**129,461**	124,363	165,056
Investing Activities:			
Acquisition of business, net of cash received	**(3,581)**	(168,204)	—
Capital expenditures	**(116,788)**	(71,125)	(40,385)
Proceeds from the sale of property, plant and equipment, net		714	—
Proceeds from insurance claims	**7,252**	—	—
Net cash used in investing activities	**(113,117)**	(238,615)	(40,385)
Financing Activities:			
Proceeds from borrowings under revolving credit facility	**100,000**	190,000	150,000
Line of credit issuance costs	**—**	—	(1,862)
Repayment of debt principal and finance lease obligations	**(75,271)**	(29,624)	(248,330)
Payments of taxes related to net share settlement of equity awards	**(10,783)**	(2,881)	(5,357)
Proceeds from issuance of shares to employee stock purchase plan	**950**	1,562	1,360
Share repurchases	**(25,000)**	—	—
Net cash (used in) provided by financing activities	**(10,104)**	159,057	(104,189)
Effect of exchange rate fluctuations on cash	**(2,686)**	(4,294)	4,454
Net increase (decrease) in cash and cash equivalents	**3,554**	40,511	24,936
Cash and cash equivalents at beginning of period	**232,296**	191,785	166,849
Cash and cash equivalents at end of period	**$ 235,850**	$ 232,296	$ 191,785
Supplemental Disclosures:			
Accrued capital additions	**$ 6,675**	$ 10,903	$ 715
Cash paid during the year for:			
Interest, net of amounts capitalized	**$ 9,701**	$ 2,402	$ 7,251
Income taxes	**$ 60,772**	$ 33,788	$ 29,983

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

ROGERS CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1 – Basis of Presentation, Organization and Summary of Significant Accounting Policies

As used herein, the terms “Company,” “Rogers,” “we,” “us,” “our” and similar terms mean Rogers Corporation and its consolidated subsidiaries, unless the context indicates otherwise.

Principles of Consolidation

The consolidated financial statements include the accounts of the Company and our wholly-owned subsidiaries, after elimination of intercompany balances and transactions. The preparation of financial statements, in conformity with accounting principles generally accepted in the United States (U.S. GAAP), 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

Through the fourth quarter of 2020, we operated three strategic operating segments: Advanced Connectivity Solutions (ACS), Elastomeric Material Solutions (EMS) and Power Electronics Solutions (PES), with the remaining operations, which represented our non-core businesses, being reported in a fourth operating segment, the Other operating segment. In the first quarter of 2021, we completed the realignment of our strategic business segments to reflect the combination of our ACS and PES businesses resulting in a new strategic business segment, Advanced Electronics Solutions (AES). The combination of these two complementary businesses with capabilities in both high power and high frequency applications is expected to enhance our overall value proposition to customers in multiple high-growth markets. As a result of our organizational and reporting structure changes, we re-evaluated the chief operating decision maker’s review and assessment of the Company’s operating performance for purposes of performance monitoring and resource allocation. We determined, based on the financial data utilized by the chief operating decision maker to assess segment performance and allocate resources among the Company’s strategic business segments, that we have three operating segments under this new organizational and reporting structure: AES, EMS and Other. Reported results for the AES operating segment prior to 2021 represent the aggregation of the results for our former ACS and PES operating segments.

Advanced Electronics Solutions

Our AES operating segment designs, develops, manufactures and sells circuit materials, ceramic substrate materials, busbars and cooling solutions for applications in electric and hybrid electric vehicles (EV/HEV), wireless infrastructure (i.e., power amplifiers, antennas and small cells), automotive (i.e., advanced driver assistance systems (ADAS), telematics and thermal solutions, aerospace and defense (i.e., antenna systems, communication systems and phased array radar systems), mass transit, clean energy (i.e., variable frequency drives, renewable energy), connected devices (i.e., mobile internet devices and thermal solutions) and wired infrastructure (i.e., computing and internet protocol (IP) infrastructure) markets. We believe these materials have characteristics that offer performance and other functional advantages in many market applications, which serve to differentiate our products from other commonly available materials. AES products are sold globally to converters, fabricators, distributors and original equipment manufacturers (OEMs). Trade names for our AES products include: curamik®, ROLINX®, RO4000® Series, RO3000® Series, RT/duroid®, CLTE Series®, TMM®, AD Series®, DiClad® Series, CuClad® Series, Kappa®, COOLSPAN®, TC Series®, 92ML™, IsoClad® Series, MAGTREX®, XTremeSpeed™ RO1200™ Laminates, IM Series™, 2929 Bondply, SpeedWave® Prepreg, RO4400™/RO4400T™ Series and Radix™. As of December 31, 2022, our AES operating segment had manufacturing and administrative facilities in Chandler, Arizona; Rogers, Connecticut; Bear, Delaware; Eschenbach, Germany; Evergem, Belgium; Budapest, Hungary; and Suzhou, China.

Elastomeric Material Solutions

Our EMS operating segment designs, develops, manufactures and sells engineered material solutions for a wide variety of applications and markets. These include polyurethane and silicone materials used in cushioning, gasketing and sealing, and vibration management applications for EV/HEV, general industrial, portable electronics, automotive, mass transit, aerospace and defense, footwear and impact mitigation and printing markets; customized silicones used in flex heater and semiconductor thermal applications for EV/HEV, general industrial, portable electronics, automotive, mass transit, aerospace and defense and medical markets; polytetrafluoroethylene and ultra-high molecular weight polyethylene materials used in wire and cable protection, electrical insulation, conduction and shielding, hose and belt protection, vibration management, cushioning, gasketing and sealing, and venting applications for EV/HEV, general industrial, automotive and aerospace and defense markets. We believe these materials have characteristics that offer functional advantages in many market applications, which serve to differentiate our products from other commonly available materials. EMS products are sold globally to converters, fabricators, distributors and OEMs. Trade names for our EMS products include: PORON®, BISCO®, DeWAL®, ARLON®, eSorba®, XRD®, Silicone Engineering and R/bak®.

As of December 31, 2022, our EMS operating segment had manufacturing and administrative facilities in Rogers, Connecticut; Woodstock, Connecticut; Bear, Delaware; Carol Stream, Illinois; Narragansett, Rhode Island; Evergem, Belgium; Blackburn, England; Siheung, South Korea; and Suzhou, China. We also own 50% of two unconsolidated joint ventures: (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.

Other

Our Other operating segment consists of elastomer components for applications in general industrial market, as well as elastomer floats for level sensing in fuel tanks, motors, and storage tanks applications in the general industrial and automotive markets. We sell our elastomer components under our ENDUR® trade name and our floats under our NITROPHYL® trade name.

Summary of Significant Accounting Policies

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, both 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 losses of $1.7 million, gains of $3.0 million and gains of $0.9 million in 2022, 2021 and 2020, respectively.

Allowance for Credit Losses

The allowance for credit losses 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 our 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 with costs determined primarily on a first-in, first-out (FIFO) basis. We record allowances for estimated losses due to excess, obsolete and slow-moving inventory that is determined for groups of products based on purchases in the recent past and/or expected future demand, as well as market conditions, design cycles and other economic factors. 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.

Our “Inventories” line item in the consolidated statements of financial position consisted of the following:

	As of December 31,	
(Dollars in thousands)	**2022**	2021
Raw materials	**$ 87,851**	$ 60,208
Work-in-process	**45,100**	29,078
Finished goods	**49,451**	44,098
Total inventories	**$ 182,402**	$ 133,384

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:

Property, Plant and Equipment Classification	**Estimated Useful Lives**
Buildings and improvements	30-40 years
Machinery and equipment	5-15 years
Office equipment	3-10 years

Software Costs

We capitalize certain internal and external costs of computer software developed or obtained for internal use, principally related to software coding, software configuration, designing system interfaces and installation and testing of the software. We amortize capitalized internal use software costs using the straight-line method over the estimated useful lives of the software, generally from three to five years. Net capitalized software and development costs were $58.9 million and $28.6 million as of December 31, 2022 and 2021, respectively. The December 31, 2022 balance is almost entirely attributable to our planned implementation of a new enterprise resource planning system. 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 evaluated for impairment annually, and between annual impairment assessments if events or changes in circumstances indicate the carrying value may be impaired, by first performing a qualitative assessment to determine whether a quantitative goodwill impairment assessment is necessary. If it is determined, based on qualitative factors, the fair value of the reporting unit may be more likely than not less than its carrying amount or if significant changes to macro-economic factors related to the reporting unit have occurred that could materially impact fair value, a quantitative goodwill impairment assessment would be required. We can elect to forgo the qualitative assessment and perform a quantitative assessment. The quantitative assessment compares the fair value of a reporting unit with its carrying amount. The application of the quantitative assessment requires significant judgment, including the 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 growth rates and future market conditions, among others. When performing the quantitative assessment, we have historically 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. Upon performing the quantitative assessment, if the carrying value of the reporting unit exceeds its fair value, an impairment charge is recognized in an amount equal to that excess, not to exceed the carrying amount of goodwill.

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 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 11.1% for EMS to 13.6% for ECD, and terminal growth rates ranging from 3.4% for EMS to 3.5% for RF Solutions, curamik® and ECD. 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 assessment for the year ended December 31, 2022. Our RF Solutions, EMS, curamik® and ECD reporting units had allocated goodwill of $51.7 million, $234.8 million, $63.7 million and $2.2 million respectively, as of December 31, 2022.

Indefinite-lived other intangible assets are evaluated for impairment annually, and between annual impairment assessments if events or changes in circumstances indicate the carrying value may be impaired, by first performing a qualitative assessment to determine whether a quantitative indefinite-lived other intangible asset impairment assessment is necessary. If it is determined, based on qualitative factors, the fair value of the indefinite-lived other intangible asset may be more likely than not less than its carrying amount or if significant changes to macro-economic factors related to the indefinite-lived other intangible asset have occurred that could materially impact fair value, a quantitative indefinite-lived other intangible asset impairment assessment would be required. We can elect to forgo the qualitative assessment and perform a quantitative assessment. The quantitative assessment compares the fair value of the indefinite-lived other intangible asset with its carrying amount. The application of the quantitative assessment requires significant judgment, including determining the 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 assessment for the year ended December 31, 2022. Our curamik® reporting unit had an indefinite-lived other intangible asset of $4.2 million as of December 31, 2022.

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 $17.9 million of impairment charges resulting from our definite-lived other intangible assets impairment analysis for the year ended December 31, 2022. Our RF Solutions, EMS and curamik® reporting units had definite-lived other intangible assets of $1.9 million, $123.3 million and $4.4 million, respectively, as of December 31, 2022.

The useful life determination for each indefinite-lived other intangible asset is evaluated each reporting period to determine whether events and circumstances support an indefinite useful life. The useful life determination for each definite-lived other intangible asset is evaluated each reporting period to determine whether events and circumstances warrant a revision to the remaining period of amortization.

Pension and Other Postretirement Benefits

We sponsor one material defined benefit pension plan, the Rogers Corporation Employees' Pension Plan (the Union Plan), which covers certain union employees, and we sponsor multiple fully insured or self-funded medical plans and fully insured life insurance plans for retirees. The Union Plan was frozen in 2013 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 rates 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 bond index; (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; 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 determine these assumptions based on consultation with outside actuaries and investment advisors. Any changes in these assumptions could have a significant impact on our assets and liabilities. We review these assumptions periodically throughout the year and update as necessary.

