ENTEGRIS INC
Form 10-K
February 26, 2015
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2014

or

o 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: 001-32598

Entegris, Inc.
(Exact name of registrant as specified in its charter)

Delaware	41-1941551
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)

129 Concord Road, Billerica, Massachusetts 01821
(Address of principal executive offices and zip code)
(978) 436-6500
(Registrant's telephone number, including area code)

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

Title of Class	Name of Exchange on which Registered
Common Stock, $0.01 Par Value	The Nasdaq Global Select Market

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

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

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

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

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

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

Large Accelerated Filer	x	Accelerated Filer	o
Non-Accelerated Filer	o (Do not check if a smaller reporting company)	Smaller reporting company	o

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

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The aggregate market value of voting stock held by non-affiliates of the registrant, based on the last sale price of the Common Stock on June 28, 2014, the last business day of registrant's most recently completed second fiscal quarter, was $1,683,447,163. Shares held by each officer and director of the registrant and by each person who owned 10 percent or more of the outstanding Common Stock have been excluded from this computation in that such persons may be deemed to be affiliates of the registrant. This determination of affiliate status for this purpose is not necessarily a conclusive determination for other purposes.

As of February 18, 2015, 139,792,583 shares of the registrant's Common Stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's Definitive Proxy Statement for its 2015 Annual Meeting of Stockholders scheduled to be held on April 30, 2015, or the 2015 Proxy Statement, which will be filed with the Securities and Exchange Commission, or SEC, not later than 120 days after December 31, 2014, are incorporated by reference into Part III of this Annual Report on Form 10-K. With the exception of the portions of the 2015 Proxy Statement expressly incorporated into this Annual Report on Form 10-K by reference, such document shall not be deemed filed as part of this Annual Report on Form 10-K.

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PART I
Item 1. Business.

THE COMPANY

Entegris, Inc., referred in this report as Entegris or the Company, is a worldwide developer, manufacturer and supplier of yield-enhancing materials and solutions for advanced manufacturing processes in the semiconductor and other high-technology industries. Our products and materials are used to manufacture semiconductors, micro-electromechanical systems or MEMS, flat panel displays, light emitting diodes or "LEDs", high-purity chemicals, such as photoresists, solar cells, gas lasers, optical and magnetic storage devices, and critical components for aerospace, glass manufacturing and biomedical applications. We sell our products worldwide through a direct sales force and through selected distributors.

The Company was incorporated in Delaware in March 2005 in connection with a strategic merger of equals transaction between Entegris, Inc., a Minnesota corporation, and Mykrolis Corporation, a Delaware corporation. On April 30, 2014, the Company acquired ATMI, Inc., a Delaware Corporation based in Danbury, CT, referred to throughout this report as ATMI. This transaction is referred to alternatively as the Merger or the ATMI acquisition in this report. See OUR HISTORY below.

We offer a diverse product portfolio that includes approximately 19,000 standard and customized products which include both unit driven and capital expense driven products. As a result of the Merger, unit-driven products now comprise approximately 80% of our combined sales, with the balance being capital driven products. Our unit-driven products are consumed or exhausted during the customer's manufacturing process and rely on the level of semiconductor and other manufacturing activity to drive growth. Our unit-driven product class includes membrane-based liquid filters, resin-based gas purifiers, wafer shippers, disk-shipping containers and test assembly and packaging products, implant gas storage and delivery systems, copper electroplating materials, advanced precursor materials for thin film deposition and photoresist strip and post chemical mechanical planarization (CMP) or CMP cleaning materials and consumable graphite and silicon carbide components. Capital expense driven products, which generally have a lifetime of 18 months or more, rely on the expansion of manufacturing capacity to drive growth and include our fluid management components, systems and subsystems that transfer, monitor, and control process liquids used in the semiconductor manufacturing processes, gas filtration and purification components, systems and subsystems that remove contaminants at equipment and factory level for manufacturing, our process carriers that protect the integrity of in-process wafers and graphite, silicon carbide and specialty coated components for manufacturing equipment. Unit-driven products accounted for approximately 74%, 66%, and 66% of our net sales for fiscal years 2014, 2013 and 2012, respectively, while capital expense-driven products accounted for approximately 26%, 34% and 34% of our net sales for the fiscal years 2014, 2013 and 2012, respectively.

Our Internet address is www.entegris.com. On this web site, under the "Investors-Financial Information-SEC Filings" section, we post the following filings as soon as reasonably practicable after they are electronically filed with, or furnished to, the U.S. Securities and Exchange Commission (SEC): our annual, quarterly, and current reports on Forms 10-K, 10-Q, and 8-K; our proxy statements; any amendments to those reports or statements, and Form SD. All such filings are available on our web site free of charge. The SEC also maintains a web site (www.sec.gov) that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The content on our website, and any other website, as referred to in this Form 10-K is not incorporated by reference into this Form 10-K unless expressly noted.

SEMICONDUCTOR INDUSTRY BACKGROUND

Semiconductors, or integrated circuits, are the building blocks of today's electronics and the backbone of the information age. The market for semiconductors has grown significantly over past decades. This trend is expected to continue as the advanced connectivity of devices to the internet or the "internet of things", gathers increasing momentum. We believe that the connected devices, ranging from every day devices, such as light bulbs and home heating thermostats interconnected through wireless technology to the internet and the cloud to permit remote monitoring and control of the device, to connected automobiles that offer a new level of safety and comfort to vehicle operators will drive growth in the demand for semiconductors and create significant opportunities for our products. This new trend will supplement existing demand driven by applications in data processing, wireless communications, broadband infrastructure, personal computers, handheld electronic devices and other consumer electronics.

The manufacture of semiconductors is a highly complex process that consists of numerous and repeated process operations. The process starts with the delivery of raw silicon wafers from wafer manufacturers to semiconductor manufacturers and requires hundreds of highly complex and sensitive manufacturing steps, during which a variety of materials are repeatedly applied to the silicon wafer to build the integrated circuits on the wafer surface. We offer a broad range of products to purify, transport and monitor these critical process materials during the manufacturing process. We provide advanced chemical materials used in many of these process steps and offer a broad range of products to purify, transport and monitor these critical process materials during

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the manufacturing process. The process operations that rely most heavily on our products and chemical materials are described below.

Deposition. Deposition refers to placing layers of insulating or conductive materials on a wafer surface in thin films that make up the circuit elements of semiconductor devices. The two main deposition processes are physical vapor deposition, where a thin film is deposited on a wafer surface in a low-pressure gas environment, and chemical vapor deposition, where a thin film is deposited on a wafer surface using a gas medium and a chemical bonding process. In addition, electro-plating technology is used for the deposition of low resistance conductive materials such as copper. The control of uniformity and thickness of these films through our advanced precursor materials and electro-plating chemicals used during the process as well as our filtration and purification products, which remove defects and contaminants from materials are critical to the performance of the semiconductor circuit and, consequently, the manufacturing yield.

Chemical Mechanical Planarization (CMP). CMP flattens, or planarizes, the topography of the surface of the wafer after deposition by use of CMP polishing pads and slurries containing abrasive particles in a chemical mixture. The purpose of CMP is to permit the patterning of small features on the resulting smooth surface by the photolithography process. We offer a broad range of products used by semiconductor manufacturers during and immediately following the CMP process. Our Planarclean®, ESC-784 and TitanKlean™ formulated chemical materials remove defects from wafer surfaces after the CMP process. We also offer high pH formulations that provide passivation of copper surfaces on the wafer after the post CMP cleaning. Our filtration and purification systems are used to filter the liquid slurries and to remove oversized particles and contaminants that can cause defects on a wafer's surface, while not affecting the functioning of the abrasive particles in the liquid slurries. Our consumable polyvinyl alcohol (PVA) roller brushes are used to clean the wafer after completion of the CMP process to prepare the wafer for subsequent operations and our pad conditioners are used to prepare the surface of the CMP polishing pad.

Photolithography. Photolithography is the process step that defines the patterns of the circuits to be built on the chip. Before photolithography, a wafer is pre-coated with photoresist, a light-sensitive film composed of ultra-high purity chemicals in liquid form. The photoresist is exposed to specific forms of radiation, such as ultraviolet light, electrons or x-rays, to form patterns that eventually become the circuitry on the chip. This process is repeated many times, using different patterns and interconnects between layers to form the complex, multi-layer circuitry in a semiconductor chip. As device geometries decrease and wafer sizes increase, it is even more critical that these photoresists are dispensed onto the wafer with accurate thickness and uniformity, as well as with extremely low levels of contamination, so that manufacturers can achieve acceptable yields in the manufacturing process. Our liquid filtration and liquid dispense systems play a critical role in assuring the pure, accurate and uniform dispense of photoresists onto the wafer. In addition, ST and AP photoresist strip cleaning materials are proprietary chemistries used for negative resist removal, and our gas micro-contamination systems eliminate airborne amine contaminants that can disrupt effective photolithography processes.

Etch and Resist Strip. Etch is the process of selectively removing precise areas of thin films that have been deposited on the surface of a wafer. The hardened photoresist protects the remaining material that makes up the circuits. During etch, specific areas of the film not covered by photoresist are removed to leave a desired circuit pattern. Similarly, resist strip is a process of removing the photoresist material from the wafer after the desired pattern has been etched on the wafer. Emerging advanced etch and resist strip applications require our ST-250™ and TitanKlean™ formulated solutions to remove photo resists and post-etch residues, and our gas filters and purifiers to help assure the purity of the process gas streams used in the etch process.

Ion Implant. Ion implantation provides a means for introducing impurities into the silicon crystal, typically into selected areas defined by the photolithographic process. This selective implanting of ions into defined areas creates electrically conductive areas that form the transistors of the integrated circuits. Ion implanters have the ability to

implant selected elements into the silicon wafers at precise locations and depths by bombarding the silicon surface with a precisely controlled beam of electrically charged ions of specific atomic mass and energy. These ions are embedded into the silicon crystal structure, changing the electrical properties of the silicon. The precision of ion implantation techniques permits customers to achieve the necessary control of this doping process to construct up to 500 billion transistors of uniform characteristics on a 300mm wafer. Since these transistors are the starting point of all subsequent process steps, repeatability, uniformity and yield are extremely important. Our SDS® and VAC® gas delivery systems assure the safe, effective and efficient delivery of the toxic gases necessary for the implant process. In addition, our proprietary low temperature plasma coating process for core components are critical elements of ion implantation equipment.

Wet Cleaning. Ultra-high purity chemicals and photoresists of precise composition are used to clean the wafers, to pattern circuit images and to remove photoresists after etch. Before processes such as photoresist coating, thin film deposition, ion implantation, diffusion and oxidation, and after processes such as ion implantation and etch, the photoresists must be stripped off, and the wafer cleaned in multiple steps using chemical processes. To maintain manufacturing yields and avoid defective products, the cleaning chemicals must be maintained at very high purity levels without the presence of foreign material such as particles, ions or organic

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contaminants. As described above, our proprietary formulated cleaning chemistries are used in these wet cleaning processes and our liquid filters and purifiers are used to assure the purity of these chemicals.

Our wafer and reticle carriers are high-purity “micro-environments” which carry wafers between each of the above process steps, protecting them from damage and contamination during these transport operations. Our fluid handling components assure the delivery of pure liquid chemicals to each of these process steps. Front-end wafer processing can involve hundreds of steps and take several weeks. As a result, a batch of 25 fully processed wafers, the standard number of wafers that can be transported in one of our 200 mm and 300 mm products, can be worth several million dollars. Since significant value is added to the wafer during each successive manufacturing step, it is essential that the wafer be well protected to minimize the risk of any damage. Thus, in the case of wafer carriers, precise wafer positioning, highly reliable and predictable cassette interface dimensions and advanced materials are crucial. The failure to prevent damage to wafers can severely impact integrated circuit performance, render an integrated circuit inoperable or disrupt manufacturing operations. Our products enable semiconductor manufacturers to: minimize contamination (semiconductor processing is now so sensitive that ionic contamination in certain processing chemicals is measured in parts per trillion); protect semiconductor devices from electrostatic discharge and shock; avoid process interruptions; prevent damage or abrasion to wafers and materials during automated processing caused by contact with other materials or equipment; prevent damage due to abrasion or vibration of work-in-process and finished goods during transportation to and from customer and supplier facilities; and eliminate the dangers associated with handling toxic chemicals.

Future Trends. Semiconductor manufacturing has become increasingly complex in recent years as new materials and new process technologies have been introduced to enhance device performance and achieve productivity gains. We expect this trend to accelerate in future years. This increasing complexity of semiconductor devices has substantially increased the cost of semiconductor plant infrastructure and equipment and has made achieving target yields more difficult for semiconductor manufacturers adopting advanced processes. Fabrication of wafers at the advanced technology nodes requires larger diameter wafers and finer line widths that are more costly and more complex to manufacture than smaller wafer sizes and larger line widths. In addition, these advanced processes create new contamination and material compatibility risks, rendering larger wafers more vulnerable to damage or contamination. All of these difficulties increase the need and demand for our advanced materials and contamination control products. In response to the challenges faced by our semiconductor customers, we have been moving aggressively to collaborate with semiconductor equipment companies and device manufacturers to synthesize new materials, to develop enhanced methods of filtration and purification and to introduce advanced materials packaging and materials monitoring capabilities to address the challenges of the advanced technology nodes. These collaborations often include the outsourcing of the design and manufacture of innovative materials management and liquid delivery, measurement, control and purification systems to Entegris. Also our semiconductor customers have become increasingly focused on materials management solutions that enable them to safely store, handle, process and transport critical materials throughout the manufacturing process to minimize the potential for damage or degradation to their materials and to protect their investment in processed wafers. We believe that these trends provide opportunities for our advanced chemical, materials management and polymer engineering expertise and our advanced tool design capabilities to enable us to provide our semiconductor customers with innovative materials, materials management, purification, wafer transport, and process solutions enabling them to successfully manage this growing complexity.

Many of the processes used to manufacture semiconductors are also used to manufacture photovoltaic cells, LEDs, flat panel displays and magnetic storage devices resulting in the need for similar filtration, purification, control and measurement capabilities. We seek to leverage our products, technologies and expertise in serving semiconductor applications to address these important market opportunities.

OUR BUSINESS STRATEGY

Our objective is to be a leading global provider of advanced materials and solutions used in processing and manufacturing in high-technology industries. We intend to benefit from our market leading position and strengthen our core business in the semiconductor industry. We will also build upon our position as a worldwide developer, manufacturer and supplier of advanced specialty materials, filtration and purification solutions, delivery systems, and materials packaging solutions used by semiconductor device manufacturers to grow our business in other high value-added manufacturing process markets. Our strategy includes the following key elements:

Technology Leadership. With the emergence of smaller and more powerful semiconductor devices, and the deployment of new materials and processes to produce them, we believe there is a need for greater materials management within the semiconductor fabrication process. We seek to extend our technology by developing advanced products that address more stringent requirements for greater purification, protection and transport of high value-added materials and for contamination control, fluid delivery and monitoring, and system integration. We also support our customers' operations by developing advanced chemical materials for use in their critical fabrication processes. We continuously improve our products as our customers' needs evolve. For example, we have introduced sub 10 nanometer filtration products, advanced deposition materials for next generation transistor and

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interconnect technologies, advanced reticle pods for extreme ultra violet or EUV photolithography applications, advanced 300mm wafer carriers and advanced e-chucks for implant equipment to meet the rigorous demands of the advanced technology nodes faced by our customers.

Global Presence. We have established a global infrastructure of design, manufacturing, distribution, service and technical support facilities to meet the needs of our customers. As semiconductor and other electronic device manufacturers have become increasingly global, they have required that suppliers offer comprehensive local repair, customer and technical support services. In response to this trend, we have, for example, expanded our operations in Taiwan and South Korea to provide manufacturing capabilities to support our important customers in these regions, we have established sales and service offices in China in anticipation of a growing semiconductor manufacturing base in that region and we have transferred customer support and logistics activities to local regions, including our expanded presence in Singapore, to enhance our global and regional management of supply chain and manufacturing processes, and we maintain advanced technology centers in Taiwan and South Korea. We maintain our customer relationships through a combination of direct sales and support personnel and selected independent sales representatives and distributors in Asia, Europe and the Middle East.

Operational Excellence. We have also established leading edge manufacturing plants located in the United States, Malaysia, Japan, South Korea and Taiwan that possess the advanced manufacturing capabilities described under Manufacturing below. We have consolidated management of these plants under a single global operations organization with a charter to drive these plants to achieve world class manufacturing and quality standards. Our strategy is to develop our advanced manufacturing capabilities into a competitive advantage with our customers through implementation of the following priorities:

- use of manufacturing equipment and facilities incorporating leading edge technology including advanced clean room and cleaning procedures;
- implementation of standardized manufacturing systems stressing optimization of overall equipment operational effectiveness, predictive maintenance, and direct labor productivity;
- implementation of automated quality systems that provide both process monitoring and process control throughout the manufacturing process as well as predictive quality data allowing us to predict and remediate potential quality excursions before they occur;
- excellence of supply chain management systems that assure a supply of high quality raw materials that is reliable and responsive to the changing requirements for our products;
- conduct of manufacturing operations so as to assure the safety of our employees and of the individuals using our products;
- a streamlined manufacturing organization well-aligned internally as well as with our customers that is capable of rapid design and development of prototypes of new and derivative products; rapid response to customer feedback concerning prototypes and ability to quickly commercialize and ramp production of prototypes accepted by our customers.

Strong Customer Base. We have established solid ongoing relationships with many of the world's leading semiconductor manufacturers, original equipment manufacturers (OEMs), and semiconductor materials suppliers. We intend to continue to leverage these relationships to participate in significant collaborations with our customers at the product design stage, which to facilitate our ability to introduce new products and applications that meet our customers' needs. For example, we work with our key customers at the pre-design and design stages to identify and respond to their requests for current and future generations of products for emerging applications requiring cleaner materials as well as systems that maintain the integrity and stability of materials during transport through the manufacturing process. To respond to these opportunities we have developed advanced filtration and purification solutions as well a new packaging solutions based on process challenges identified by our customers. We believe that our large customer base will continue to be an important source of new product development opportunities that we

intend to emphasize.

Comprehensive and Diverse Product Offerings. The semiconductor manufacturing industry is characterized by rapid technological changes and intense competition, especially at the current time when the imperative of increased productivity is driving the move to the advanced technology nodes with the technological challenges inherent in these advances. We believe that semiconductor manufacturers are seeking suppliers who can provide a broad range of reliable, flexible and cost-effective products and materials, as well as the technological and application design expertise necessary to deliver other effective solutions. Our comprehensive offering of materials and components enables us to meet a broad range of customer needs and provide a single source of flexible product offerings for semiconductor device and capital equipment manufacturers as they seek to consolidate their supplier relationships to a smaller select group with comprehensive capabilities. We believe our offering of consumable products and materials, creates a competitive advantage because we offer a comprehensive array of solutions to these challenges at the advanced technology nodes.

Adjacent Markets. We leverage our accumulated expertise in the semiconductor industry by developing products for applications that employ similar production processes that utilize materials integrity management, high-purity fluids and integrated dispense

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system technologies. Outside of the semiconductor industry, our products are used in other manufacturing processes, including the manufacturing of flat panel displays, fuel cell components, high-purity chemicals, solar cells, optical magnetic storage devices and products for life sciences. We plan to continue to identify and develop products that address materials management and advanced materials processing applications where fluid management plays a critical role. We believe that by utilizing our technology to provide manufacturing solutions across multiple industries, we are able to increase the total available market for our products and reduce, to an extent, our exposure to the cyclicality of any particular market.

Strategic Acquisitions, Partnerships and Related Transactions. We will continue to pursue strategic acquisitions and business partnerships that enable us to address gaps in our product offerings, secure new customers, diversify into complementary product markets and broaden our technological capabilities and product offerings. Our acquisition of ATMI, Inc. in April 2014 and of Jetalon Solutions, Inc. in April 2013 are examples of this strategy. ATMI brings a whole new portfolio of technologies and materials products to serve our semiconductor customers while Jetalon Solutions reinforces our presence in the semiconductor industry by providing new and complementary sensing and control technologies. Further, as the dynamics of the markets that we serve shift, we will reevaluate the ability of our existing businesses to provide value-added solutions to those markets in a manner that contributes to achieving our objectives; in the event that we conclude that a business is not able to do this, we expect to restructure or replace that business. The sale of our cleaning equipment business in 2008 is an example of this strategy. Finally, we are continuously evaluating opportunities for strategic alliances and joint development efforts with key customers and other industry leaders.

OUR SEGMENTS

We design, manufacture and market our products through two business segments: (i) our critical materials handling segment, which offers a wide range of products that purify, monitor and deliver critical liquids and gases to the semiconductor manufacturing process and similar manufacturing processes as well as microenvironment products to preserve the integrity of wafers, reticles and electronic components at various stages of transport, processing and storage and materials, components and services to a wide range of customers in the semiconductor industry and in adjacent and unrelated industries; and (ii) our electronic materials segment which offers a wide range of materials and materials delivery systems to support the advanced semiconductor manufacturing processes. Each segment has dedicated manufacturing resources managed by our global operations organization, and is composed of product-focused business units. Each business segment has its own dedicated marketing and engineering, research and development resources. There follows a detailed description of our two segments:

CRITICAL MATERIALS HANDLING SEGMENT

Liquid Microcontamination Products. Liquid processing occurs during multiple manufacturing steps including photolithography, deposition, planarization and surface etching and cleaning. The fluids that are used include various mixtures of acids, bases, solvents, slurries and photochemicals, which in turn are used over a broad range of operating conditions. The design and performance of our liquid filtration and purification products are critical to the semiconductor manufacturing process because they directly reduce defects and improve the manufacturing yield. Specially designed proprietary filters remove nanometer-sized particles and bubbles from the different fluid streams that are used in the manufacturing process. Some of our filters are constructed with ultra-high molecular weight polyethylene flat sheet membranes that offer improved bubble clearance and gel removal to prevent defects in the wafers that occur if these elements are not removed. Our low hold-up volume disposable filters, with flat sheet membranes, use our Connectology™ technology to allow filter changes in less than a minute, significantly faster than conventional filters, to reduce the amount of expensive chemicals lost each time a filter is changed and to minimize operator exposure to hazardous solvents and vapors during change out. In addition to the filtration of particles from fluids, we have also expanded our offerings for chemical purification, which targets the removal of specific molecules

from a process chemical, to improve yield in processes such as wet cleaning.