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 a plan's obligations that determine our funded status as of the end of the year; and (c) recognize changes in the funded status of a defined benefit plan in the year in which the changes occur and report these changes in accumulated other comprehensive loss. Additionally, actuarial losses (gains) that are not immediately recognized as net periodic pension cost (credit) are recognized as a component of accumulated other comprehensive loss (income) and amortized into net periodic pension cost (credit) in future periods.

Investments were stated at fair value as of the dates reported. Securities traded on a national securities exchange were valued at the last reported sales price on the last business day of the plan year. Fixed-income bonds were valued using price evaluations provided by independent pricing services. 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 recordkeeper, on the last business day of the relevant 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 Company assets for investment purposes.

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 review our asbestos-related projections annually in the fourth quarter of each year unless facts and circumstances materially change during the year, at which time we would analyze these projections. We believe the assumptions made on the potential exposure and expected insurance coverage are reasonable at the present time, but are subject to uncertainty based on the actual future outcome of our asbestos litigation. Our estimates of asbestos-related contingent liabilities and related insurance receivables are based on a claim projection analysis and an insurance usage analysis prepared annually by third parties. The claim projection analysis contains numerous assumptions, including 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, average indemnity costs, average defense costs, 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 assumptions are subject to even greater uncertainty as the projection period lengthens. 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 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. Given the inherent uncertainty in making projections, we plan to re-examine periodically the assumptions used in 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. Our accrued asbestos liabilities may not approximate our actual asbestos-related indemnity and defense costs, and our accrued insurance recoveries may not 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 that could exceed existing reserves and insurance recoveries.

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 our revolving 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 characteristics as of December 31, 2022, borrowings would generally bear interest at London interbank offered rate (LIBOR) plus 175.0 basis points. As the current borrowings under the Fourth Amended Credit Agreement bear interest at adjusted 1-month LIBOR plus 175.0 basis points, we believe the carrying value of our borrowings approximates fair value. For additional information on the calculation of fair value measurements, refer to “Note 2 – Fair Value Measurements.”

Hedging Transactions and Derivative Financial Instruments

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 (loss). 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.” For additional information, refer to “Note 3 – Hedging Transactions and Derivative Financial Instruments.”

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. As of December 31, 2022 and 2021, there were no customers that individually accounted for more than 10% of total accounts receivable. We did not experience significant credit losses on customers’ accounts in 2022, 2021 or 2020.

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 U.S. and in numerous foreign jurisdictions. We account for income taxes following Accounting Standards Codification (ASC) 740, *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.

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 item in the consolidated statements of operations. Accrued interest and penalties are included within the related tax liability line item in the consolidated statements of financial position.

Revenue Recognition

Recognition of revenue occurs when a customer obtains control of promised goods or services in an amount that reflects the consideration to which the providing entity expects to be entitled in exchange for those goods or services. We recognize revenue when all of the following criteria are met: (1) we have entered into a binding agreement, (2) the performance obligations have been identified, (3) the transaction price to the customer has been determined, (4) the transaction price has been allocated to the performance obligations in the contract, and (5) the performance obligations have been satisfied. The majority of our shipping terms permit us to recognize revenue at point of shipment. Some shipping terms require the goods to be cleared 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. Shipping and handling costs are treated as fulfillment costs. Sales tax or VAT are excluded from the measurement of the transaction price.

We manufacture some products to customer specifications which are customized to such a degree that it is unlikely that another entity would purchase these products or that we could modify these products for another customer. These products are deemed to have no alternative use to the Company whereby we have an enforceable right to payment evidenced by contractual termination clauses. In accordance with ASC 606, for those circumstances we recognize revenue on an over-time basis. Revenue recognition does not occur until the product meets the definition of "no alternative use" and therefore, items that have not yet reached that point in the production process are not included in the population of items with over-time revenue recognition.

As appropriate, we record estimated reductions to revenue for customer returns, allowances, and warranty claims. Provisions for such reductions are made at the time of sale and are typically derived from historical trends and other relevant information.

Earnings Per Share

Basic earnings per share is based on the weighted average number of common shares outstanding. Diluted earnings per share is based on the weighted average number of common shares outstanding and all dilutive potential common shares outstanding.

Equity Compensation

Equity compensation mainly consists of expense related to restricted stock units and deferred stock units.

Performance-based restricted stock unit compensation expense is based on achievement of both market and service conditions. The fair value of these awards is determined based on a Monte Carlo simulation valuation model on the grant date. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period with no changes for final projected payout of the awards.

Time-based restricted stock unit compensation expense is based on the achievement of only service conditions. The fair value of these awards is determined based on the market value of the underlying stock price on the grant date. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period.

Deferred stock units, which are granted to non-management directors, are fully vested on the date of grant and the related shares are generally issued on the 13-month anniversary of the grant date unless the director elects to defer the receipt of those shares. The fair value of these awards is determined based on the market value of the underlying stock price on the grant date. The compensation related to these grants is expensed immediately on the date of grant.

Business Combination Purchase Price Allocation

The application of the acquisition method requires the allocation of the purchase price amongst the acquisition date fair values of identifiable assets acquired and liabilities assumed in a business combination. Fair values are determined using the income approach, market approach and/or cost approach depending on the nature of the asset or liability being valued and the reliability of available information. The income approach estimates fair value by discounting associated lifetime expected future cash flows to their present value and relies on significant assumptions regarding future revenues, expenses, working capital levels and discount rates. The market approach estimates fair value by analyzing recent actual market transactions for similar assets or liabilities. The cost approach estimates fair value based on the expected cost to replace or reproduce the asset or liability and relies on assumptions regarding the occurrence and extent of any physical, functional and/or economic obsolescence.

Restructuring Activities

We record charges associated with restructuring activities, such as employee termination benefits, when management approves and commits to a plan of termination, or over the future service period, if any. Other costs associated with restructuring activities may include contract termination costs, including costs related to leased facilities to be abandoned or subleased, and facility and employee relocation costs.

Advertising Costs

Advertising costs are expensed as incurred and amounted to $3.3 million, $2.7 million and $2.2 million in 2022, 2021 and 2020, respectively.

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.

As a result of our pension termination and settlement efforts in late 2019 and the first half of 2020, we had a pension surplus investment balance, which was accounted for as an available-for-sale investment. For additional information regarding this balance, refer to "Note 11 – Pension Benefits and Other Postretirement Benefits." Available-for-sale investments measured at fair value on a recurring basis, categorized by the level of inputs used in the valuation, were as follows:

	Available-for-Sale Investment at Fair Value as of December 31, 2022			
Pension surplus investment	**Level 1**	**Level 2**	**Level 3**	**Total**
	$ —	**$ —**	**$ —**	**$ —**

	Available-for-Sale Investment at Fair Value as of December 31, 2021			
	Level 1	Level 2	Level 3	Total(1)
Pension surplus investment[(1)]	$ 6,638	$ —	$ —	$ 6,638

[(1)] This balance was invested in a money market fund and was recorded in the "Other long-term assets" line item in the condensed consolidated statements of financial position. As of December 31, 2021, the fair value of this investment approximated its carrying value.

From time to time we enter into various instruments that require fair value measurement, including foreign currency contracts, copper derivative contracts and interest rate swaps. 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, 2022			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total[(1)]**
Foreign currency contracts	**$ —**	**$ (82)**	**$ —**	**$ (82)**
Copper derivative contracts	**$ —**	**$ 500**	**$ —**	**$ 500**

(Dollars in thousands)	Derivative Instruments at Fair Value as of December 31, 2021 Level 1	Level 2	Level 3	Total[1]
Foreign currency contracts	$ —	$ (16)	$ —	$ (16)
Copper derivative contracts	$ —	$ 1,344	$ —	$ 1,344

[1] All balances were recorded in the "Other current assets" or "Other accrued liabilities" line items in the consolidated statements of financial position.

For additional information on our derivative contracts, refer to "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, commodity pricing risk (primarily related to copper) and 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 option 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, which are collectively a function of five primary variables: price of the underlying instrument, time to expiration, strike price, interest rate and volatility. 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 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.
- *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, 2022, we did not have any derivative contracts that qualified for hedge accounting treatment.

Foreign Currency

In 2022, we entered into U.S. dollar, Korean won, and euro 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 in the period in which the adjustment occurred.

As of December 31, 2022 the notional values of these foreign currency forward contracts were as follows:

Notional Values of Foreign Currency Derivatives		
USD/CNH	$	13,598,684
KRW/USD	₩	7,596,600,000
EUR/USD	€	3,756,866

Commodity

As of December 31, 2022, we had 12 outstanding contracts to hedge exposure related to the purchase of copper in our AES operating segment. These contracts are held with financial institutions and are intended to offset rising copper prices 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 in the period in which the adjustment occurred.

As of December 31, 2022, the volume of our copper contracts outstanding were as follows:

Volume of Copper Derivatives	
January 2023 - March 2023	69 metric tons per month
April 2023 - June 2023	69 metric tons per month
July 2023 - September 2023	69 metric tons per month
October 2023 - December 2023	69 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. We terminated the interest rate swap in September 2020. As a result, we settled the interest rate swap for $2.4 million in October 2020, representing the fair value of the interest rate swap on the date of termination. Both Rogers Corporation and the counterparties released each other from all obligation under the interest rate swap agreement, including the obligation to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to the agreed upon notional principal amount of $75.0 million.

Effects on Financial Statements

The following table presents the impact from these instruments on the statement of operations and statements of comprehensive income:

		Years Ended December 31,		
(Dollars in thousands)	**Financial Statement Line Item**	**2022**	2021	2020
Foreign Currency Contracts				
Contracts not designated as hedging instruments	Other income (expense), net	**$ (251)**	$ (2,890)	$ (1,981)
Copper Derivatives Contracts				
Contracts not designated as hedging instruments	Other income (expense), net	**$ 848**	$ 3,914	$ 3,610
Interest Rate Swap Contract				
Contract designated as hedging instrument	Other comprehensive income (loss)	**$ —**	$ —	$ 1,254

Note 4 – Accumulated Other Comprehensive Loss

The changes in accumulated other comprehensive loss by component for each of the fiscal years in the two-year period ended December 31, 2022 were as follows:

(Dollars and accompanying footnotes in thousands)	Foreign Currency Translation Adjustments	Pension and Other Postretirement Benefits[1]	Total
Balance as of December 31, 2020	$ (10,571)	$ (9,004)	$ (19,575)
Other comprehensive income (loss) before reclassifications	(25,070)	(823)	(25,893)
Amounts reclassified to earnings	—	225	225
Net other comprehensive income (loss) for period	(25,070)	(598)	(25,668)
Balance as of December 31, 2021	(35,641)	(9,602)	(45,243)
Other comprehensive income (loss) before reclassifications	**(39,934)**	**(244)**	**(40,178)**
Amounts reclassified to earnings	**—**	**157**	**157**
Net other comprehensive income (loss) for period	**(39,934)**	**(87)**	**(40,021)**
Balance as of December 31, 2022	**$ (75,575)**	**$ (9,689)**	**$ (85,264)**

[1] Net of taxes of $1,926, $2,125 and $1,951 for the years ended December 31, 2022, 2021 and 2020, respectively.

The impacts to the consolidated statements of operations related to items reclassified to earnings were as follows:

(Dollars in thousands)	**Financial Statement Line Item**	Years Ended December 31, **2022**	2021
Amortization/settlement of pension and other postretirement benefits			
	Pension settlement charges	**$ —**	$ —
	Other income (expense), net[1]	**(405)**	(290)
	Income tax (expense) benefit	**248**	65
	Net income	**$ (157)**	$ (225)

[1] These accumulated other comprehensive loss components are included in the computation of net periodic pension cost. For additional details, refer to "Note 11 – Pension Benefits, Other Postretirement Benefits and Employee Savings and Investment Plan."

Note 5 – Property, Plant and Equipment

Our "Property, plant and equipment, net" line item in the consolidated statements of financial position consisted of the following:

(Dollars in thousands)	As of December 31, **2022**	2021
Land and improvements	**$ 23,886**	$ 24,804
Buildings and improvements	**169,548**	163,920
Machinery and equipment	**334,069**	322,653
Office equipment	**61,447**	57,156
Property plant and equipment, gross	**588,950**	568,533
Accumulated depreciation	**(381,584)**	(367,850)
Property, plant and equipment, net	**207,366**	200,683
Equipment in process	**151,049**	126,284
Total property, plant and equipment, net	**$ 358,415**	$ 326,967

Depreciation expense was $29.5 million, $29.0 million and $29.3 million in 2022, 2021 and 2020, respectively. Additionally, we recognized $47.2 million, $0.5 million and $0.6 million of impairment charges in 2022, 2021 and 2020, respectively. For additional information related to the impairment charges, refer to "Note 15 – Supplemental Financial Information."

Note 6 – Goodwill and Other Intangible Assets

Goodwill

The changes in the carrying amount of goodwill for the period ending December 31, 2022, by operating segment, were as follows:

(Dollars in thousands)	Advanced Electronics Solutions	Elastomeric Material Solutions	Other	Total
December 31, 2021	$ 119,567	$ 248,398	$ 2,224	$ 370,189
Purchase accounting adjustment	—	(926)	—	(926)
Foreign currency translation adjustment	(4,215)	(12,683)	—	(16,898)
December 31, 2022	**$ 115,352**	**$ 234,789**	**$ 2,224**	**$ 352,365**

Other Intangible Assets

The carrying amount of other intangible assets were as follows:

	December 31, 2022			December 31, 2021		
(Dollars in thousands)	**Gross Carrying Amount**	**Accumulated Amortization**	**Net Carrying Amount**	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Customer relationships	**$ 178,605**	**$ 85,569**	**$ 93,036**	$ 198,095	$ 77,870	$ 120,225
Technology	**82,349**	**59,052**	**23,297**	88,445	54,900	33,545
Trademarks and trade names	**19,098**	**6,639**	**12,459**	25,504	8,968	16,536
Covenants not to compete	**1,919**	**1,199**	**720**	2,693	1,137	1,556
Total definite-lived other intangible assets	**281,971**	**152,459**	**129,512**	314,737	142,875	171,862
Indefinite-lived other intangible asset	**4,212**	**—**	**4,212**	4,491	—	4,491
Total other intangible assets	**$ 286,183**	**$ 152,459**	**$ 133,724**	$ 319,228	$ 142,875	$ 176,353

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

Amortization expense was $16.4 million, $14.3 million and $42.1 million in 2022, 2021 and 2020, respectively. Additionally, in 2022, we impaired $17.9 million of customer relationships, technology and trademarks and trade names definite-lived other intangible assets related to our high-performance engineered cellular elastomer business. For additional information related to the impairment charges, refer to "Note 15 – Supplemental Financial Information." The estimated annual future amortization expense is $13.2 million, $12.1 million, $10.6 million, $10.2 million and $9.8 million in 2023, 2024, 2025, 2026 and 2027, respectively. These amounts could vary based on changes in foreign currency exchange rates.

The weighted average amortization period as of December 31, 2022, by definite-lived other intangible asset class, is presented in the table below:

Definite-Lived Other Intangible Asset Class	**Weighted Average Remaining Amortization Period**
Customer relationships	7.7
Technology	3.6
Trademarks and trade names	10.1
Covenants not to compete	1.0
Total definite-lived other intangible assets	**7.2**

Note 7 – Earnings Per Share

Basic earnings per share is based on the weighted average number of common shares outstanding. Diluted earnings per share is based on the weighted average number of common shares outstanding and all dilutive potential common shares outstanding.

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

	Years Ended December 31,		
(Dollars and shares in thousands, except per share amounts)	**2022**	2021	2020
Numerator:			
Net income	**$ 116,629**	$ 108,133	$ 49,990
Denominator:			
Weighted average shares outstanding - basic	**18,784**	18,731	18,681
Effect of dilutive shares	**169**	132	25
Weighted average shares outstanding - diluted	**18,953**	18,863	18,706
Basic earnings per share	**$ 6.21**	$ 5.77	$ 2.68
Diluted earnings per share	**$ 6.15**	$ 5.73	$ 2.67

Dilutive shares are calculated using the treasury stock method and primarily include unvested restricted stock units. Anti-dilutive shares are excluded from the calculation of diluted shares and diluted earnings per share. For 2022, 2021 and 2020, 18,444, 721 and 8,454 shares were excluded, respectively.

Note 8 – Capital Stock and Equity Compensation

Capital Stock

Our 2019 Long-Term Equity Compensation Plan, which was approved by our shareholders in May 2019, permits the granting of restricted stock units and certain other forms of equity awards to officers and other key employees. Under this plan, we also grant each non-management director deferred stock units, which permit non-management directors to receive, at a later date, one share of Rogers capital stock for each deferred stock unit, with no payment of any consideration by the director at the time the shares were received.

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

	As of December 31,	
	2022	2021
Shares reserved for issuance under outstanding restricted stock unit awards	**255,310**	320,381
Deferred compensation to be paid in stock, including deferred stock units	**6,850**	9,500
Additional shares reserved for issuance under Rogers Corporation 2019 Long-Term Equity Compensation Plan	**914,439**	869,516
Shares reserved for issuance under the Rogers Corporation Global Stock Ownership Plan for Employees[(1)]	**59,611**	65,163
Total	**1,236,210**	1,264,560

[(1)] This is an employee stock purchase plan within the meaning of Section 432(b) of the Internal Revenue Code of 1986, as amended, that was suspended as of December 31, 2021, pursuant to the then-pending merger agreement with DuPont.

Share Repurchases

In 2015, we initiated a share repurchase program (the Program) of up to $100.0 million of the Company's capital stock. We initiated the 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, 2022, $24.0 million remained of our $100.0 million share repurchase program. In 2022, we purchased 237,806 shares for a total value of $25.0 million. There were no share repurchases in 2021 or 2020.

Equity Compensation

Performance-Based Restricted Stock Units

As of December 31, 2022, we had performance-based restricted stock units from 2021 and 2020 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 measurement period. Participants are eligible to be awarded shares ranging from 0% to 200% of the original award amount, based on certain defined performance measures.

The outstanding awards have one measurement criteria: the three-year total shareholder return (TSR) on our capital stock as compared to that of a specified group of peer companies. The TSR measurement criteria of the awards is considered a market condition. As such, the fair value of this measurement criteria is determined on the grant date using a Monte Carlo simulation valuation model. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period with no changes for final projected payout of the awards. We account for forfeitures as they occur.

Below were the assumptions used in the Monte Carlo calculation for each material award granted in 2021 and 2020:

	February 10, 2021	February 12, 2020
Expected volatility	51.0%	41.0%
Expected term (in years)	2.9	2.9
Risk-free interest rate	0.18%	1.41%

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.

A summary of activity of the outstanding performance-based restricted stock units for 2021 and 2020 is presented below:

	2022		2021		2020	
	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 as of January 1	**114,554**	**$ 196.23**	111,059	$ 170.84	106,943	$ 161.33
Awards granted	**26,819**	**176.33**	41,507	258.17	87,244	131.99
Stock issued	**(60,053)**	**179.72**	—	—	(75,486)	111.54
Awards forfeited	**(15,807)**	**204.69**	(38,012)	189.69	(7,642)	179.89
Awards outstanding as of December 31	**65,513**	**$ 201.18**	114,554	$ 196.23	111,059	$ 170.84

We recognized $2.3 million, $7.7 million and $5.8 million of compensation expense related to performance-based restricted stock units in 2022, 2021 and 2020, respectively. As of December 31, 2022, there was $1.9 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 0.5 years.

Time-Based Restricted Stock Units

As of December 31, 2022, we had time-based restricted stock unit awards from 2022, 2021 and 2020 outstanding. The outstanding awards all ratably vest on the first, second and third anniversaries of the original grant date. 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 subsequent to the last grant anniversary date. Each time-based restricted stock unit represents a right to receive one share of the Rogers' capital stock at the end of the vesting period. The fair value of the award is determined by the market value of the underlying stock price at the grant date. We recognize compensation expense on all of these awards on a straight-line basis over the vesting period. We account for forfeitures as they occur.

A summary of activity of the outstanding time-based restricted stock units for 2022, 2021 and 2020 is presented below:

	2022		2021		2020	
	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 as of January 1	**96,989**	**$ 157.49**	102,142	$ 120.16	101,685	$ 122.68
Awards granted	**96,620**	**219.60**	50,640	180.19	58,807	116.87
Stock issued	**(48,253)**	**183.00**	(46,329)	146.45	(50,868)	111.16
Awards forfeited	**(21,072)**	**223.90**	(9,464)	146.58	(7,482)	122.87
Awards outstanding as of December 31	**124,284**	**$ 194.60**	96,989	$ 157.49	102,142	$ 120.16

We recognized $8.2 million, $7.6 million and $6.0 million of compensation expense related to time-based restricted stock units in 2022, 2021 and 2020, respectively. As of December 31, 2022, there was $16.1 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 0.9 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 13-month anniversary of the grant date unless the individual elects to defer the receipt of those shares. Each deferred stock unit results in the issuance of one share of Rogers' capital stock. The grant of deferred stock units is typically done annually during the second quarter of each year. The fair value of the award is determined by the market value of the underlying stock price at the grant date.

A summary of activity of the outstanding deferred stock units for 2022, 2021 and 2020 is presented below:

	2022		2021		2020	
	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 as of January 1	**9,500**	**$ 173.82**	12,450	$ 113.96	7,150	$ 170.89
Awards granted	**4,800**	**272.12**	6,450	188.60	10,400	108.88
Stock issued	**(7,450)**	**183.20**	(9,400)	104.68	(5,100)	183.40
Awards outstanding as of December 31	**6,850**	**$ 232.51**	9,500	$ 173.82	12,450	$ 113.96

We recognized $1.3 million, $1.2 million and $1.1 million of compensation expense related to deferred stock units in 2022, 2021 and 2020, respectively.

Note 9 – Debt

In October 2020, we entered into the Fourth Amended and Restated Credit Agreement with JPMorgan Chase Bank, N.A, as administrative agent, and the lenders party thereto (the Fourth Amended Credit Agreement). The Fourth Amended Credit Agreement amends and restates the Third Amended Credit Agreement, and provides for a revolving credit facility with up to a $450.0 million borrowing capacity, with sublimits for multicurrency borrowings, letters of credit and swing-line notes, in addition to a $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 Fourth Amended Credit Agreement). The Fourth Amended Credit Agreement extends the maturity, the date on which all amounts borrowed or outstanding under the Fourth Amended Credit Agreement are due, from October 16, 2020 to March 31, 2024.