Microenvironment Products. Our microenvironment products fall into three sub-categories, wafer and reticle handling products, wafer shipping products and data storage products. We are a global producer of wafer and reticle handling products. We offer a wide variety of products that hold and position wafers as they travel between each piece of equipment used in the automated semiconductor manufacturing process. These specialized carriers provide precise wafer positioning, wafer protection and highly reliable and predictable cassette interfaces in automated fabs. Semiconductor manufacturers rely on our products to improve yields by protecting wafers from abrasion, degradation and contamination during the manufacturing process. We provide standard and customized products that meet a spectrum of industry standards and customers' wafer handling needs including front opening unified pods or "FOUPs", wafer transport and process carriers, standard mechanical interface or "SMIF" pods and work-in-process boxes. To meet our customers' varying wafer processing and transport needs, we offer wafer process carriers in a variety of materials, including advanced polymeric materials, and in sizes ranging from 100 mm through 300 mm. In addition, we offer FOUPs for developmental 450 mm wafers. We also provide mask and reticle handling products, including reticle SMIF pods for the protection of extremely valuable and contamination-sensitive lithography reticles. We are also a global provider of critical

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shipping products that preserve the integrity of raw silicon wafers as they are transported from wafer manufacturers to semiconductor manufacturers or finished wafers shipped to back end processors. We lead the market with our extensive, high-volume line of Ultrapak ® and Crystalpak ® products which are supplied to wafer manufacturers in a full range of sizes covering 100, 125, 150 and 200 mm wafers. We also offer a full-pitch, front-opening shipping box, or FOSB, for the transportation and automated interface of 300 mm wafers. For developmental 450 mm wafers, we offer a Single Wafer Shipper, a Multi-Application Carrier, or MAC, and a front-opening unified pod, or FOUP.

For the data storage market we offer products and solutions for magnetic disks and the read/write heads used to read and write today's higher density disks. Finally, we offer chip and matrix trays as well as carriers for bare die handling and integrated circuits that are compatible with industry standards, are available in a wide range of sizes with various feature sets and that offer dimensional stability and permanent electrostatic discharge protection.

Fluid Management and Control Products. We offer chemical management and distribution systems that assure the consistent, clean and safe delivery of sophisticated chemicals to the point-of-use in the semiconductor fab. Most of these products are made from perfluoroalkoxy or PFA, a fluoropolymer resin widely used in the semiconductor industry because of its high purity and inertness to chemicals. The innovative design and reliable performance of our products under the most stringent of process conditions has made us a leader in high-purity fluid transfer products. Both semiconductor manufacturers and semiconductor OEMs use our chemical management and distribution products. Our comprehensive product line provides our customers with a single-source provider for their process chemical management needs throughout the manufacturing process. Our chemical management and distribution products include valves, fittings, tubing, pipe, custom fabricated products and associated connection systems for high-purity chemical applications.

Our proprietary photochemical filtration and dispense systems integrate our patented two-stage, filter device and valve control technologies. Our two-stage technology permits the filtering and dispense functions to operate independently so that filtering and dispensing of photochemicals can occur at different rates, reducing the differential pressure across the filter, conserving expensive photochemicals and resulting in reduced defects in wafers. As described above, we offer a line of proprietary filters specifically designed to efficiently connect with these systems. Our patented digital valve control technology improves chemical uniformity on wafers and improves ease of optimized system operation. In addition, our integrated high-precision liquid dispense systems enable uniform application of photoresists for the spin-coating process, where uniformity is measured in units of Angstroms, a tiny fraction of the thickness of a human hair.

We offer a wide variety of measurement and control products for high-purity and corrosive applications. For electronic measurement and control of liquids, we provide a complete line of pressure and flow measurement and control products as well as all-plastic capacitance sensors for leak detection, valve position, chemical level and other measurements. We also offer mechanical gauge pressure measurement products. The acquisition of Jetalon Solutions added metrology and sensor products that use refractive index technology to achieve greater precision in real-time chemical blending, which is increasingly critical in applications where minute variations of process fluid concentration levels can adversely impact manufacturing yields. In semiconductor manufacturing, Jetalon Solutions products monitor and control liquid concentrations in all wet processing areas including wafer surface preparation and cleaning, photolithography, CMP, post-CMP cleaning, and copper electroplating. In the biopharmaceutical market, these solutions are used in both upstream and downstream processing in applications such as real-time in-line concentration monitoring of media and buffer preparations. This is an area of increasing interest for biopharmaceutical applications given the growing trend from batch manufacturing to real-time or continuous manufacturing processes.

Liquid Packaging Products. Semiconductor process chemicals spend most of their time in contact with fluid storage containers, so it is critical for these containers to resist degradation by these process chemicals and avoid contributing contaminants to the chemicals. We offer rigid wall HPDE blow molded drums and rotationally molded composite

containers and associated connection systems for semiconductor process chemicals in sizes ranging from 20 to 2,000 liters. We also offer container liners and container assemblies, such as NOWPak® and BrightPak™, in sizes ranging from 1 to 200 liters, for high-purity liquid materials packaging and dispensing systems for advanced photolithography applications as well as for flat-panel display and liquid containment and delivery systems.

Specialty Materials Products. These products are made from specialized graphite or silicon carbide. Our Poco Graphite products sold to the semiconductor industry are used for critical components for semiconductor manufacturing equipment at various stages of the semiconductor manufacturing process including chemical vapor deposition or CVD, where our expendable graphite chamber liners and shower heads are critical components used in the CVD chamber; dry or plasma etch, where our consumable graphite components deliver, baffle and confine the process gases during the etch process; and ion implant, where our consumable graphite components are critical elements of ion implantation equipment. In addition, our POCO® high-quality graphite is used to make precision consumable electrodes for electrical discharge machining, a non-contact precision thermoelectric machining process for hard and exotic metals and other materials. Poco Graphite also manufactures a number of graphite hot glass contact materials for

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use in the manufacture of glass containers. Finally, Poco Graphite manufactures a number of graphite consumable products for various industrial applications including bushings and thrust washers for aerospace applications, substrates for industrial print heads, components for scan heads in industrial optical applications, cathodes for fuel cells and materials for manufacturers of artificial heart valves for human implantation.

We also offer a variety of high-performance specialty coatings for critical components used in semiconductor and other high-technology manufacturing operations. These components, often in highly complex geometries, are coated by means of a proprietary low-temperature, plasma-assisted CVD process to provide corrosion and abrasion resistance and desired conductivity and hydrophobicity properties. We also provide complex assemblies such as electrostatic chucks for ion implant equipment, where our coatings prevent contamination of the process. Our coatings are also used in other high-technology applications such as aerospace optical components.

ELECTRONIC MATERIALS SEGMENT

Specialty Gases Products. Among the primary issues for semiconductor manufacturers are production throughput, cost, and safety because of the hazardous properties of the gases used in the ion implant processes. Our patented Safe Delivery Source® ("SDS®") solutions use a standard gas cylinder containing a carbon-based adsorbent material. The cylinder is filled with gas under conditions such that the gas is adsorbed onto the adsorbent material at sub-atmospheric pressure. Sub-atmospheric storage of hazardous gases minimizes potential leaks of gas during transportation and use, thus providing significant safety and environmental improvements over traditional high-pressure and mechanical cylinders. In addition, SDS products allow more process gas to be stored in the cylinder, providing significantly higher rates of productivity than traditional methods of gas delivery used in ion implantation manufacturing processes. These advantages have led the majority of significant semiconductor manufacturers to adopt this technology as the industry standard for dopant gas delivery. Materials packaged in SDS systems include primarily arsine, phosphine, germanium and boron trifluoride. The third generation of SDS products, called SDS3, maintains all the inherent safety features of previous generation SDS products, but dramatically increases the gas storage capacity by using a new adsorbent. The two to three times capacity improvement over the previous SDS products allows ion implanter users to reduce tool down time, resulting in significant cost savings for our customers. We also offer Vacuum Actuated Cylinders (“VAC®”), a complementary technology to SDS where select implant gases are stored under high pressure but delivered sub-atmospherically.

Deposition Products. Several processes for depositing thin films such as CVD and atomic layer deposition (“ALD”) processes are enabled by advanced liquid, gaseous and solid precursors. We believe that we are well-positioned for the incorporation of ALD processes by the semiconductor industry with our ProE-Vap® ampoule. This proprietary container allows for reliable delivery of low volatility solid precursors required for processes that demand ALD, like high-k gates. We have also successfully adapted the carbon adsorption technology used in SDS and incorporated it into products for semiconductor deposition processes marketed under the SAGE® brand. These applications include: low-k plasma-enhanced deposition, or “PE-CVD”, processes using low-k materials, pre-metal dielectric high-density plasma, or “HDP-CVD”, and films using phosphine gases and thermal deposition processes using germane gases. Given the increasing need for new materials used in leading edge semiconductor processes, we are also developing a portfolio of new deposition products to meet the future needs of our customers.

Surface Preparation and Copper Integration Products. We believe that we are a market leader in copper electroplating materials and processes in semiconductor development and manufacturing with our Viaform® product, which includes inorganic and proprietary organic molecules that provide the wiring for copper interconnects allowing manufacturers to eliminate processing steps. We also focus on the total copper integration scheme with post-chemical mechanical planarization (“CMP”) cleaning solutions. ATMI’s ST and AP photoresist strip and post-CMP cleaning materials are proprietary chemistries used for applications such as semiconductor post-etch residue removal, wafer etching, organics removal, negative resist removal, edge bead removal, and corrosion prevention. In addition to filters for the

purification of CMP liquid chemical slurries, we offer a line of consumable PVA roller brush products to clean the wafer following the CMP process. Our unique Planarcore™ PVA roller brush is molded on the core to allow easy installation that reduces tool downtime and a dimensionally stable product that provides consistent wafer-to-wafer cleaning performance. In addition, our CMP pad conditioners, based on our silicon carbide capabilities, offer unique preparation solutions for each distinct CMP pad application, with significant improvement in CMP pad life.

Gas Microcontamination Products. Our Wafergard®, Chambergard® and Waferpure® particle and molecular filtration products purify the gas entering the process chamber in order to eliminate system and wafer problems due to particulate, atmospheric and chemical contaminants. These filters are able to retain all particles 0.003 microns and larger. Our metal filters, such as stainless steel and nickel filters, reduce out gassing and improve corrosion resistance. Our Waferpure ® and Aeronex Gatekeeper® purifiers chemically react with and absorb contaminants, such as oxygen and water, to prevent contamination, and our ChamberGard™ vent diffusers reduce particle contamination and processing cycle times. We offer a wide variety of gas purification products to meet the stringent requirements of semiconductor processing. Our Aeronex Gas Purification Systems contain dual-resin beds, providing a continuous supply of purified gas without process interruption. These gas purification systems are capable of handling

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higher flow rates and longer duty cycles than cartridge purifiers. Our product line also includes filter housings and hybrid media chemical air filters which purify air entering tool enclosures and remove airborne molecular contaminants.

Other Entegris products. We also offer our eVOLV™ wet chemical process to recycle electronic waste and recover precious metals and other high value materials from components and printed circuit boards and our BrightBlack® precision engineered carbon materials with high purity, high capacity, small tunable pores and excellent mechanical durability for gas capture, storage and release.

WORLDWIDE APPLICATIONS DEVELOPMENT AND FIELD SUPPORT CAPABILITIES

We provide strong technical support to our customers through local service groups and engineers consisting of field applications engineers, technical service groups, applications development groups and training capabilities. Our field applications engineers, located in the United States and approximately ten other countries, work directly with our customers on product qualification and process improvements in their facilities. In addition, in response to customer needs for local technical service and fast turnaround time, we maintain regional applications laboratories and technology centers. Our applications laboratories maintain process equipment that simulate customers' applications and industry test standards and provide product evaluation and technical support for our customers; our regional technology centers collaborate with our customers to develop materials to meet their most advanced semiconductor manufacturing challenges.

OUR CUSTOMERS AND MARKETS

Within the semiconductor market, our major customer groups include semiconductor device manufacturers, OEMs that provide equipment to semiconductor device manufacturers, gas and chemical manufacturing companies and manufacturers of high-precision electronics.

Our most significant customers based on sales in 2014 include virtually all of the leading semiconductor device makers and equipment makers and leading wafer grower companies. We also sell our products to flat panel display OEMs, materials suppliers and manufacturers. The major manufacturers for flat panel displays and flat panel display equipment are concentrated in Japan, Korea and other parts of Asia.

In our other high-technology markets, our customers include manufacturers and suppliers in the solar and life science industries and, for our Poco Graphite products, electrical discharge machining customers, glass container manufacturers, aerospace manufacturers and manufacturers of biomedical implantation devices.

In 2014, 2013 and 2012, net sales to our top ten customers accounted for approximately 42%, 34% and 36%, respectively, of combined net sales. In 2014, one individual customer accounted for approximately 14% of our net sales. In 2013 and 2012, no single customer accounted for ten percent or more of net sales. International net sales represented 75%, 71% and 69%, respectively, of net sales in 2014, 2013 and 2012. Approximately 2,400 customers purchased products from us during 2014.

We may enter into supply agreements with our customers to govern the conduct of our business with our customers, including the manufacture of our products. These agreements generally have a term of one to three years, but do not contain any long-term purchase commitments. Instead, we work closely with our customers to develop non-binding forecasts of the future volume of orders. However, customers may cancel their orders, change production quantities from forecasted volumes or delay production for a number of reasons beyond our control.

SALES AND MARKETING

We sell our products worldwide, primarily through our direct sales force and strategic independent distributors located in offices in all major semiconductor markets, as well as through independent distributors elsewhere. As of December 31, 2014, our sales and marketing force consisted of 485 employees worldwide. Our direct sales force is also supplemented by independent distributors, sales representatives and agents, which are directed to specific market segments.

Our unique capabilities and long-standing industry relationships have provided us with the opportunity for significant collaboration with our customers at the product design stage, which has facilitated our ability to introduce new materials and new solutions that meet our customers' needs. We are constantly identifying for our customers the variety of materials, purification and process control challenges that may be addressed by our products. Our sales representatives provide our customers with worldwide support and information about our products and materials.

We believe that our technical support services are important to our marketing efforts. These services include assisting in defining a customer's needs, evaluating alternative products and materials, designing a specific system to perform the desired separation

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or operation, training users and assisting customers in compliance with relevant government regulations. In addition, we maintain a network of service centers and technology centers located in all key markets internationally and in the United States to support our products and our customers with their advanced development needs.

COMPETITION

The market for our products is highly competitive. While price is an important factor, we compete primarily on the basis of the following factors:

- historical customer relationships;
- technical expertise;
- product quality and performance;
- total cost of ownership;
- customer service and support;
- breadth of product line;
- breadth of geographic presence;
- advanced manufacturing capabilities; and
- after-sales service.

We believe that we compete favorably with respect to all of the factors listed above, but we cannot assure you that we will continue to do so. We believe that our key competitive strengths include our broad product line, our strong research and development infrastructure and investment, our manufacturing excellence, our advanced quality control systems, the low total cost of ownership of our products, our ability to provide our customers with quick order fulfillment and our technical applications expertise. However, our competitive position varies depending on the market segment and specific product areas within these segments. While we have longstanding relationships with a number of semiconductor and other electronic device manufacturers, we also face significant competition from companies that also have longstanding relationships with other semiconductor and electronic device manufacturers and, as a result, have been able to have their products specified by those customers for use in manufacturers' fabrication facilities. In the markets for our consumable products, we believe that our differentiated membrane and materials management technologies, our materials and materials delivery systems, our strong supply chain capabilities that allow us to provide our customers with quick order fulfillment, and our technical expertise, which enables us to develop membranes to meet specific customer needs and assist our customers in improving the functionality of our membranes for particular applications, allow us to compete favorably. In these markets our competitors compete against us on the basis of price, as well as alternative membrane technology having different functionality, manufacturing capabilities and breadth of geographic presence.

The market for our products is highly fragmented, and we compete with a number of different companies. Our liquid filtration and other contamination control products compete with product offerings from a wide range of companies including both large companies, such as Pall Corporation, as well as small Asian filter manufacturers. Our microenvironment product lines face competition largely on a product-by-product basis. We face competition from mid-size Japanese companies such as Miraial Co. Ltd.and Shin-Etsu Polymer Co., Ltd. and from small regional suppliers such as Gudeng Precision Industrial Co., Ltd. and e.PAK Resources Pte. Ltd. These companies compete with us primarily in 200 mm and below, and 300 mm applications. Our fluid management and control products also face worldwide competition from companies such as Gemu Valves, Inc., Integrated Automation, Inc. (CKD) and Tokyo Keiso Co., Ltd. Our materials packaging products primarily compete with glass and plastic bottle manufacturers. Our Poco Graphite products compete with products manufactured by companies such as Mersen (France), Tokai Carbon Co., Ltd. (Japan) and Toyo Tanso Co., Ltd. (Japan). There are numerous domestic and foreign companies that offer products that compete with our Electronic Materials products including Air Products and Chemicals (Electronics Division), DuPont Electronic Technologies, Dow Chemical Company (including Rohm and Haas), BASF and Air Liquide as well as several smaller companies that specialize in niche markets. Our SDS adsorbent based sub-atmospheric implant gas delivery systems face competition from Praxair, Inc. as well as from a number of companies that compete with high-pressure gas cylinders and solid sources. Our gas filtration products compete with companies such as SAES Pure Gas, Inc., Donaldson Company, Inc. and Mott Corporation. Some of our competitors are larger and have greater resources than we do. In some cases, our competitors are smaller than us, but

well-established in specific product niches. We believe that none of our competitors competes with us across all of our product offerings and that, within the markets that we serve, we offer a broader line of products, make use of a wider range of process control technologies and address a broader range of applications than any single competitor.

ENGINEERING, RESEARCH AND DEVELOPMENT

Our aggregate engineering, research and development expenses in 2014, 2013 and 2012 were $87.7 million, $55.3 million and $50.9 million, respectively. As of December 31, 2014, we had 386 employees in engineering, research and development. In addition, we have followed a practice of supplementing our internal research and development efforts by licensing technology from unaffiliated third parties and/or acquiring distribution rights with respect to products incorporating externally owned technologies when we believe it is in our long-term interests to do so. These R&D expenses consist of personnel and other direct and indirect costs for internally funded project development, including the use of outside service providers. We also participate in joint

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development efforts with several key semiconductor manufacturers, advanced technology developers, and semiconductor equipment manufacturers.

To meet the global needs of our customers, we have engineering, research and development capabilities in California, Connecticut, Minnesota, Massachusetts, Colorado, Texas, Japan, Korea, Taiwan, France, China and Malaysia. Our engineering, research and development efforts are directed toward developing and improving our technology platforms for semiconductor and advanced processing applications and identifying and developing products for new applications for which fluid management plays a critical role.

We use sophisticated methodologies to research, develop and characterize our materials and products. Our materials technology laboratories are equipped to analyze the physical, rheological, thermal, chemical and compositional nature of the polymers we use. Our materials lab includes standard and advanced polymer analysis equipment such as inductively coupled plasma mass spectrometry (ICP/MS), inductively coupled plasma atomic emission spectrometry (ICP/AES), fourier transform infrared spectroscopy (FTIR) and automated thermal desorption gas chromatography/mass spectrometry (ATD-GC/MS). This advanced analysis equipment allows us to detect contaminants in materials that could harm the semiconductor manufacturing process to levels as low as parts per billion, and in many cases parts per trillion.

Our capabilities to test and characterize our materials and products are focused on continuously reducing risks and threats to the integrity of the critical materials that our customers use in their manufacturing processes. We expect that technology and product engineering, research and development will continue to represent an important element in our ability to develop and characterize our materials and products.

Key elements of our engineering, research and development expenditures over the past three years have included the development of new product platforms to meet the manufacturing needs for 28 and 20 nanometer and smaller semiconductor devices. Driven by the proliferation of new materials and chemicals in the manufacturing processes and more demanding platforms for contamination control for 300 mm wafers, investments were made for new contamination control products in the area of copper interconnects, deep ultra-violet (DUV) and EUV photolithography, and chemical and gas management technologies for advanced wafer cleans, deposition and etch equipment. We made additional investments in the area of advanced process control, monitoring and diagnostics capabilities for future generations of semiconductor manufacturing processes, including the development of a manufacturing capability for the production of Single Wafer Carriers, Multi Application Carriers and FOUPs for the next generation 450 mm wafers. Our employees also work closely with our customers' development personnel. These relationships help us identify and define future technical needs on which to focus our engineering, research and development efforts. In addition, we participate in Semiconductor Equipment and Materials International (SEMI), an association of semiconductor equipment suppliers, and leading industry consortia, such as the Interuniversity Microelectronics Centre (IMEC) and Semiconductor Manufacturing Technology (SEMATECH), including its Global 450 Consortium (G450C). For example, we have participated with Semiconductor Equipment and Materials International, SEMI, to develop specifications for the next generation wafer shipping and handling products and with a major customer to develop specific wafer handling products for 450 mm wafers. We also support research at academic and other institutions targeted at advances in materials science and semiconductor process development.

We also form strategic alliances, including joint development programs and collaborative marketing efforts, to develop new products and to accelerate the introduction of our products. These programs have led to significant technological advances, including the development of proprietary advanced materials and semiconductor manufacturing processes. We have a strategic alliance with Enthone, Inc. ("Enthone"), a subsidiary of Alent plc, pursuant to which we hold the exclusive worldwide marketing and distribution rights to Enthone's copper ECD products, including its ViaForm products. Under the terms of the agreement, Enthone continues to manufacture the ViaForm products for us. We also have smaller alliances and programs in Asia to enhance our core technology base

and promote the introduction of new and innovative products.

MANUFACTURING

Our customers rely on our products and materials to assure the integrity of the critical materials used in their manufacturing processes by providing dimensional precision and stability, purity, cleanliness and consistent performance. Our ability to meet our customers' expectations, combined with our substantial investments in worldwide manufacturing capacity, position us to respond to the increasing demands of the semiconductor industry and other industries that require yield enhancing materials and solutions.

To meet our customer needs worldwide, we have established an extensive global manufacturing network with manufacturing and coating facilities in the United States, Japan, Taiwan, France, Malaysia and South Korea. Because we work in an industry where contamination control is paramount, we maintain Class 100 to Class 10,000 clean rooms for manufacturing and assembly. We believe that our worldwide manufacturing operations and our advanced manufacturing capabilities are important competitive advantages. Our advanced manufacturing capabilities include:

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- Injection Molding. Our manufacturing expertise is based on our long experience with injection molding. Using molds produced from computer-aided processes, our manufacturing technicians utilize specialized injection molding equipment and operate within specific protocols and procedures established to consistently produce precision products.
- Extrusion. Extrusion is accomplished through the use of heat and force from a screw to melt solid polymer pellets in a cylinder and then forcing the resulting melt through a die to produce tubing and pipe. We have established contamination-free on-line laser marking and measurement techniques to properly identify products during the extrusion process and ensure consistency in overall dimension and wall thickness. In addition, we use extrusion technology to extrude a polymer mix into flat sheet and hollow fiber membranes.
- Blow Molding. Blow molding consists of the use of heat and force from a screw to melt solid polymer pellets in a cylinder and then forcing the resulting melt through a die to create a hollow tube. The molten tube is clamped in a mold and expanded with pressurized gas until it takes the shape of the mold. We utilize advanced three-layer processing to manufacture premium grade 55 gallon drums, leading to cost savings while simultaneously assuring durability, strength and purity.
- Rotational Molding. Rotational molding is accomplished by the placing of a solid polymer powder in a mold, placing the mold in an oven and rotating the mold on two axes so that the melting polymer coats the entire surface of the mold. This forms a part in the shape of the mold upon cooling. We use rotational molding in manufacturing containers up to 5,000 liters.
- Compression Molding. In compression molding, thermoset polymers are processed. Today, we use this manufacturing process primarily for manufacturing integrated flow controllers and valves market. We use the same expertise as in injection molding to assure a consistently produced precision product.
- Membrane Casting. We cast membrane by extruding a polymer into flat sheet or hollow fiber format that is passed through a chamber with controlled atmospheric conditions to control the development of voids or pores in the membrane. Once cast, the membrane is subjected to solvent extraction and annealing steps. The various properties of the membranes that we offer are developed during subsequent process steps.
- Cartridge Manufacturing. We fabricate the membrane we manufacture as well as membranes manufactured by others into finished filtration cartridges in a variety of configurations. The fabrication process involves membrane processing into pleated and other configurations around a central core and enclosing it in a framework of end caps and protective screening for use in fabricated cartridge housings. We also manufacture filter cartridges that are integrated into their own housings and incorporate our patented Connectology™ quick connect technology.
- Specialty Coating Capabilities. We fabricate high performance electrostatic chucks by using highly engineered materials and advance vacuum coatings. We have proprietary low-temperature, plasma-assisted CVD and physical vapor deposition (PVD) processes that deposit coatings on a variety of vacuum compatible materials, including metals, alloys, ceramics, semiconductors and polymers, with superior density, purity and uniformity.
- Graphite Synthesis. We have a differentiated proprietary graphite synthesis process that produces premium graphite with superior strength, uniformity and performance. This synthesis process consists of blending and forming petroleum cokes into “green” billets, baking over an extended period between 800 to 1,100°C, followed by a graphitization process at temperatures between 2,000 to 3,000°C. The graphite produced by this process is sold in bulk, machined into specific components or converted into silicon carbide through controlled exposure to silicon monoxide gas.
- Machining. Machining consists of the use of computer-controlled equipment to create shapes, such as valve bodies and other specific components, out of solid polymer blocks or rods, premium graphite and silicon carbide. Our computerized machining capabilities enable speed and repeatability in volume manufacturing of our machined products, particularly products utilized in chemical delivery applications.
- Assembly. We have established protocols, flow charts, work instructions and quality assurance procedures to assure proper assembly of component parts. The extensive use of robotics throughout our facilities reduces labor costs, diminishes the possibility of contamination and assures process consistency.

Tool Making. We employ tool development staff in the United States and Malaysia and have tool-making capabilities in Malaysia. Our toolmakers produce the majority of the tools we use throughout the world.

- High-Purity Materials Packaging. We have established protocols, flow charts, work instructions and quality assurance procedures to assure proper and ultraclean assembly of materials packaging products in reliable, consistent and repeatable processes.
- Gas Delivery Systems. We use state of the art, secure gas cabinets with advanced leak monitoring capabilities and established protocols, flow charts, work instructions and quality and safety assurance procedures to assure the safe, efficient and cost effective filling of gas cylinders.

We have made significant investments in systems and equipment to create innovative products and tool designs Including metrology and 3D printing capabilities for rapid analysis and production prototype of products.

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In addition we use contract manufacturers for certain of our gas microcontamination and other electronic materials products both in the U.S. and Asia.

PATENTS AND OTHER INTELLECTUAL PROPERTY RIGHTS

We rely on a combination of patent, copyright, trademark and trade secret laws and license agreements to establish and protect our proprietary rights. As of December 31, 2014 our combined patent portfolio included 641 current U.S. patents, 1,266 current foreign patents, including counterparts to U.S. filings, 277 pending U.S. patent applications, 67 pending filings under the Patent Cooperation Treaty not yet nationalized and 974 pending foreign patent applications. While we believe that patents may be important for aspects of our business, we believe that our success also depends upon close customer contact, innovation, technological expertise, responsiveness and worldwide distribution. Additionally, while our patented technology may delay or deter a competitor in offering a competing product, we do not believe that our patent portfolio functions as a barrier to entry for any of our competitors. In addition, while we license and will continue to license technology used in the manufacture and distribution of products from third parties, we do not consider any particular license to be material to our business. We also license our technology to third parties from time to time and, in particular, as required for our patented technology to be designated as the standard by SEMI or other standard setting organizations within the semiconductor industry.

We require each of our employees, including our executive officers, to enter into standard agreements pursuant to which the employee agrees to keep confidential all of our proprietary information and to assign to us all inventions made while employed by us. We also require all outside scientific collaborators, sponsored researchers, and other advisors and consultants who are provided confidential information to execute confidentiality agreements upon the commencement of the consulting or collaboration relationship in question. These agreements generally provide that all confidential information developed or made known to the entity or individual during the course of the entity’s or individual’s relationship with the Company is to be kept confidential and not disclosed to third parties except in specific limited circumstances.

The patent position of any manufacturer, including us, is subject to uncertainties and may involve complex legal and factual issues. Litigation has in the past and may in the future be necessary to enforce our patents and other intellectual property rights or to defend ourselves against claims of infringement or invalidity. The steps that we have taken in seeking patents and other intellectual property protections may prove inadequate to deter misappropriation of our technology and information. In addition, our competitors may independently develop technologies that are substantially equivalent or superior to our technology.

GOVERNMENTAL REGULATION

Our operations are subject to federal, state and local regulatory requirements relating to environmental, waste management and health and safety matters, including measures relating to the release, use, storage, treatment, transportation, discharge, disposal and remediation of contaminants, hazardous substances and wastes, as well as practices and procedures applicable to the construction and operation of our plants. There can be no assurance that we will not incur material costs and liabilities or that our past or future operations will not result in exposure to injury or claims of injury by employees or the public. Although some risk of costs and liabilities related to these matters is inherent in our business, as with many similar businesses, we believe that our business is operated in substantial compliance with applicable regulations. However, new, modified or more stringent requirements or enforcement policies could be adopted, which could adversely affect us. While we expect that capital expenditures will be necessary to assure that any new manufacturing facility is in compliance with environmental and health and safety laws, we do not expect these expenditures to be material.

EMPLOYEES

As of December 31, 2014, we had 3,348, full-time employees, as well as approximately 180 temporary and part-time employees. 386 of our full-time employees work in engineering, research and development and 485 work in sales and marketing. Given the variability of business cycles in the semiconductor industry and the quick response time required by our customers, it is critical that we be able to quickly adjust the size of our production staff to maximize efficiency. Therefore, we use skilled temporary labor as required.

None of our employees are represented by a labor union or covered by a collective bargaining agreement other than statutorily mandated programs in certain European countries.

INFORMATION ABOUT OUR OPERATING SEGMENTS

Our financial reporting segments are Critical Materials Handling (CMH), and Electronic Materials (EM). See Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations - Segment Analysis below for a

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discussion of revenue and segment profitability with respect to each of these reporting segments, which discussion is incorporated herein by reference. See also note 15 to our consolidated financial statements. Further, in 2014, 2013 and 2012 approximately 75%, 71% and 69%, respectively, of our net sales were made to customers outside North America. Industry and geographic segment information is also discussed in note 15 to the Entegris, Inc. consolidated financial statements (the "Financial Statements") included in response to Item 8 below, which note is incorporated herein by reference.

OTHER INFORMATION

On July 27, 2005, our Board of Directors adopted a shareholder rights plan (the "Rights Plan") pursuant to which Entegris declared a dividend on August 8, 2005 to its shareholders of record on that date of one preferred share purchase right (a "Right") for each share of Entegris common stock owned on August 8, 2005 and authorized the issuance of Rights in connection with future issuances of Entegris common stock. Each Right entitles the holder to purchase one-hundredth of a share of a series of preferred stock at an exercise price of $50, subject to adjustment as provided in the Rights Plan. The Rights Plan is designed to protect Entegris' shareholders from attempts by others to acquire Entegris on terms or by using tactics that could deny all shareholders the opportunity to realize the full value of their investment. The Rights are attached to the shares of our common stock until certain triggering events specified in the Rights Agreement occur, including, unless approved by our board of directors, an acquisition by a person or group of specified levels of beneficial ownership of our common stock or a tender offer for our common stock. Upon the occurrence of any of these triggering events, the Rights authorize the holders to purchase at the then-current exercise price for the Rights that number of shares of our common stock having a market value equal to twice the exercise price. The Rights are redeemable by us for $0.01 and will expire on August 8, 2015. One of the events that would trigger the Rights is the acquisition, or commencement of a tender offer, by a person (an Acquiring Person, as defined in the shareholder rights plan), other than Entegris or any of our subsidiaries or employee benefit plans, of 15% or more of the outstanding shares of our common stock. An Acquiring Person may not exercise a Right.

Entegris' products are made from a wide variety of raw materials that are generally available in quantity from alternate sources of supply. However, certain materials included in the Company's products, such as certain filtration membranes, polymer resins and petroleum coke used by our Critical Materials Handling segment are obtained from a single source or a limited group of suppliers. Our Electronic Materials segment uses a broad range of specialty and commodity chemicals and polymers in the development of its products, including parts and sub-assemblies that are obtained from outside suppliers. We seek, where possible, to have several sources of supply for all of these materials. Likewise, we may, in some instances, rely on a single or a limited number of suppliers, or upon suppliers in a single country, for some of the materials used by our Electronic Materials segment, however, we have not experienced any sustained interruption in production or the supply of materials to our Electronic Materials segment, and we do not anticipate any significant difficulties in obtaining the materials necessary to manufacture these products. Although the Company seeks to reduce dependence on these sole and limited source suppliers, the partial or complete loss of these sources could interrupt our manufacturing operations and result in an adverse effect on the Company's results of operations. Furthermore, a significant increase in the price of one or more of these components could also adversely affect the Company's results of operations.

OUR HISTORY

Effective April 30, 2014, the Company completed the acquisition of ATMI, Inc., a Delaware corporation based in Danbury, CT, for a cash purchase price of $34.00 per ATMI share pursuant to a merger transaction in which ATMI, Inc. became a wholly owned subsidiary of the Company. ATMI, Inc. was incorporated under the laws of Delaware in 1997, and its predecessor company was incorporated under the laws of Delaware in 1987.

Effective August 6, 2005 Entegris, Inc., a Minnesota corporation, and Mykrolis Corporation, a Delaware corporation, completed a strategic merger of equals transaction, pursuant to which they were each merged into the Company to carry on the combined businesses. Entegris Minnesota was incorporated in June 1999 to effect the business combination of Fluoroware, Inc., which began operating in 1966, and EMPAK, Inc., which began operating in 1980.

Mykrolis was organized as a Delaware corporation on October 16, 2000 under the name Millipore MicroElectronics, Inc. in connection with the spin-off by Millipore Corporation of its microelectronics business unit which was completed on February 27, 2002.

EXECUTIVE OFFICERS OF THE REGISTRANT

The following is a list, as of January 31, 2015, of our Executive Officers. All of the Corporate Officers listed below were elected to serve until the first Directors Meeting following the 2015 Annual Stockholders Meeting.