All obligations under the Fourth Amended Credit Agreement are guaranteed by each of our existing and future material domestic subsidiaries, as defined in the Fourth Amended Credit Agreement (the Guarantors). The obligations are also secured by a Fourth Amended and Restated Pledge and Security Agreement, dated as of October 16, 2020, 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 our and the Guarantors' non-real estate assets. These assets include, but are not limited to, receivables, equipment, intellectual property, inventory, and stock in certain subsidiaries.

In March 2021, the U.K. Financial Conduct Authority ("FCA") publicly announced that immediately after December 31, 2021, publication of most Euro, Swiss Franc, Japanese Yen and Pound Sterling LIBOR settings will permanently cease. In October 2021, Rogers Corporation and JPMorgan Chase Bank, N.A. entered into an amendment (Amendment No 1) to the Fourth Amended Credit Agreement to adopt a new benchmark interest rate to replace the discontinued LIBOR reference rates.

Borrowings under the Fourth Amended Credit Agreement can be made as alternate base rate loans, euro-currency loans, or RFR loans. Alternate base rate loans bear interest at a base reference rate plus a spread of 62.5 to 100.0 basis points, depending on our leverage ratio. The base reference rate is the greatest of (a) the prime rate in effect on such day, (b) the NYFRB rate in effect on such day plus ½ of 1%, or (c) the adjusted LIBOR for a one-month interest period in dollars on such day (or if such day is not a business day, the immediately preceding business day) plus 1%. Euro-currency loans bear interest based on adjusted LIBOR plus a spread of 162.5 to 200.0 basis points, depending on our leverage ratio. RFR loans bears interest based upon the Sterling Overnight Index Average (SONIA) plus 0.0326% plus a spread of 162.5 to 200.0 basis points. Based on our leverage ratio as of December 31, 2022, the spread was 175.0 basis points.

In addition to interest payable on the principal amount of indebtedness outstanding from time to time under the Fourth Amended Credit Agreement, we incur an annual fee of 25 to 35 basis points (based upon our leverage ratio), paid quarterly, of the unused amount of the lenders' commitments under the Fourth Amended Credit Agreement.

The Fourth Amended Credit Agreement contains customary representations and 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 total net leverage ratio of no more than 3.25 to 1.00, subject to a one-time election to increase the maximum total net 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. We are permitted to net up to $50.0 million of unrestricted domestic cash and cash equivalents against indebtedness in the calculation of the total net leverage ratio.

The Fourth 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 total net leverage ratio does not exceed 2.75 to 1.00. If our total net 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 total net leverage ratio did not exceed 2.75 to 1.00 as of December 31, 2022.

In 2022, we borrowed $100.0 million under our revolving credit facility for use in various operations. In 2021, we borrowed $190.0 million under our revolving credit facility, which was primarily used to fund our acquisition of Silicone Engineering Limited. In 2020, we borrowed $150.0 million under our revolving credit facility as a precautionary measure of increasing our cash position and preserving our financial flexibility with the uncertainty in the global markets resulting from the COVID-19 pandemic. In 2022, 2021 and 2020, we made discretionary principal payments on our revolving credit facility of $75.0 million, $25.0 million and $248.0 million, respectively.

We had $215.0 million of outstanding borrowings under our revolving credit facility as of December 31, 2022, and $190.0 million as of December 31, 2021. We had $0.9 million and $1.6 million of outstanding line of credit issuance costs as of December 31, 2022 and 2021, respectively, which will be amortized over the life of the Fourth Amended Credit Agreement.

Note 10 – Leases

Finance Leases

We had a finance lease obligation related to our manufacturing facility in Eschenbach, Germany. Under the terms of the lease agreement, we had an option to purchase the property upon the expiration of the lease on June 30, 2021 at a price which was the greater of (i) the then-current market value or (ii) the residual book value of the land including the buildings and installations thereon. We exercised this purchase option with a net cash payment of $5.0 million on June 30, 2021, extinguishing the remaining finance lease obligation and finance lease right-of-use asset related to this facility. Our finance lease obligation related to this facility was $4.2 million just prior to the exercise of the purchase option and $4.2 million as of December 31, 2021. The finance lease right-of-use asset balance for this facility was $6.1 million just prior to the exercise of the purchase option and $6.1 million as of December 31, 2021, respectively. Accumulated amortization related to this finance lease right-of-use asset was $4.5 million just prior to the exercise of the purchase option and as of December 31, 2022. The aggregate of all other finance lease obligations, finance lease right-of-use assets and related accumulated amortization, were immaterial as of December 31, 2022 and December 31, 2021.

Amortization expense related to our finance lease right-of-use assets, which is primarily included in the "Cost of sales" line item of the consolidated statements of operations, was immaterial for each of the years ended December 31, 2022 and 2021. Interest expense related to our finance lease obligations, which is included in the "Interest expense, net" line item of the consolidated statements of operations, was immaterial for each of the years ended December 31, 2022 and 2021. Payments made on the principal portion of our finance lease obligations were immaterial for each of the years ended December 31, 2022 and 2021.

Operating Leases

We have operating leases primarily related to building space and vehicles. Renewal options are included in the lease term to the extent we are reasonably certain to exercise the option. The exercise of lease renewal options is at our sole discretion. We account for lease components separately from non-lease components. The incremental borrowing rate represents our ability to borrow on a collateralized basis over a similar lease term. Our expenses and payments for operating leases were as follows:

	Year Ended December 31,		
(Dollars in thousands)	**2022**	2021	2020
Operating leases expense	**$ 2,788**	$ 3,002	$ 3,257
Short-term leases expense	**$ 579**	$ 330	$ 464
Payments on operating lease obligations	**$ 3,063**	$ 2,784	$ 2,893

Lease Balances in Statements of Financial Position

Our assets and liabilities balances related to finance and operating leases reflected in the consolidated statements of financial position were as follows:

		As of December 31,	
(Dollars in thousands)	**Financial Statement Line Item**	**2022**	2021
Finance lease right-of-use assets	Property, plant and equipment, net	**$ 1,749**	$ 389
Operating lease right-of-use assets	Other long-term assets	**$ 13,013**	$ 17,161
Finance lease obligations, current portion	Finance lease obligations, current portion	**$ 498**	$ 198
Finance lease obligations, non-current portion	Finance lease obligations, non-current portion	**$ 1,295**	$ 209
Total finance lease obligations		**$ 1,793**	$ 407
Operating lease obligations, current portion	Other accrued liabilities	**$ 2,842**	$ 2,810
Operating lease obligations, non-current portion	Other long-term liabilities	**$ 10,689**	$ 14,965
Total operating lease obligations		**$ 13,531**	$ 17,775

Net Future Minimum Lease Payments

The following table includes future minimum lease payments under finance and operating leases together with the present value of the net future minimum lease payments as of December 31, 2022:

	Finance			Operating		
(Dollars in thousands)	Leases Signed	Less: Leases Not Yet Commenced	Leases in Effect	Leases Signed	Less: Leases Not Yet Commenced	Leases in Effect
2023	608	(46)	562	3,536	(81)	3,455
2024	425	(49)	376	2,716	(142)	2,574
2025	425	(50)	375	2,360	(145)	2,215
2026	418	(45)	373	2,057	(72)	1,985
2027	212	(45)	167	1,310	(3)	1,307
Thereafter	164	(38)	126	4,682	—	4,682
Total lease payments	2,252	(273)	1,979	16,661	(443)	16,218
Less: Interest	(218)	32	(186)	(2,718)	31	(2,687)
Present Value of Net Future Minimum Lease Payments	$ 2,034	$ (241)	$ 1,793	$ 13,943	$ (412)	$ 13,531

The following table includes information regarding the lease term and discount rates utilized in the calculation of the present value of net future minimum lease payments:

	Finance Leases	Operating Leases
Weighted Average Remaining Lease Term	4.6 years	6.5 years
Weighted Average Discount Rate	3.89%	5.24%

Practical Expedients

We have elected to recognize lease payments in the consolidated statements of operations on a straight-line basis over the term of the lease for short-term leases. We also elected the package of practical expedients that allows us to carry forward the historical lease classification and accounting for indirect costs for any existing leases.

Note 11 – Pension Benefits, Other Postretirement Benefits and Employee Savings and Investment Plan

Pension and Other Postretirement Benefits

Pension and Other Postretirement Benefit Plans

As of December 31, 2022, we had one qualified noncontributory defined benefit pension plan: the Union Plan. In June 2020, we completed the remaining settlement efforts for the Rogers Corporation Defined Benefit Pension Plan (following its merger with the Hourly Employees Pension Plan of Arlon LLC, Microwave Material and Silicone Technologies Divisions, Bear, Delaware (collectively, the Merged Plan)), which had been terminated and substantially settled in late 2019. There are no plans to terminate the Union Plan.

Additionally, we sponsor non-qualified noncontributory defined benefit pension plans and postretirement benefit plans including multiple fully insured or self-funded medical plans and life insurance plans for certain retirees. The measurement date for all plans is December 31st for each respective plan year.

Pension Plan Termination & Settlement

In October 2019, our Chief Executive Officer approved the termination of the Merged Plan. We provided participants of the Merged Plan an option to elect either a lump sum distribution or an annuity. A group annuity contract was purchased with an insurance company for all participants who did not elect a lump sum distribution. The insurance company became responsible for administering and paying pension benefit payments effective January 1, 2020.

Upon completion of the pension termination and settlement processes for the Merged Plan, we had a $9.7 million remaining pension surplus investment balance. In July 2020 and December 2021, we transferred $9.2 million of the pension surplus investment balance to a suspense account held within a trust for the Rogers Employee Savings and Investment Plan (RESIP), a 401(k) plan for domestic employees. In December 2021, we transferred the remaining pension investment balance not initially transferred, to the RESIP trust suspense account. In 2021, $0.5 million of the pension surplus investment balance was used for further settlement efforts for the Merged Plan termination. The funds in the RESIP trust suspense account were used to fund certain employer contributions. In 2022, we exhausted the pension surplus investment balance.

Plan Assets and Plan Benefit Obligations

The following table summarizes the change in plan assets and changes in benefit obligations:

	Pension Benefits		Other Postretirement Benefits	
(Dollars in thousands)	**2022**	2021	**2022**	2021
Change in plan assets:				
Fair value of plan assets as of January 1	**$ 33,462**	$ 35,296	**$ —**	$ —
Actual return on plan assets	**(5,616)**	(222)	**—**	—
Employer contributions	**—**	—	**19**	165
Benefit payments	**(1,546)**	(1,612)	**(19)**	(165)
Transfer related to plan termination	**—**	—	**—**	—
Pension settlements	**—**	—	**—**	—
Fair value of plan assets as of December 31	**$ 26,300**	$ 33,462	**$ —**	$ —
Change in plan benefit obligations:				
Fair value of plan benefit obligations as of January 1	**$ 28,652**	$ 30,289	**$ 1,444**	$ 1,503
Service cost	**—**	—	**89**	41
Interest cost	**746**	732	**36**	26
Actuarial (gain) loss	**(6,573)**	(757)	**(109)**	39
Benefit payments	**(1,546)**	(1,612)	**(19)**	(165)
Pension settlements	**—**	—	**—**	—
Fair value of plan benefit obligations as of December 31	**$ 21,279**	$ 28,652	**$ 1,441**	$ 1,444
Amount overfunded (underfunded)	**$ 5,021**	$ 4,810	**$ (1,441)**	$ (1,444)

The decreases in our plan benefit obligations in 2022 and 2021 were primarily driven by actuarial gains and benefit payments, partially offset by interest costs.