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Name	Age	Office	First Appointed To Office*
CORPORATE OFFICERS			
Bertrand Loy	49	President & Chief Executive Officer	2001
Gregory B. Graves	54	Executive Vice President, Chief Financial Officer & Treasurer	2002
Peter W. Walcott	68	Senior Vice President, Secretary & General Counsel	2001
John J. Murphy	62	Senior Vice President, Human Resources	2005
Todd Edlund	52	Senior Vice President, Chief Operating Officer	2007
Christian F. Kramer	52	Senior Vice President, Chief Commercial Officer	2014
William Shaner	47	Senior Vice President, Global Operations	2007
Corey Rucci	55	Vice President, Business Development	2014
Gregory Marshall	58	Vice President, Quality and EH&S	2011
Michael D. Sauer	49	Vice President, Controller & Chief Accounting Officer	2011

* With either the Company or a predecessor company

Bertrand Loy has served as our Chief Executive Officer, President and a director since November 2012. Prior to his promotion, Mr. Loy served as our Executive Vice President and Chief Operating Officer since 2008. From August 2005 until July 2008, he served as our Executive Vice President and Chief Administrative Officer in charge of our global supply chain and manufacturing operations. He served as the Vice President and Chief Financial Officer of Mykrolis from January 2001 until August 2005. Prior to that, Mr. Loy served as the Chief Information Officer of Millipore Corporation during 1999 and 2000. From 1995 until 1999, he served as the Division Controller for Millipore's Laboratory Water Division. From 1989 until 1995, Mr. Loy served Sandoz Pharmaceuticals (now Novartis) in a variety of financial, audit and controller positions located in Europe, Central America and Japan. Mr. Loy served as a director of BTU International, Inc., (supplier of advanced thermal processing equipment) until its acquisition in January of 2015. He also serves as a director of Harvard Bioscience, Inc. (scientific equipment) since November of 2014.

Gregory B. Graves has served as our Executive Vice President and Chief Financial Officer since July 2008. Prior to that he served as Senior Vice President and Chief Financial Officer since April 2007. Prior to April 2007, he served as Senior Vice President, Strategic Planning & Business Development since the effectiveness of the merger with Mykrolis. Mr. Graves served as the Chief Business Development Officer of Entegris Minnesota since September 2002 and from September 2003 until August 2004 he also served as Senior Vice President of Finance. Prior to joining Entegris Minnesota, Mr. Graves held positions in investment banking and corporate development, including at U.S. Bancorp Piper Jaffray from June 1998 to August 2002 and at Dain Rauscher from October 1996 to May 1998.

Peter W. Walcott has been our Senior Vice President, Secretary and General Counsel since the effectiveness of the merger with Mykrolis. He served as the Vice President, Secretary and General Counsel of Mykrolis since October 2000. Mr. Walcott served as the Assistant General Counsel of Millipore Corporation from 1981 until March 2001.

John J. Murphy joined us as our Senior Vice President, Human Resources in October 2005. He served as the Senior Vice President Human Resources of HNTB, an engineering and architectural services firm, from February 2004 until October 2005 and as Corporate Vice President, Human Resources of Cadence Design Systems, Inc. from May 2000 through October 2003. Prior to that Mr. Murphy held senior human resources positions with Williams Companies L.M. Ericsson Telephone Company and General Electric Company.

Todd Edlund has been our Senior Vice President and Chief Operating Officer since November 2014. Prior to that he was Senior Vice President and General Manager of our Critical Materials Handling business and prior to the merger with ATMI, Inc. he was the Vice President and General Manager of our Contamination Control Solutions Division

since December 2007. He served as the Vice President and General Manager of our Liquid Systems Business Unit from 2005 to 2007, and prior to that as Entegris Minnesota's Vice President of Sales for semiconductor markets from 2003 to 2005. Prior to 2003, Mr. Edlund held a variety of positions with our predecessor companies since 1995.

Christian F. Kramer has been our Senior Vice President and Chief Commercial Officer since November of 2014; prior to that he served as Senior Vice President , General Manager, of our Electronic Materials businesses since our merger with ATMI, Inc. Prior to that Mr. Kramer served ATMI, Inc as Senior Vice President and General Manager, Microelectronics, since February 2013. Mr. Kramer joined ATMI in 2010 and, through 2012, served as Senior Vice President of ATMI Material Solutions. Prior to joining ATMI, Mr. Kramer was Vice President, Global Strategic Account Management for Tokyo Electron America, a global manufacturer

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of capital equipment used in the semiconductor industry, from 1998 through 2010. Prior to that, Mr. Kramer held various commercial leadership positions in the semiconductor industry.

William Shaner has been our Senior Vice President Global Operations since February 2014. Previously he served as our Vice President and General Manager, Microenvironments Division since 2007. He has served in a variety of sales, marketing, business development and engineering roles since joining Entegris in 1995.

Gregory Marshall has been our Vice President of Quality and EH&S since March of 2010. Prior to that he served as our Global Director of Quality since the merger with Mykrolis Corporation, prior to which he served as the Director of Quality for Mykrolis. Prior to joining Mykrolis Mr. Marshall served and the Director of US Quality for Kokusai Semiconductor Equipment Corporation.

Corey Rucci assumed his current position of Vice President Business Development in February 2014. Prior to that he served as Vice President and General Manager of our Specialty Materials Division since 2011 and as General Manager of Poco Graphite, Inc. (Poco) since 2008 when we acquired Poco. Prior to joining Entegris, Mr. Rucci served Poco as the President and Chief Operating Officer since 2007, Chief Operating Officer since 2005, Chief Financial Officer since 2001 and Vice President of Business Development since 1998. Prior to that he worked at UNOCAL Corp. for 17 years in a variety of accounting, marketing and business development roles.

Michael D. Sauer has been our Vice President, Controller and Chief Accounting Officer since June 2012. Prior to that, he served as the Corporate Controller since 2008. From the time of the merger with Mykrolis until April 2008, Mr. Sauer served as Director of Treasury and Risk Management. Mr. Sauer joined Fluoroware, Inc., a predecessor to Entegris Minnesota in 1988 and held a variety of finance and accounting positions until 2001 when he became the Director of Business Development for Entegris Minnesota, the successor to Fluoroware, serving in that position until the merger with Mykrolis.

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Item 1A. Risk Factors.

Risks Relating to our Business and Industry

The semiconductor industry has historically been highly cyclical, and industry downturns reduce net sales and profits. Our business depends on the purchasing patterns of semiconductor manufacturers, which, in turn, depend on the current and anticipated demand for semiconductors and products utilizing semiconductors. The semiconductor industry has historically been highly cyclical with periodic significant downturns, which often have resulted in significantly decreased expenditures by semiconductor manufacturers. Even moderate cyclicality can cause our operating results to fluctuate significantly from one period to the next. We have in the past experienced significant revenue deterioration and incurred significant operating losses due to a severe downturn in both the capital and unit-driven segments of the semiconductor industry. We are unable to predict the ultimate duration and severity of future downturns for the semiconductor industry.

Furthermore, in periods of reduced demand, we must continue to maintain a satisfactory level of engineering, research and development expenditures and continue to invest in our infrastructure. At the same time, we have to manage our operations to be able to respond to any significant increases in demand, if they occur. In addition, because we typically do not have significant backlog, changes in order patterns have a more immediate impact on our revenues. We expect the semiconductor industry to continue to be cyclical. During downturns our revenue is reduced, and there is likely to be an increase in pricing pressure and shifts in product and customer mix, all of which may affect gross margin and net income. Such fluctuations in our results could cause our stock price to decline significantly. We believe that period-to-period comparisons of our results of operations may not be meaningful, and you should not rely

upon them as indicators of our future performance.

The semiconductor industry is subject to rapid demand shifts, which are difficult to predict. As a result, our inability to meet demand in response to these rapid shifts may cause a reduction in our market share. Our ability to increase sales of our products, particularly our capital equipment products, depends in part upon our ability to ramp up the use of our manufacturing capacity for such products in a timely manner and to quickly mobilize our supply chain. In order to meet the demands of our customers, we may be required to ramp up our manufacturing capacity in as little as a few months. If we are unable to expand our manufacturing capacity on a timely basis or manage such expansion effectively, our customers could seek such products from other suppliers, and our market share could be reduced. Because demand shifts in the semiconductor industry are rapid and difficult to foresee, we may not be able to increase capacity quickly enough to respond to any such increase in demand.

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We may not be able to accurately forecast demand for our products. We typically operate our business on a just-in-time shipment basis with a modest level of backlog and we order supplies and plan production based on internal forecasts of demand. Due to these factors, we have, in the past, and may again in the future, fail to accurately forecast demand for our products, in terms of both volume and specific products for which there will be demand. This has led to, and may in the future lead to, delays in product shipments, disappointment of customer expectations, or, alternatively, an increased risk of excess inventory and of inventory obsolescence. If we fail to accurately forecast demand for our products, our business, financial condition and operating results could be materially and adversely affected.

Semiconductor industry up-cycles may not reach historic levels and instead may reflect a lower rate of long-term growth. There may not be new high-opportunity applications to drive growth in the semiconductor industry, as was the case in earlier market cycles. Accordingly, the semiconductor industry may experience lower growth rates during any recovery cycle than has historically been the case and its longer-term performance may reflect this lower growth rate. We are unable to predict the duration or ultimate severity of any downturn or the growth rate of any recovery cycle that may follow.

If we are unable to maintain our technological expertise in design and manufacturing processes, we will not be able to successfully compete. The semiconductor industry is subject to rapid technological change, changing customer requirements and frequent new product introductions. Because of this, the life cycle of our products is difficult to determine. We believe that our future success will depend upon our ability to develop and provide products that meet the changing needs of our customers, including the shrinking of integrated circuit line-widths and the use of new classes of materials, such as copper, titanium nitride and organic and inorganic dielectric materials, which are materials that have either a low or high resistance to the flow of electricity. This requires that we successfully anticipate and respond to technological changes in manufacturing processes in a cost-effective and timely manner. Any inability to develop the technical specifications for any of our new products or enhancements to our existing products or to manufacture and ship these products or enhancements in volume in a timely manner could harm our business prospects and significantly reduce our sales. In addition, if new products have reliability or quality problems, we may experience reduced orders, higher manufacturing costs, delays in acceptance and payment, additional service and warranty expense, and damage to our reputation.

Our sales are somewhat concentrated on a small number of key customers and, therefore, our net sales and profitability may materially decline if one or more of our key customers does not continue to purchase our existing and new products in significant quantities. We depend and expect to continue to depend on a limited number of customers for a large portion of our business, and changes in several customers' orders could have a significant impact on our operating results. Our top ten customers accounted for 42%, 34% and 36% of our net sales in 2014, 2013 and 2012, respectively. If any one of our key customers decides to purchase significantly less from us or to terminate its relationship with us, our net sales and profitability may decline significantly. We could also lose our key customers or significant sales to our key customers because of factors beyond our control, such as a significant disruption in our customers' businesses generally or in a specific product line. These customers may stop incorporating our products into their products with limited notice to us and suffer little or no penalty for doing so. The semiconductor industry is currently undergoing consolidation with a number of major firms merging or being acquired. If any of our customers merge or are acquired, we may experience lower overall sales from the merged or surviving companies. Because one of our strategies has been to develop long-term relationships with key customers in the product areas in which we focus, and because we have a long product design and development cycle for most of our products and prospective customers typically require lengthy product qualification periods prior to placing volume orders, we may be unable to replace these customers quickly or at all.

We are subject to order and shipment uncertainties and many of our costs are fixed, and, therefore, any significant changes, cancellations or deferrals of orders or shipments could cause our net sales and profitability to decline or

fluctuate. We do not usually obtain long-term purchase orders or commitments from our customers. Instead, we work closely with our customers to develop non-binding forecasts of the future volume of orders. Customers may cancel their orders, change production quantities from forecasted volumes or delay production for reasons beyond our control. Order cancellations or deferrals could cause us to hold inventory for longer than anticipated, which could reduce our profitability, restrict our ability to fund our operations and cause us to incur unanticipated reductions or delays in our revenue. Our customers often change their orders multiple times between initial order and delivery. Such changes usually relate to quantities or delivery dates, but sometimes relate to the specifications of the products we are supplying. If a customer does not pay for these products, we could incur significant charges against our income. In addition, our profitability may be affected by the generally fixed nature of our costs. Because a substantial portion of our costs is fixed, we may experience deterioration in gross margins when volumes decline.

Competition from existing or new companies in the microelectronics industry could cause us to experience downward pressure on prices, fewer customer orders, reduced margins, the inability to take advantage of new business opportunities and the loss of market share. We operate in a highly competitive industry. We compete against many domestic and foreign companies that have substantially greater manufacturing, financial, research and development and marketing resources than we do. In addition, some of our competitors may have more developed relationships with our existing customers than we do, which may enable them

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to have their products specified for use more frequently by these customers. We also face competition from the manufacturing operations of our current and potential customers, who continually evaluate the benefits of internal manufacturing versus outsourcing. As more OEMs dispose of their manufacturing operations and increase the outsourcing of their products to liquid and gas delivery system and other component companies, we may face increasing competitive pressures to grow our business in order to maintain our market share. If we are unable to maintain our competitive position, we could experience downward pressure on prices, fewer customer orders, reduced margins, the inability to take advantage of new business opportunities and a loss of market share. Further, we expect that existing and new competitors will improve the design of their existing products and will introduce new products with enhanced performance characteristics. The introduction of new products or more efficient production of existing products by our competitors could diminish our market share and increase pricing pressure on our products. Further, customers continue to demand lower prices, shorter delivery times and enhanced product capability. If we do not respond adequately to such pressures, we could lose customers or orders. If we are unable to compete successfully, we could experience pricing pressures, reduced gross margins and order cancellation, which could have a material adverse effect on our results of operations.

The limited market acceptance of our 300 mm shipper products as well as our other products could continue to harm our operating results. The broad adoption of 300 mm wafers has contributed to the increasing complexity of the semiconductor manufacturing process. The greater diameter of these wafers requires higher tooling costs and presents more complex handling, storage and transportation challenges. We have made and continue to make substantial investments in our 300 mm wafer shipping products, but there is no guarantee that a sufficient number of our customers will adopt our 300 mm wafer shipping product lines. Sales of our shipping products for these applications has, to date been, and could continue in the future to be modest, and we might not recover our development costs.

Semiconductor and other electronic device manufacturers may direct semiconductor capital equipment manufacturers to use a specified supplier’s product in their equipment. Accordingly, our success depends in part on our ability to have semiconductor and other electronic device manufacturers specify that our products be used at their fabrication facilities. Some of our competitors may have more developed relationships with semiconductor and other electronic device manufacturers, which enable them to have their products specified for use in manufacturers’ fabrication facilities.

From time to time, we make capital investments in anticipation of future business opportunities; if we are unable to obtain the anticipated business, our revenue and profitability may decline. In the semiconductor market, the first company to introduce an innovative product meeting an identified customer need often will have a significant advantage over offerings of competitive products. For this reason, we may make significant capital investments in technology and manufacturing capacity in advance of future business developing and without any commitment from our customers to purchase products manufactured as a result of these investments. For example, we have made significant capital investments to develop the capability to manufacture shippers and FOUPs for 450 mm wafers, however, the size and timing of the development of the market for 450 mm wafer shippers and FOUPs remains uncertain. Major semiconductor manufacturers have delayed the implementation of 450 mm manufacturing while others have announced that they would not initiate 450 mm manufacturing until after 2020, so we cannot assure you that we will be able to successfully sell significant quantities of our 450 mm shipper and FOUP products or realize a return on our investment in the near term or ever. If we are unable to achieve broad market acceptance for these products or if a competitive product is preferred by our customers, we may not be able to recoup our investment, we may lose market share and our revenue and profitability may decline.

We may acquire other businesses, form joint ventures or divest businesses that could negatively affect our profitability, require us to incur debt and dilute your ownership of the Company. As part of our business strategy, we have, and we expect to continue to address gaps in our product offerings, diversify into complementary product markets or pursue additional technology and customers through acquisitions, joint ventures or other types of

collaborations. We also expect to adjust our portfolio of businesses to meet our ongoing strategic objectives. As a result, we may enter markets in which we have no or limited prior experience and may encounter difficulties in divesting businesses that no longer meet our objectives. Competition for acquiring attractive businesses in our industry is substantial. In executing this part of our business strategy, we may experience difficulty in identifying suitable acquisition candidates or in completing selected transactions at appropriate valuations. Alternatively, we may be required to undertake multiple transactions at the same time in order to take advantage of acquisition opportunities that do arise; this could strain our ability to effectively execute and integrate these transactions. We would consider a variety of financing alternatives for each acquisition which could include borrowing funds, reducing our cash balances or issuing additional shares of our common stock to complete an acquisition. This could impair our liquidity and dilute your ownership of the Company. Further, we may not be able to successfully integrate any acquisitions that we do make into our existing business operations, and we could assume unknown or contingent liabilities or experience negative effects on our reported results of operations from dilutive results from operations and/or from future potential impairment of acquired assets, including goodwill, related to future acquisitions. We may experience difficulties in operating in foreign countries or over significant geographical distances and in retaining key employees or customers of an acquired business, and our management’s attention could be diverted from other business issues. We may not

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identify or complete these transactions in a timely manner, on a cost-effective basis or at all, and we may not realize the benefits of any acquisition or joint venture.

We may not effectively penetrate new markets. Part of our business strategy is to leverage our expertise in our core competencies for growth in new and adjacent markets, such as photovoltaic cells, LEDs, flat panel displays, lithium ion batteries and magnetic storage devices. Our ability to grow our business could be limited if we are unable to execute on this strategy.

Additional Risks Related to Our Business

The loss or significant curtailment of purchases by any of the largest customers of our Electronic Materials (EM) business could adversely affect our results of operations. While our EM business generates revenue from hundreds of customers worldwide, a significant percent of its revenues are generated by its top ten customers. The loss of or significant curtailment of purchases by one or more of these top customers, including curtailments due to a change in the design or manufacturing sourcing policies or practices of these customers or the timing of customer inventory adjustments may adversely affect our results of operations. Our EM customers' and their customers' aggressive management of inventory has already adversely affected EM's results of operations in the past and may continue to adversely affect future results of operations.

We may have difficulty obtaining the resources or products we need for manufacturing or assembling our EM products or operating other aspects of our EM business, which could adversely affect our ability to meet demand for our EM products and may increase our costs. We have hundreds of suppliers providing various materials that we use in the production of our EM products and other aspects of our business, and we seek, where possible, to have several sources of supply for all of these materials. However, we may rely on a single or a limited number of suppliers, or upon suppliers in a single country, for certain of these materials. The inability of such suppliers to deliver adequate supplies of reasonable quality production materials or other supplies could disrupt our production process for EM products. In addition, production could be disrupted by the unavailability of the resources used in production, such as electricity, chemicals, and gases. The unavailability or reduced availability of the materials or resources we use for our EM products may require us to reduce production of EM products or may require us to incur additional costs in order to obtain an adequate supply of these materials or resources. The occurrence of any of these events could adversely affect our business and results of operations.

Certain of our EM products are used to transport toxic gases used in the semiconductor manufacturing process. Our patented SDS systems use a standard gas cylinder containing a carbon-based adsorbent material. The cylinder is filled with gas under conditions such that the gas is adsorbed onto the adsorbent material at sub-atmospheric pressure to minimize potential leaks of gas during transportation and use. Likewise our VAC systems use a complementary technology where select implant gases are stored under high pressure but delivered sub-atmospherically. While we believe that these delivery systems are the safest available in the industry, as with any products involved in the transport and storage of toxic gases, if a leak should occur during transport or during storage at our customers' location serious damage could result including injury or death to any person exposed to those toxic gases creating significant product liability for us. While we believe we maintain adequate levels of product liability insurance, there can be no assurance that our insurance will be adequate to satisfy any such liabilities and our financial results or financial condition could be adversely affected.

Our results of operations could be adversely affected by climate change or natural catastrophes, such as the March 2011 earthquake and tsunami in Japan and the June 2012 wildfires in Colorado Springs, Colorado, in the locations in which we, our customers or our suppliers operate. We have manufacturing and other operations in locations subject to natural events such as severe weather and earthquakes that could disrupt operations. In addition, our suppliers and customers also have operations in such locations. A natural disaster that results in a prolonged disruption to our

operations, or our customers' or suppliers' operations, may adversely affect our results of operations and financial condition. Also, climate change poses both regulatory and physical risks that could harm our results of operations or affect the way we conduct our businesses. While the March 2011 earthquake and tsunami in Japan did not materially impair manufacturing operations at our Yonezawa, Japan plant and while the June 2012 wildfires did not materially impair manufacturing operations at our Colorado Springs plant, there can be no assurance that future such catastrophes will not impact our manufacturing operations or those of our supply chain partners by disrupting our ability to manufacture and deliver products to our customers, resulting in an adverse impact on our business and results of operations.

We may be subject to information technology system failures, network disruptions and breaches in data security. Information technology system failures, network disruptions and breaches of data security from cyber attacks, employee social media use on our computers or through failure of our internet service providers and other cloud computing service providers to successfully secure their own systems could disrupt our operations, causing customer communication and order management issues, unintentional disclosure of customer, employee and proprietary information, and disruption in transaction processing, which could affect our reputation and reporting of financial results. While our management has taken steps to address these concerns by

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implementing network security, hiring personnel and establishing internal control measures, there can be no assurance that a system failure or data security breach will not have a material adverse effect on our financial condition and operating results.

The integration of ATMI's operations into ours following the Merger could create additional risks for our internal controls over financial reporting. We intend to integrate ATMI into our control environment and subject it to internal control testing during calendar year 2015, which means that deficiencies in our internal control over financial reporting as a combined company may not be identified until then. Any such undiscovered deficiencies, if material, could result in misstatements of our results of operations, restatements of our financial statements, declines in the trading price of our common stock or otherwise have a material adverse effect on our business, reputation, results of operations, financial condition or cash flows.

Risks Related to Our Indebtedness

We will have a substantial amount of indebtedness, which could adversely affect our financial health and our ability to obtain financing in the future, react to changes in our business and to make payments on the indebtedness. As of December 31, 2014, we have an aggregate principal amount of approximately $767 million of outstanding total indebtedness, comprised of our 6% senior unsecured notes due April 1, 2022 ("Notes") and our senior secured term loan facility due 2021 ("Term Loan"). In addition we have approximately $75 million of unutilized capacity under a senior secured asset-based revolving credit facility ("ABL Facility"), which is subject to a borrowing base.

Subject to the limits contained in the credit agreements governing our Term Loan, the ABL Facility and the indenture that governs the Notes, we may be able to incur substantial additional debt from time to time to finance working capital, capital expenditures, investments or acquisitions, or for other purposes. If we do so, the risks related to our high level of debt could intensify. Specifically, our high level of debt could have important consequences to investors, including:

- making it more difficult for us to satisfy our obligations with respect to the Notes, the Term Loan and the ABL Facility;
- limiting our ability to obtain additional financing to fund future working capital, capital expenditures, acquisitions or other general corporate requirements;
- requiring a substantial portion of our cash flow to be dedicated to debt service payments instead of other purposes, thereby reducing the amount of cash flow available for working capital, capital expenditures, acquisitions and other general corporate purposes;
- increasing our vulnerability to adverse changes in general economic, industry and competitive conditions;
- exposing us to the risk of increased interest rates as certain of our borrowings, including borrowings under the Notes, the Term Loan and the ABL Facility;
- limiting our flexibility in planning for and reacting to changes in the industry in which we compete;
- preventing us from raising funds necessary to repurchase all Notes tendered to us upon the occurrence of certain changes of control, which could constitute a default under the indenture governing the Notes;
- placing us at a disadvantage compared to other, less leveraged competitors or competitors with comparable debt at more favorable interest rates; and
- increasing our cost of borrowing.