Our pension-related balances reflected in the consolidated statements of financial position consisted of the following:

	Pension Benefits		Other Postretirement Benefits	
	As of December 31,		As of December 31,	
(Dollars in thousands)	**2022**	2021	**2022**	2021
Assets & Liabilities:				
Non-current assets	**$ 5,251**	$ 5,123	**$ —**	$ —
Current liabilities	**(4)**	(3)	**(166)**	(136)
Non-current liabilities	**(226)**	(310)	**(1,275)**	(1,308)
Net assets (liabilities)	**$ 5,021**	$ 4,810	**$ (1,441)**	$ (1,444)
Accumulated Other Comprehensive Loss:				
Net actuarial (loss) gain	**$ (11,803)**	$ (11,807)	**$ 189**	$ 80
Prior service benefit	**—**	—	**—**	—
Accumulated other comprehensive (loss) income	**$ (11,803)**	$ (11,807)	**$ 189**	$ 80

The projected benefit obligation (PBO), accumulated benefit obligation (ABO), and fair value of plan assets for the pension plan with a PBO or ABO in excess of its plan assets were immaterial as of December 31, 2022 and 2021.

The PBO, ABO, and fair value of plan assets for the pension plan with plan assets in excess of its PBO or ABO were $21.0 million, $21.0 million and $26.3 million, respectively, as of December 31, 2022. The PBO, ABO, and fair value of plan assets for the pension plans with plan assets in excess of their PBO or ABO were $28.3 million, $28.3 million and $33.5 million, respectively, as of December 31, 2021.

The PBO and ABO of plan assets for the other postretirement benefit plans with a PBO or ABO in excess of plan assets were both $1.4 million as of December 31, 2022. The PBO and ABO of plan assets for the other postretirement benefit plans with a PBO or ABO in excess of plan assets were both $1.4 million as of December 31, 2021. The other postretirement benefit plans did not have any plan assets as of December 31, 2022 or 2021.

Components of Net Periodic Benefit Cost (Credit)

The components of net periodic benefit cost (credit) were as follows:

	Pension Benefits			Other Postretirement Benefits		
	Years Ended December 31,			Years Ended December 31,		
(Dollars in thousands)	**2022**	2021	2020	**2022**	2021	2020
Service cost	**$ —**	$ —	$ —	**$ 89**	$ 41	$ 56
Interest cost	**746**	732	908	**36**	26	40
Expected return of plan assets	**(1,359)**	(1,558)	(1,574)	**—**	—	—
Amortization of prior service credit	**—**	—	—	**—**	(97)	(112)
Amortization of net loss (gain)	**405**	387	427	**—**	—	—
Settlement charge	**—**	—	(63)	**—**	—	—
Net periodic benefit cost (credit)	**$ (208)**	$ (439)	$ (302)	**$ 125**	$ (30)	$ (16)

Plan Assumptions

The key plan assumptions utilized in our annual plan measurements were as follows:

	Pension Benefits		Other Postretirement Benefits	
	2022	2021	**2022**	2021
Weighted average assumptions used in benefit obligations:				
Discount rate	**5.25 %**	2.75 %	**5.00 %**	2.25 %
Weighted average assumptions used in net periodic benefit costs:				
Discount rate	**2.75 %**	2.50 %	**2.25 %**	1.75 %
Expected long-term rate of return on assets	**4.17 %**	4.53 %	**— %**	— %

For measurement purposes as of December 31, 2022, we assumed an annual health care cost trend rate of 6.25% for covered health care benefits for retirees pre-age 65 or post-age 65. For measurement purposes as of December 31, 2021, we assumed an annual health care cost trend rate of 6.25% for covered health care benefits for retirees pre-age 65 or post-age 65.

Our pension plan 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 consider future cash contributions to the plan as well as the potential of the portfolio underperforming the market. We set asset allocation target ranges based on current funding status and future projections in order to mitigate the portfolio performance risk while maintaining its funded status. Fixed income securities comprise a substantial percentage of our plan assets portfolio. As of December 31, 2022, we held approximately 91% fixed income and short-term cash securities and 9% equity securities in our portfolio, compared to December 31, 2021 when we held approximately 90% fixed income and short-term cash securities and 10% equity securities.

In determining our investment strategy and calculating the net benefit cost, we utilized an expected long-term rate of return on plan assets, which was developed based on several factors, including the plans' asset allocation targets, the historical and projected performance on those asset classes, as well as the plan's current asset composition. To justify our assumptions, we analyzed certain data points related to portfolio performance. Based on the historical returns and the projected future returns, we determined that a target return of 5.59% is appropriate for the current portfolio.

The following table presents the fair value of the pension plan net assets by asset category and level, within the fair value hierarchy, as of December 31, 2022 and 2021:

	Fair Value of Plan Assets as of December 31, 2022			
(Dollars in thousands)	**Level 1**	**Level 2**	**Level 3**	**Total**
Fixed income bonds	**$ —**	**$ 22,180**	**$ —**	**$ 22,180**
Mutual funds	**2,466**	**—**	**—**	**2,466**
Pooled separate accounts	**—**	**531**	**—**	**531**
Guaranteed deposit account	**—**	**—**	**1,123**	**1,123**
Total plan assets at fair value	**$ 2,466**	**$ 22,711**	**$ 1,123**	**$ 26,300**

	Fair Value of Plan Assets as of December 31, 2021			
(Dollars in thousands)	Level 1	Level 2	Level 3	Total
Fixed income bonds	$ —	$ 28,392	$ —	$ 28,392
Mutual funds	3,400	—	—	3,400
Pooled separate accounts	—	380	—	380
Guaranteed deposit account	—	—	1,290	1,290
Total plan assets at fair value	$ 3,400	$ 28,772	$ 1,290	$ 33,462

The following table presents a summary of changes in the fair value of the guaranteed deposit account's Level 3 assets for the year ended December 31, 2022:

	Guaranteed Deposit Account
Balance as of December 31, 2021	$ 1,290
Change in unrealized gain (loss)	(129)
Purchases, sales, issuances and settlements (net)	(38)
Balance as of December 31, 2022	**$ 1,123**

Cash Flows

We were not required to make any contributions to our qualified noncontributory defined benefit pension plan in 2022 and 2021. We made expected benefit payments for our qualified defined benefit pension plan through the utilization of plan assets for the funded pension plans in 2022 and 2021. As there is no funding requirement for the non-qualified noncontributory defined benefit pension plans and other postretirement benefit plans, we funded benefit payments, which were immaterial in 2022 and 2021, as incurred using cash from operations.

The benefit payments are based on the same assumptions used to measure our benefit obligations as of December 31, 2022. The following table sets forth the expected benefit payments to be paid for the pension plans and the other postretirement benefit plans:

	Pension Benefits	**Other Postretirement Benefits**
2023	$ 1,721	$ 166
2024	$ 1,725	$ 147
2025	$ 1,761	$ 158
2026	$ 1,712	$ 164
2027	$ 1,705	$ 158
2028-2032	$ 7,972	$ 718

Employee Savings and Investment Plan

We sponsor the RESIP, a 401(k) plan for domestic employees. In 2022, employees could defer an amount they choose, up to the annual IRS limit of $20,500. Certain eligible participants are also allowed to contribute the maximum catch-up contribution per IRS regulations. We match each eligible employee's annual pre-tax contributions at a rate of 100% for the first 1% of the employee's salary and 50% for the next 5% of each employee's salary 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 $11.8 million, $5.6 million and $4.9 million in 2022, 2021 and 2020, respectively. The increase in expense in 2022 was primarily due to a $6.5 million discretionary RESIP contribution related to the previously anticipated merger with DuPont.

Note 12 – Commitments and Contingencies

Environmental & Legal

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

Voluntary Corrective Action Program

Our location 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. Remediation activities on the site are ongoing and are recorded as reductions to the accrual as they are incurred. We have incurred aggregate remediation costs of $1.9 million through December 31, 2022, and the accrual for future remediation efforts is $0.7 million.

Asbestos

Overview

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 summarizes the change in number of asbestos claims outstanding during 2022 and 2021:

	2022	2021
Claims outstanding as of January 1	**543**	561
New claims filed	**129**	125
Pending claims concluded*	**(135)**	(143)
Claims outstanding as of December 31	**537**	543

* For the year ended December 31, 2022, 119 claims were dismissed and 16 claims were settled. For the year ended December 31, 2021, 125 claims were dismissed and 18 claims were settled. Settlements totaled approximately $2.4 million for the year ended December 31, 2022, compared to $2.1 million for the year ended December 31, 2021.

Impacts on Financial Statements

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.

The liability projection period covers all current and future indemnity and defense costs through 2064, which represents the expected end of our asbestos liability exposure with no further ongoing claims expected beyond that date. This conclusion was based 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 expected downward trend in claims due to the average age of our claimants, which is approaching the average life expectancy.

To date, the indemnity and defense costs of our asbestos-related product liability litigation have been substantially covered by insurance. Although we have exhausted coverage under some of our insurance policies, we believe that we have applicable primary, excess and/or umbrella coverage for claims arising with respect to most of the years during which we manufactured and marketed asbestos-containing products. 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 covered 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, and no carrier had informed us it intended to terminate the agreement. We expect to continue 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 are responsible for uninsured indemnity and defense costs, and we paid $0.6 million, $0.5 million and $0.4 million in 2022, 2021 and 2020, respectively, related to such costs.

The amounts recorded for the asbestos-related liability and the related insurance receivables are 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 U.S., could cause the actual liability and insurance recoveries for us to be higher or lower than those projected or recorded.

Changes recorded in the estimated liability and estimated insurance recovery based on the projections of asbestos litigation and corresponding insurance coverage, result in the recognition of expense or income. We recognized an immaterial amount of expense and an immaterial amount of income in 2022 and 2021, respectively, as well as income of $0.7 million in 2020. The benefit recognized in 2020 was primarily due to a favorable change in the defense cost assumptions.

Our projected asbestos-related claims and insurance receivables were as follows:

	As of December 31,	
(Dollars in thousands)	**2022**	2021
Asbestos-related liabilities	**$ 65,033**	$ 68,332
Asbestos-related insurance receivables	**$ 59,807**	$ 62,567

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 will have a material adverse impact on our results of operations, financial position or cash flows.

Note 13 – Income Taxes

The “Income before income tax expense” line item in the consolidated statements of operations consisted of:

(Dollars in thousands)	**2022**	2021	2020
Domestic	**$ 58,390**	$ 34,435	$ (4,371)
International	**81,990**	91,845	72,905
Total	**$ 140,380**	$ 126,280	$ 68,534

The “Income tax expense” line item in the consolidated statements of operations consisted of:

(Dollars in thousands)	Current	Deferred	Total
2022			
Domestic	**$ 26,666**	**$ (18,730)**	**$ 7,936**
International	**17,641**	**(1,826)**	**15,815**
Total	**$ 44,307**	**$ (20,556)**	**$ 23,751**
2021			
Domestic	$ 5,155	$ (2,938)	$ 2,217
International	16,187	(257)	15,930
Total	$ 21,342	$ (3,195)	$ 18,147
2020			
Domestic	$ 5,340	$ (11,012)	$ (5,672)
International	26,610	(2,394)	24,216
Total	$ 31,950	$ (13,406)	$ 18,544

Deferred tax assets and liabilities as of December 31, 2022 and 2021, were comprised of the following:

(Dollars in thousands)	**2022**	2021
Deferred tax assets		
Accrued employee benefits and compensation	**$ 8,678**	$ 10,647
Net operating loss carryforwards	**4,433**	3,785
Tax credit carryforwards	**2,823**	13,170
Reserves and accruals	**4,716**	5,145
Operating leases	**4,227**	4,191
Capitalized research and development	**21,305**	16,622
Other	**10,205**	5,299
Total deferred tax assets	**56,387**	58,859
Less deferred tax asset valuation allowance	**(2,843)**	(9,775)
Total deferred tax assets, net of valuation allowance	**53,544**	49,084
Deferred tax liabilities		
Depreciation and amortization	**14,368**	32,669
Postretirement benefit obligations	**687**	2,071
Unremitted earnings	**2,551**	2,335
Operating leases	**4,618**	4,422
Other	**4,228**	4,367
Total deferred tax liabilities	**26,452**	45,864
Net deferred tax asset (liability)	**$ 27,092**	$ 3,220

As of December 31, 2022, we had state net operating loss carryforwards totaling $7.1 million in various state taxing jurisdictions, which expire between 2023 and 2042, and approximately $3.6 million of state research credit carryforwards, which will expire between 2023 and 2040. We believe that it is more likely than not that the benefit from certain of the state net operating loss and state R&D credits carryforwards will not be realized. In recognition of this risk, we have provided a valuation allowance of $2.8 million relating to these carryforwards. We currently have approximately $4.7 million of foreign tax credits that begin to expire in 2028.

We had a valuation allowance of $2.8 million as of December 31, 2022 and $9.8 million as of December 31, 2021, 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. Differences between forecasted and actual future operating results or changes in carryforward periods could adversely impact the amount of deferred tax asset considered realizable.

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

(Dollars in thousands)	**2022**	2021	2020
Tax expense at Federal statutory income tax rate	**$ 29,480**	$ 26,519	$ 14,392
Impact of foreign operations	**1,531**	2,020	1,193
Foreign source income, net of tax credits	**(6,461)**	(4,944)	1,050
State tax, net of federal	**6,898**	175	(313)
Unrecognized tax benefits	**1,921**	(8,823)	5,800
Equity compensation excess tax deductions	**(3,025)**	262	(791)
General business credits	**(821)**	(867)	(931)
Distribution related foreign taxes	**1,504**	2,516	2,332
Executive compensation limitation	**2,859**	1,570	900
Valuation allowance change	**(6,932)**	525	(5,375)
Disproportionate tax effect of pension settlement charges	**—**	—	—
Other	**(3,203)**	(806)	287
Income tax expense (benefit)	**$ 23,751**	$ 18,147	$ 18,544

Our effective income tax rate for 2022 was 16.9% compared to 14.4% for 2021. The 2022 rate increase was primarily due to the impact of the decrease in the reversals of unrecognized tax positions in China.

We did not make any changes in 2022 to our position on the permanent reinvestment of our historical earnings from foreign operations. With the exception of certain Chinese subsidiaries, we continue to assert that historical foreign earnings are indefinitely reinvested. As of December 31, 2022 and 2021, we had recorded a deferred tax liability of $2.5 million and $2.3 million, respectively, for Chinese withholding tax on undistributed earnings that are not indefinitely reinvested. The other remaining foreign subsidiaries have both the intent and ability to indefinitely reinvest their undistributed earnings and we estimate that, if these undistributed earnings are distributed, they may give rise to an estimated $2.1 million of additional tax liabilities. If circumstances change and it becomes apparent that some, or all of the undistributed earnings as of December 31, 2022 will not be indefinitely reinvested, the provision for the tax consequences, if any, will be recorded in the period when circumstances change. Distributions out of current and future earnings are permissible to fund discretionary activities such as business acquisitions. However, when distributions are made, this could result in a higher effective tax rate.

Unrecognized tax benefits, excluding potential interest and penalties, for the years ended December 31, 2022 and 2021, were as follows:

(Dollars in thousands)	**2022**	2021
Beginning balance as of January 1	**$ 6,583**	$ 15,688
Gross increases - current period tax positions	**3,402**	1,046
Gross increases - tax positions in prior periods	**237**	1,150
Gross decreases - tax positions in prior periods	**(178)**	(9,151)
Foreign currency exchange	**(147)**	(10)
Settlements	**(1,028)**	(2,140)
Ending balance as of December 31	**$ 8,869**	$ 6,583

Included in the balance of unrecognized tax benefits as of December 31, 2022 were $7.8 million of tax benefits that, if recognized, would impact the effective tax rate.

We recognized interest accrued related to unrecognized tax benefit as income tax expense. Related to the unrecognized tax benefits noted above, as of December 31, 2022 and 2021, we had accrued potential interest and penalties of approximately $1.1 million.

We are subject to taxation in the U.S. and various state and foreign jurisdictions. Our tax years from 2018 through 2022 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 2018.

Note 14 – Operating Segment and Geographic Information

Our reporting structure is comprised of the following strategic operating segments: AES and EMS. The remaining operations, which represent our non-core businesses, are reported in the Other operating segment. We believe this structure aligns our external reporting presentation with how we currently manage and view our business internally.

Operating Segment Information

The following table presents a disaggregation of revenue from contracts with customers and other pertinent financial information, for the periods indicated; inter-segment sales have been eliminated from the net sales data:

(Dollars in thousands)	Advanced Electronics Solutions	Elastomeric Material Solutions	Other	Total
December 31, 2022				
Net sales - recognized over time	**$ 227,031**	**$ 15,887**	**$ 16,361**	**$ 259,279**
Net sales - recognized at a point in time	**$ 303,184**	**$ 404,119**	**$ 4,589**	**$ 711,892**
Total net sales	**$ 530,215**	**$ 420,006**	**$ 20,950**	**$ 971,171**
Operating income (loss)	**$ 77,163**	**$ 60,351**	**$ 6,918**	**$ 144,432**
Total assets	**$ 854,194**	**$ 778,655**	**$ 13,365**	**$ 1,646,214**
Capital expenditures	**$ 58,858**	**$ 57,617**	**$ 313**	**$ 116,788**
Depreciation & amortization	**$ 21,721**	**$ 23,480**	**$ 678**	**$ 45,879**
Investment in unconsolidated joint ventures	**$ —**	**$ 14,082**	**$ —**	**$ 14,082**
Equity income in unconsolidated joint ventures	**$ —**	**$ 4,437**	**$ —**	**$ 4,437**
December 31, 2021				
Net sales - recognized over time	$ 244,016	$ 14,909	$ 18,838	$ 277,763
Net sales - recognized at a point in time	$ 290,413	$ 363,108	$ 1,602	$ 655,123
Total net sales	$ 534,429	$ 378,017	$ 20,440	$ 932,886
Operating income (loss)	$ 50,198	$ 60,051	$ 6,933	$ 117,182
Total assets	$ 826,719	$ 759,576	$ 12,271	$ 1,598,566
Capital expenditures	$ 38,945	$ 31,777	$ 403	$ 71,125
Depreciation & amortization	$ 22,936	$ 19,695	$ 653	$ 43,284
Investment in unconsolidated joint ventures	$ —	$ 16,328	$ —	$ 16,328
Equity income in unconsolidated joint ventures	$ —	$ 7,032	$ —	$ 7,032
December 31, 2020				
Net sales - recognized over time	$ 190,042	$ 10,614	$ 14,451	$ 215,107
Net sales - recognized at a point in time	$ 268,637	$ 317,563	$ 1,276	$ 587,476
Total net sales	$ 458,679	$ 328,177	$ 15,727	$ 802,583
Operating income	$ 32,023	$ 30,817	$ 4,494	$ 67,334
Total assets	$ 746,086	$ 504,199	$ 13,720	$ 1,264,005
Capital expenditures	$ 23,689	$ 16,214	$ 482	$ 40,385
Depreciation & amortization	$ 23,593	$ 47,159	$ 673	$ 71,425
Investment in unconsolidated joint ventures	$ —	$ 15,248	$ —	$ 15,248
Equity income in unconsolidated joint ventures	$ —	$ 4,877	$ —	$ 4,877

Operating Segment Net Sales by Geographic Area

The following table presents net sales by our operating segment operations by geographic area for the years indicated:

(Dollars in thousands)	Net Sales[1]			
Region/Country	Advanced Electronics Solutions	Elastomeric Material Solutions	Other	Total
December 31, 2022				
United States	**$ 122,707**	**$ 169,490**	**$ 4,439**	**$ 296,636**
Other Americas	**6,628**	**15,389**	**287**	**22,304**
Total Americas	**129,335**	**184,879**	**4,726**	**318,940**
China	**154,435**	**121,666**	**7,397**	**283,498**
Other APAC	**75,205**	**31,393**	**2,692**	**109,290**
Total APAC	**229,640**	**153,059**	**10,089**	**392,788**
Germany	**78,666**	**30,390**	**1,092**	**110,148**
Other EMEA	**92,574**	**51,678**	**5,043**	**149,295**
Total EMEA	**171,240**	**82,068**	**6,135**	**259,443**
Total net sales	**$ 530,215**	**$ 420,006**	**$ 20,950**	**$ 971,171**
December 31, 2021				
United States	$ 93,584	$ 161,180	$ 4,508	$ 259,272
Other Americas	3,107	10,226	755	14,088
Total Americas	96,691	171,406	5,263	273,360
China	193,422	122,000	4,773	320,195
Other APAC	85,100	27,569	2,647	115,316
Total APAC	278,522	149,569	7,420	435,511
Germany	72,531	29,214	827	102,572
Other EMEA	86,685	27,828	6,930	121,443
Total EMEA	159,216	57,042	7,757	224,015
Total net sales	$ 534,429	$ 378,017	$ 20,440	$ 932,886
December 31, 2020				
United States	$ 90,822	$ 128,347	$ 3,679	$ 222,848
Other Americas	2,943	8,437	682	12,062
Total Americas	93,765	136,784	4,361	234,910
China	153,297	108,161	2,859	264,317
Other APAC	70,830	43,364	2,162	116,356
Total APAC	224,127	151,525	5,021	380,673
Germany	70,881	19,118	410	90,409
Other EMEA	69,906	20,750	5,935	96,591
Total EMEA	140,787	39,868	6,345	187,000
Total net sales	$ 458,679	$ 328,177	$ 15,727	$ 802,583

[1] Net sales are allocated to countries based on the location of the customer. The table above lists individual countries with 10% or more of net sales for the periods indicated.

We had contract assets primarily related to unbilled revenue for revenue recognized related to products that are deemed to have no alternative use whereby we have the right to payment. Revenue is recognized in advance of billing to the customer in these circumstances as billing is typically performed at the time of shipment to the customer. The unbilled revenue is included in the contract assets on the consolidated statements of financial position.

Our contract assets by operating segment were as follows:

	As of December 31,	
(Dollars in thousands)	**2022**	2021
Advanced Electronics Solutions	**$ 33,736**	$ 31,398
Elastomeric Material Solutions	**1,584**	2,082
Other	**3,533**	3,130
Total contract assets	**$ 38,853**	$ 36,610

We did not have any contract liabilities as of December 31, 2022 or 2021. No impairment losses were recognized in 2022, 2021 or 2020 on any receivables or contract assets arising from our contracts with customers.

Long-Lived Assets by Geographic Area

Our long-lived assets[1] by geographic area were as follows:

	As of December 31,	
(Dollars in thousands)	**2022**	2021
United States	**$ 401,237**	$ 454,531
England	**161,916**	188,859
Germany	**139,671**	133,546
Other	**154,693**	113,734
Total long-lived assets	**$ 857,517**	$ 890,670

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

Note 15 – Supplemental Financial Information

Restructuring and Impairment Charges

The components of "Restructuring and impairment charges" line item in the condensed consolidated statements of operations, were as follows:

	Years Ended December 31,		
(Dollars in thousands)	**2022**	2021	2020
Restructuring charges			
Manufacturing footprint optimization	**$ 1,114**	$ 3,115	$ 12,348
U.S. footprint consolidation	**363**	—	—
Restructuring charges	**1,477**	3,115	12,348
Impairment charges			
Fixed assets impairment charges	**47,191**	455	587
Other impairment charges	**17,894**	—	52
Impairment charges	**65,085**	455	639
Total restructuring and impairment charges	**$ 66,562**	$ 3,570	$ 12,987

Restructuring Charges - Manufacturing Footprint Optimization

During the third quarter of 2020, we commenced manufacturing footprint optimization plans involving certain Europe and Asia manufacturing locations, primarily impacting our AES operating segment, in order to achieve greater cost competitiveness as well as align capacity with end market demand. The majority of the restructuring activities were completed in the first half of 2021. We incurred restructuring charges and related expenses of $1.1 million and $3.1 million in 2022 and 2021. Severance and related benefits activity related to the manufacturing footprint optimization plan is presented in the table below for the year ended December 31, 2022:

(Dollars in thousands)	**Manufacturing Footprint Optimization Restructuring Severance and**
Balance as of December 31, 2021	$ 1,395
Provisions	363
Payments	(1,606)
Foreign currency translation adjustment	(104)
Balance as of December 31, 2022	**$ 48**

Impairment Charges

We recognized $65.1 million, $0.5 million and $0.6 million of impairment charges in 2022, 2021 and 2020, respectively. The impairment charges in 2022 primarily related to certain AES operating segment equipment-in-process in the U.S. as well as certain EMS operating segment intangibles and fixed assets related to our high-performance engineered cellular elastomer business in the U.S. The impairment charges in 2021 and 2020 were both primarily related to AES operating segment fixed assets in Belgium.

The impairment of the equipment-in-process in our AES operating segment was triggered by our decision in November 2022 to exit the Price Road facility in Arizona.

The impairment of certain intangibles and fixed assets related to our high-performance engineered cellular elastomer business in our EMS operating segment was triggered upon committing to a plan in late 2022 to divest ourselves of this business by early 2023 and the subsequent fair valuing of assets and liabilities. In addition to the impairment charges, we recognized an additional $2.6 million accrual against the remaining net assets of the business based on the estimated fair value of the business. As the high-performance engineered cellular elastomer business met the criteria of held for sale accounting as of December 31, 2022, the remaining $4.6 million in assets and $3.3 million in liabilities were designated as assets held for sale and liabilities held for sale, respectively, which are captured in the “Other current assets” and “Other accrued liabilities” financial statement line items of our Statements of Financial Position. The assets are primarily comprised of accounts receivables, contract assets and inventories, while the liabilities are primarily comprised of accounts payables and other accrued liabilities.

On February 17, 2023 we entered into an asset purchase agreement to sell our high-performance engineered cellular elastomer business for a net purchase price of $1.8 million. The business disposition is scheduled to be completed in early March.

Allocation of Restructuring and Impairment Charges to Operating Segments

The following table summarizes the allocation of restructuring and impairment charges to our operating segments:

	Years Ended December 31,		
(Dollars in thousands)	**2022**	2021	2020
Advanced Electronics Solutions			
Allocated restructuring charges	**$ 1,070**	$ 3,029	$ 11,947
Allocated impairment charges	**40,450**	455	587
Elastomeric Material Solutions			
Allocated restructuring charges	**407**	86	401
Allocated impairment charges	**24,635**	—	52
Total restructuring and impairment charges	**$ 66,562**	$ 3,570	$ 12,987

Subsequent Event - Restructuring Charges

On February 16, 2023, we announced a reduction in force plan of our global workforce that is expected to be completed in the first half of 2023. The plan is expected to significantly reduce our manufacturing costs and operating expenses, and are being done in conjunction with other previously announced cost reduction initiatives. We estimate that we will incur approximately $10 million to $13 million in pre-tax restructuring charges related to this plan, all of which are expected to be in the form of cash-based expenditures and substantially all of which are expected to be related to employee severance and other termination benefits.

Other Operating (Income) Expense, Net

The components of "Other operating (income) expense, net" were as follows:

	Years Ended December 31,		
(Dollars in thousands)	**2022**	2021	2020
UTIS fire			
Fixed assets write-offs	**$ —**	$ 1,073	$ —
Inventory charges	**197**	874	—
Professional services	**1,449**	2,771	—
Lease obligations	**437**	994	—
Lease impairments	**—**	495	—
Compensation & benefits	**2,420**	2,072	—
Third-party property claims	**—**	4,650	—
Other	**(262)**	155	—
Insurance recoveries	**(6,646)**	(6,874)	—
Total UTIS fire	**(2,405)**	6,210	—
Regulatory termination fee, net	**(142,069)**	—	—
Loss (gain) on sale or disposal of property, plant and equipment	**460**	(880)	41
Economic incentive grants	**—**	—	(145)
Total other operating (income) expense, net	**$ (144,014)**	**$ 5,330**	**$ (104)**

In early February 2021, there was a fire at our UTIS manufacturing facility in Ansan, South Korea, which manufactures eSorba® polyurethane foams used in portable electronics and display applications. The site was safely evacuated and there were no reported injuries; however, there was extensive damage to the manufacturing site and some damage to nearby property. Commercial production at our new location in Siheung, South Korea commenced in late-January 2023.

In 2022, in connection with the UTIS fire, we recognized insurance recoveries of $6.6 million related to our ongoing insurance claim for property damage and compensation and benefits of hourly employees, incurred $1.4 million for various professional services and incurred $2.4 million for compensation and benefits for UTIS manufacturing employees subsequent to the fire.

In 2021, in connection with the UTIS fire, we recognized fixed asset write-offs and inventory charges of $1.1 million and $0.9 million, respectively, related to property destroyed in the fire, a $4.7 million contingent liability pertaining to damage to nearby property and a $0.5 million contingent liability pertaining to our obligations for the fire damage to the building in connection with the underlying lease agreement. Further, in 2021 we incurred $2.8 million of fees for various professional services in connection with the assessment of the fire and the efforts to rebuild and resume operations and $2.1 million of compensation and benefits for UTIS manufacturing employees, subsequent to the fire. In 2021, we also recognized anticipated insurance recoveries of $6.9 million related to our ongoing insurance claim for property damage and compensation and benefits of hourly employees, less the applicable $0.3 million deductible.

In 2022, we recognized income from a regulatory termination fee of $142.1 million, which was net of an incurred transaction-related fee. For additional information, refer to "Note 16 – Mergers and Acquisitions."

Interest Expense, Net

The components of “Interest expense, net” were as follows:

	Years Ended December 31,		
(Dollars in thousands)	**2022**	2021	2020
Interest on revolving credit facility	**$ 8,966**	$ 892	$ 3,294
Interest rate swap settlements	**—**	—	3,191
Line of credit fees	**522**	1,066	715
Debt issuance amortization costs	**715**	715	593
Interest on finance leases	**23**	287	134
Interest income	**(685)**	(541)	(939)
Other	**6**	117	147
Total interest expense, net	**$ 9,547**	$ 2,536	$ 7,135

Note 16 – Mergers and Acquisitions

Acquisition of Silicone Engineering Ltd.

On October 8, 2021, we acquired Silicone Engineering Ltd. (Silicone Engineering), a leading European manufacturer of silicone material solutions based in Blackburn, England, for a combined purchase price of $172.3 million for the company, net of cash acquired, and its facility. As part of the agreement, there is a $4.1 million holdback, upon which we can issue claims against until six months after the close of the acquisition, at which point in time the holdback amount, less any holdback claims, is paid to the previous owners of Silicone Engineering. In April 2022, we paid $1.3 million of the holdback in exchange for a 6-month extension of the holdback period. In October 2022, we paid back the remaining of the holdback, less an immaterial amount for claims. Substantially all of our $190.0 million in borrowings under our existing credit facility in October 2021 were used to fund the transaction, with the remaining amounts being used for general corporate purposes. Silicone Engineering expands our existing advanced silicones platform in our EMS operating segment and provides us a European Center of Excellence to service customers requiring premium silicone solutions for applications in the EV/HEV, industrial, medical and other 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 Silicone Engineering’s workforce, which is expected to be deductible for tax purposes. We also recorded other intangible assets related to the acquired customer relationships, developed technology, trademarks and trade names and covenants not to compete.

The following table represents the fair values assigned to the acquired assets and liabilities assumed in the transaction. As of the filing date of this Form 10-K, the purchase accounting and purchase price allocation for the Silicone Engineering transaction have been completed.

(Dollars in thousands)	October 8, 2021
Assets	
Accounts receivable	$ **6,721**
Other current assets	**1,516**
Inventories	**1,787**
Property, plant and equipment	**9,840**
Goodwill	**107,231**
Other intangible assets	**73,628**
Other long-term assets	**850**
Total assets	**201,573**
Liabilities	
Accounts payable	**3,933**
Accrued income taxes payable	**1,383**
Other accrued liabilities	**2,102**
Non-current income tax	**1,444**
Deferred income taxes	**20,039**
Other long-term liabilities	**393**
Total liabilities	**29,294**
Fair value of net assets acquired	$ **172,279**

The other intangible assets consist of customer relationships valued at $48.9 million, developed technology valued at $9.2 million, trademarks and trade names valued at $13.6 million, a covenant not to compete valued at $1.4 million and an order backlog 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 as well as a customer attrition rate and a discount rate. These inputs are considered Level 3 under the fair value measurements and disclosure guidance.

At the acquisition date, the weighted average amortization period for the other intangible asset classes was 9.5 years for customer relationships, 3.9 years for developed technology, 11.6 years for trademarks and trade names, 1.6 years for the covenant not to compete and 0.1 years for the order backlog, resulting in amortization expenses ranging from $2.8 million to $5.2 million annually. The estimated annual future amortization expense is $5.2 million for 2022, $4.7 million for 2023, $4.6 million for 2024, $4.3 million for 2025, and $4.2 million for 2026.

In 2022 and 2021, we incurred transaction costs of $0.8 million and $3.9 million, respectively related to the Silicone Engineering acquisition, which were recorded within selling, general and administrative (SG&A) expenses in the consolidated statements of operations.

The results of Silicone Engineering have been included in our consolidated financial statements for the period subsequent to the completion of the acquisition on October 8, 2021, through December 31, 2021. Silicone Engineering's net sales for that period totaled $8.3 million.

Pro-Forma Financial Information

The following unaudited pro forma financial information presents the combined results of operations of Rogers and Silicone Engineering as if the Silicone Engineering acquisition had occurred on January 1, 2020. 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 Silicone Engineering acquisition been completed as of January 1, 2020 and should not be taken as indicative of our future consolidated results of operations.

	For the Years Ended December 31,	
(Dollars in thousands)	**2021**	2020
Net sales	**$ 973,188**	$ 835,610
Net income	**$ 120,082**	$ 47,460

Terminated Merger Agreement with DuPont

On November 1, 2021, we entered into a definitive merger agreement to be acquired by DuPont de Nemours, Inc. (DuPont) in an all-cash transaction at a price of $277.00 per share of the Company's capital stock. The merger agreement provided for the acquisition of Rogers Corporation by DuPont through the merger of Cardinalis Merger Sub, Inc., a wholly owned subsidiary of DuPont, with and into Rogers Corporation, with Rogers Corporation surviving the merger as a wholly owned subsidiary of DuPont. Company shareholders approved the merger agreement at a special shareholder meeting held on January 25, 2022. The merger agreement provided both Rogers Corporation and DuPont with a right to terminate the merger agreement if the merger had not closed on or before November 1, 2022. Consummation of the merger was subject to various customary closing conditions, including regulatory approval by the State Administration for Market Regulation of China (SAMR). As of November 1, 2022, the parties had not received regulatory approval from SAMR. On November 1, 2022, the Company received from DuPont a notice of termination of the merger agreement. Pursuant to the terms of the merger agreement, the Company received a regulatory termination fee from DuPont in the amount of $162.5 million, before taxes, and incurred a transaction-related fee of $20.4 million.

SCHEDULE II

(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 Credit Losses					
December 31, 2022	**$ 1,223**	**$ 208**	**$ (424)**	**$ —**	**$ 1,007**
December 31, 2021	$ 1,682	$ 421	$ (180)	$ (700)	$ 1,223
December 31, 2020	$ 1,691	$ 223	$ (232)	$ —	$ 1,682

(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
Inventory E&O Reserves					
December 31, 2022	**$ 16,395**	**$ 8,210**	**$ (4,600)**	**$ (2,980)**	**$ 17,025**
December 31, 2021	$ 22,430	$ 8,431	$ (7,447)	$ (7,019)	$ 16,395
December 31, 2020	$ 18,817	$ 10,554	$ (4,800)	$ (2,141)	$ 22,430

(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, 2022	**$ 9,775**	**$ 396**	**$ (7,328)**	**$ —**	**$ 2,843**
December 31, 2021	$ 9,250	$ 525	$ —	$ —	$ 9,775
December 31, 2020	$ 14,625	$ (39)	$ (5,336)	$ —	$ 9,250

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, 2022. 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, 2022.

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, 2022 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.

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, 2022. 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, 2022, 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, 2022, as stated in their report included under "Item 8. Financial Statements and Supplementary Data."

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

Part III

Item 10. Directors, Executive Officers and Corporate Governance

Officers: Qualifications and Experience

Information with respect to our executive officers is presented in “Information About Our Executive Officers” section to “Part I, Item 1. Business” of this report and is hereby incorporated into this Item 10 by reference.

Directors: Qualifications and Experience

We are incorporating by reference the information with respect to the Directors, Executive Officers and Corporate Governance set forth under the captions “Nominees for Director: Qualifications and Experience” and “Our Corporate Governance” in our Definitive Proxy Statement for our 2023 Annual Meeting of Shareholders, which we intend to file within 120 days after the end of our fiscal year pursuant to Section 14(a) of the Exchange Act. Information with respect to our executive officers 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 Ethics 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 Ethics for our 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

We are incorporating by reference the information with respect to Executive Compensation set forth under the captions “Compensation & Organization Committee Report”, “Compensation Discussion and Analysis”, “Executive Compensation”, “Director Compensation” and “CEO Pay Ratio” in our Definitive Proxy Statement for our 2023 Annual Meeting of Shareholders, which we intend to file 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 following table and footnotes below describe those equity compensation plans approved and not approved by security holders of Rogers Corporation as of December 31, 2022:

Plan Category	*(a)* Number of securities to be issued upon exercise of outstanding options, warrants and rights	*(b)* 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	1,200[1]	—[2]
Rogers Corporation 2019 Long-Term Equity Compensation Plan	260,960[3]	914,439
Rogers Corporation Global Stock Ownership Plan For Employees	—	59,611[4]
Total	**262,160**	**974,050**

[1] Consists of 1,200 shares for deferred stock units.

[2] This plan expired in early February 2019.

[3] Consists of 255,310 shares for restricted stock units and 5,650 shares for deferred stock units.

[4] This is an employee stock purchase plan within the meaning of Section 432(b) of the Internal Revenue Code of 1986, as amended, that was suspended as of December 31, 2021, pursuant to the then-pending merger agreement with DuPont.

We are incorporating by reference the information with respect to Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters set forth under the caption “Security Ownership of Certain Beneficial Owners and Management” in our Definitive Proxy Statement for our 2023 Annual Meeting of Shareholders, which we intend to file 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

We are incorporating by reference the information with respect to Certain Relationships and Related Transactions and Director Independence as set forth under the captions "Related Party Transactions" and "Corporate Governance - Director Independence" in our Definitive Proxy Statement for our 2023 Annual Meeting of Shareholders, which we intend to file 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

We are incorporating by reference the information with respect to accountant fees and services set forth under the caption "Independent Auditing Firm Fees" in our Definitive Proxy Statement for our 2023 Annual Meeting of Shareholders, which we intend to file 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

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.

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.

3.2 Amended and Restated Bylaws of Rogers Corporation, effective December 7, 2022, filed herewith.

4.1 Description of Capital Stock, incorporated by reference to Exhibit 4.1 to the Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2019 (the 2019 Form 10-K).

10.1 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.**

10.1.1 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.**

10.1.2 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).**

10.2 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.**

10.2.1 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.**

10.2.2 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.**

10.2.3 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.**

10.2.4 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 .**

10.3 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.**

10.3.1 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.**

10.3.2 Second Amendment to Rogers Corporation Amended and Restated Pension Restoration Plan, incorporated by reference to Exhibit 10.10 to the 2010 Form 10-K.**

10.4 Form of Indemnification Agreement between the Rogers Corporation 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.**

10.5 Form of Indemnification Agreement between the Rogers Corporation 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.**

10.6 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.**

10.7 Form of Performance-Based Restricted Stock Award Agreement under the 2009 Plan, incorporated by reference to Exhibit 10.14 to the Registrant's 2015 Form 10-K.**

10.8 Form of Time-Based Restricted Stock Unit Award Agreement under the 2009 Plan, incorporated by reference to Exhibit 10.16 to the Registrant's 2015 Form 10-K.**

10.9 Rogers Corporation 2019 Long-Term Equity Compensation Plan, incorporated by reference to Exhibit 4.1 to the Registrant's Registration Statement on Form S-8 filed on May 14, 2019.**

10.10 Form of Performance-Based Restricted Stock Unit Award Agreement under the 2019 Plan, incorporated by reference to Exhibit 10.10 to the 2019 Form 10-K.**

10.11 Form of Time-Based Restricted Stock Unit Award Agreement under the 2019 Plan, incorporated by reference to Exhibit 10.11 to the 2019 Form 10-K.**

10.12 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.**

10.13 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.**

10.14 Rogers Corporation Severance Plan, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on February 13, 2019.**

10.15 Form of Participation Agreement for the Company's U.S.-based named executive officers under the Rogers Corporation Severance Plan, incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on February 13, 2019.**

10.16 Fourth Amended and Restated Credit Agreement dated as of October 16, 2020, filed herewith.

10.17 Form of Director Deferred Stock Unit Award Agreement under the 2019 Plan, incorporated by reference to Exhibit 10.20 to the 2019 Form 10-K. **

10.18 Annual Incentive Compensation Plan, incorporated by reference to Exhibit A to the Registrant's Proxy Statement filed on March 24, 2014.**

10.19 Form of Time-Based Restricted Stock Unit Award Agreement for Bruce D. Hoechner, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed on February 17, 2021.

10.20 Form of Performance-Based Restricted Stock Unit Award Agreement for Bruce D. Hoechner, incorporated by reference to Exhibit 10.2 to the Registrant's Current Report on Form 8-K filed on February 17, 2021.

10.21 Letter Agreement between the Company and Ramakumar Mayampurath, dated May 1, 2021, incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q filed November 8, 2021.**

10.22 Form of 2019 Long-Term Equity Compensation Plan Time-Based Restricted Stock Unit Award Agreement, incorporated by reference to Exhibit 10.26 to the Registrant's Annual Report on Form 10-K filed February 22, 2022.

10.23 Settlement Agreement between the Company and Starboard Value LP, dated February 26, 2023, incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K filed February 27, 2023.

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 (Principal 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, Chief Financial Officer and Treasurer (Principal 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 (Principal Executive Officer) and Senior Vice President, Chief Financial Officer and Treasurer (Principal 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, 2022, formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) Consolidated Statements of Operations for the fiscal years ended December 31, 2022, 2021 and 2020; (ii) Consolidated Statements of Comprehensive Income for the fiscal years ended December 31, 2022, 2021 and 2020; (iii) Consolidated Statements of Financial Position for the fiscal years ended December 31, 2022 and 2021; (iv) Consolidated Statements of Shareholders' Equity for the fiscal years ended December 31, 2022, 2021 and 2020; (v) Consolidated Statements of Cash Flows for the fiscal years ended December 31, 2022, 2021 and 2020; (vi) Notes to Consolidated Financial Statements and (vii) Cover Page.

104 The cover page from Rogers Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2022, formatted in iXBRL and contained in Exhibit 101.

** 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/ R. Colin Gouveia

R. Colin Gouveia

President and Chief Executive Officer
Principal Executive Officer

March 1, 2023

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on March 1, 2023, by the following persons on behalf of the Registrant and in the capacities indicated.

/s/ R. Colin Gouveia

R. Colin Gouveia
President and Chief Executive Officer
Director
Principal Executive Officer

/s/ Keith L. Barnes

Keith L. Barnes
Director

/s/ Ramakumar Mayampurath

Ramakumar Mayampurath
Senior Vice President, Chief Financial Officer and Treasurer
Principal Financial Officer

/s/ Carol R. Jensen

Carol R. Jensen
Director

/s/ Mark D. Weaver

Mark D. Weaver
Chief Accounting Officer and Corporate Controller
Principal Accounting Officer

/s/ Jeffrey J. Owens

Jeffrey J. Owens
Director

/s/ Megan Faust

Megan Faust
Director

/s/ Ganesh Moorthy

Ganesh Moorthy
Director

/s/ Helene Simonet

Helene Simonet
Director

/s/ Peter C. Wallace

Peter C. Wallace
Director

/s/ Keith R. Larson

Keith R. Larson
Director

/s/ Bruce D. Hoechner

Bruce D. Hoechner
Director