In addition, the indenture that governs the Notes and the credit agreements governing our Term Loan and the ABL Facility contain restrictive covenants that will limit our ability to engage in activities that may be in our long-term best interest. Our failure to comply with those covenants could result in an event of default which, if not cured or waived, could result in the acceleration of substantially all of our debt.

Despite our current level of indebtedness, we and our subsidiaries may still be able to incur substantially more debt. This could further exacerbate the risks to our financial condition described above and prevent us from fulfilling our obligations under our existing indebtedness. We and our subsidiaries may be able to incur significant additional indebtedness in the future. Although the indenture that will govern the Notes and the credit agreements governing our Term Loan contain restrictions on the incurrence of additional indebtedness, these restrictions are subject to a number of qualifications and exceptions, and the additional indebtedness incurred in compliance with these restrictions could be substantial. If we incur any additional indebtedness that ranks equally with the Notes, subject to collateral arrangements, the holders of that debt will be entitled to share ratably with the holders of the Notes and the lenders under the Term Loan and the ABL Facility in any proceeds distributed in connection with any insolvency, liquidation, reorganization, dissolution or other winding up of our Company. These restrictions also will not prevent us from incurring obligations that do not constitute indebtedness. Our Term Loan also provides that we will have the right at any time to request additional loans and commitments, and to the extent that the aggregate amount of such additional loans and commitments exceeds $225 million, the incurrence thereof will be subject

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to our secured net leverage ratio being less than a specified ratio, or in the case of unsecured loans or other unsecured debt, or loans or other debt secured by junior liens, our total net leverage ratio being less than a specified ratio. The lenders under these facilities will not be under any obligation to provide any such additional term loans or commitments, and any additional term loans or increase in commitments will be subject to several conditions precedent and limitations. If new debt is added to our current debt levels, the related risks that the Company now faces could intensify.

We may not be able to generate sufficient cash to service all of our indebtedness and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful. Our ability to make scheduled payments on or refinance our debt obligations depends on our financial condition and operating performance, which are subject to prevailing economic, industry and competitive conditions and to certain financial, business, legislative, regulatory and other factors beyond our control. We may be unable to maintain a level of cash flow from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness.

If our cash flow and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures or to dispose of material assets or operations, seek additional debt or equity capital or restructure or refinance our indebtedness. Our ability to restructure or refinance our debt will depend on the condition of the capital markets and our financial condition at such time. Any refinancing of our debt could be at higher interest rates and may require us to comply with more onerous covenants, which could further restrict our business operations. We may not be able to effect any such alternative measures on commercially reasonable terms or at all and, even if successful, those alternative actions may not allow us to meet our scheduled debt service obligations. The credit agreements governing the Term Loan, the ABL Facility and the indenture that governs the Notes restrict our ability to dispose of assets and use the proceeds from those dispositions and may also restrict our ability to raise debt or equity capital to be used to repay other indebtedness when it becomes due. We may not be able to consummate those dispositions or to obtain proceeds in an amount sufficient to meet any debt service obligations then due.

Our inability to generate sufficient cash flow to satisfy our debt obligations, or to refinance our indebtedness on commercially reasonable terms or at all, would materially and adversely affect our financial position and results of operations and our ability to satisfy our obligations under our indebtedness.

If we cannot make scheduled payments on our debt, we will be in default and holders of the Notes could declare all outstanding principal and interest to be due and payable, the lenders under the Term Loan and the ABL Facility could terminate their commitments to loan money, our secured lenders could foreclose against the assets securing their borrowings and we could be forced into bankruptcy or liquidation.

The terms of our credit agreements governing our Term Loan, our ABL Facility and the indenture governing the Notes restrict our current and future operations, particularly our ability to respond to changes or to take certain actions. The indenture that governs the Notes and the credit agreements governing our Term Loan contain a number of restrictive covenants that impose significant operating and financial restrictions on us and may limit our ability to engage in acts that may be in our long-term best interest, including restrictions on our ability to:

•incur certain liens;
•incur additional indebtedness and guarantee indebtedness;
•pay dividends or make other distributions in respect of, or repurchase or redeem, capital stock;
•prepay, redeem or repurchase certain debt;
•make investments, loans, advances and acquisitions;
•sell or otherwise dispose of assets, including capital stock of our subsidiaries;
•enter into transactions with affiliates;

•alter the businesses we conduct;
•enter into agreements restricting our subsidiaries' ability to pay dividends; and
•consolidate, merge or sell all or substantially all of our assets.

In addition, the restrictive covenants in the credit agreement governing our ABL Facility may, at certain times, require us to maintain a fixed charge coverage ratio. Our ability to meet this financial ratio can be affected by events beyond our control.

A breach of the covenants under the indenture that governs the Notes or under the credit agreements governing our Term Loan and the ABL Facility could result in an event of default under the applicable indebtedness. Such a default may allow the creditors to accelerate the related debt and may result in the acceleration of any other debt to which a cross-acceleration or cross-default provision applies. In addition, an event of default under the credit agreement governing our ABL Facility would permit the lenders under our ABL Facility to terminate all commitments to extend further credit under that facility. Furthermore, if we were unable

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to repay the amounts due and payable under our Term Loan and ABL Facility, those lenders could proceed against the collateral granted to them to secure that indebtedness, which could force us into bankruptcy or liquidation. In the event our lenders or note holders accelerate the repayment of our borrowings, we and our subsidiaries may not have sufficient assets to repay that indebtedness.

If our operating performance declines, we may in the future need to obtain waivers from the required lenders under our Term Loan and ABL Facility to avoid being in default. If we breach our covenants under our Term Loan and ABL Facility and seek a waiver, we may not be able to obtain a waiver from the required lenders. If this occurs we would be in default under the applicable facility, the lenders could exercise their rights, as described above, and we could be forced into bankruptcy or liquidation.

The restrictions contained in the credit agreements governing our Term Loan, the ABL Facility and the indenture that governs the Notes could adversely affect our ability to:

- finance our operations;
- make needed capital expenditures;
- make strategic acquisitions or investments or enter into joint ventures;
- withstand a future downturn in our business, the industry or the economy in general;
- compete effectively and engage in business activities, including future opportunities, that may be in our best interest; and
- plan for or react to market conditions or otherwise execute our business strategies.

These restrictions may affect our ability to grow in accordance with our plans.

A lowering or withdrawal of the ratings assigned to our debt securities by rating agencies may increase our future borrowing costs and reduce our access to capital. The Notes have been rated by Standard & Poor's and Moody's. There is no assurance that such credit ratings will remain in effect for any given period of time. Rating agencies also may lower, suspend or withdraw ratings on the Notes or our other debt in the future. Any lowering, suspension or withdrawal of such ratings may have an adverse effect on the market prices or marketability of our indebtedness.

Any future lowering of our ratings likely would make it more difficult or more expensive for us to obtain additional debt financing. If any credit rating initially assigned to our indebtedness is lowered or withdrawn for any reason, the value of that indebtedness could deteriorate.

Manufacturing Risks

Our dependence on single and limited source suppliers could affect our ability to manufacture our products. We rely on single or limited source suppliers for some plastic polymers, filtration membranes and petroleum coke that are critical to the manufacturing of our products. At times, we have experienced a limited supply of certain polymers as well as the need to substitute polymers, resulting in delays, increased costs and the risks associated with qualifying new polymers with our customers. An industry-wide increase in demand for these polymers could affect the ability of our suppliers to provide sufficient quantities to us. If we are unable to obtain an adequate quantity of such supplies, our manufacturing operations may be interrupted.

In addition, suppliers may discontinue production of polymers specified in certain of our products, requiring us in some instances to certify an alternative source with our customers. If we are unable to obtain an adequate quantity of such supplies for any reason, our manufacturing operations may be adversely affected. Obtaining alternative sources would likely result in increased costs and shipping delays, which could decrease profitability and damage our relationships with current and potential customers.

Prices for polymers can vary widely. In a volatile oil price environment, some suppliers have added and may in the future add surcharges to the prices of the polymers we purchase. While we have long-term arrangements with certain key suppliers of polymers that fix our price for purchases up to specified quantities, if our polymer requirements exceed the quantities specified, we could be exposed to higher material costs. If the cost of polymers increases and we are unable to correspondingly increase the sales price of our products, our profit margins will decline.

Our filtration products incorporate a wide variety of filter membranes designed to meet specific customer filtration needs, not all of which are produced internally. In the event that a manufacturer of outsourced membrane discontinues supply or production, we may be required to identify and qualify an alternative filter membrane for that application to incorporate into our products. This could require extensive lead times and increased costs which may cause us to lose sales and cause our profit margins to decline.

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Our graphite synthesis process requires petroleum coke that meets specified criteria. While there are multiple suppliers for this petroleum coke, the sources are limited and our required criteria may cause the price of this petroleum coke to increase.

Our production processes are becoming increasingly complex, and our production could be disrupted if we are unable to avoid manufacturing difficulties. Our manufacturing processes are complex and require the use of expensive and technologically sophisticated equipment and materials. These processes are frequently modified to improve manufacturing yields and product quality. We have, on occasion, experienced manufacturing difficulties, such as temporary shortages of raw materials and occasional critical equipment breakdowns that have delayed deliveries to customers. A number of our product lines are manufactured at only one or two facilities, and any disruption could impact our sales until another facility could commence or expand production of such products.

Our manufacturing operations are subject to numerous risks, including the introduction of impurities in the manufacturing process and other manufacturing difficulties that may not be well understood for an extended period of time and that could lower manufacturing yields and make our products unmarketable; the costs and demands of managing and coordinating geographically diverse manufacturing facilities; and the disruption of production in one or more facilities as a result of a slowdown or shutdown in another facility. We could experience these or other manufacturing difficulties, which might result in a loss of customers and exposure to warranty and product liability claims.

Third-party membrane suppliers may disrupt our ability to manufacture products to meet our customer needs. Certain of our membrane products rely on membranes manufactured by third parties. In the event that these membranes are no longer available or cost-effective and we are unable to acquire an alternative source, our ability to manufacture these products may be disrupted and our profits may decline.

Our membrane manufacturing operations may be disrupted if we are unable to successfully transition manufacturing to our own facility. The Membrane Manufacturing and Supply Transition Agreement (the Membrane Agreement) between us and EMD Millipore Corporation, dated November 22, 2013, provides that our lease of space in Millipore's Bedford, Massachusetts facility and our right to use certain manufacturing equipment owned by Millipore expires on June 30, 2015. While we have opened a new membrane manufacturing plant in Bedford, MA to house these membrane manufacturing operations, qualification of this new membrane manufacturing plant is still under way and will require significant lead time to complete. In addition, the transition of membrane manufacturing operations to this new facility, which will also consolidate certain other existing operations in Massachusetts, will be complex and time consuming. In addition, our current membrane manufacturing is operating at capacity. Consequently, delays in completion of the qualification of our new membrane manufacturing facility or a failure to execute the transition of our membrane manufacturing operations effectively and expeditiously might disrupt our manufacture of membrane, exacerbate our capacity constraints and result in a loss of customers or exposure to warranty, product liability claims and breach of contract claims.

We may lose sales if we are unable to timely procure, repair or replace capital equipment necessary to manufacture many of our products. If our existing equipment fails, or we are unable to obtain new equipment quickly enough to satisfy any increased demand for our products, we may lose sales to competitors. In particular, we do not maintain duplicate tools or equipment for most of our important products. Fixing or replacing complex tools is time consuming, and we may not be able to replace a damaged tool in time to meet customer requirements. In addition, from time to time we may upgrade or add new manufacturing equipment that may require substantial lead times to build and qualify. Delays in building and qualifying new equipment could result in a disruption of our manufacturing processes and prevent us from meeting our customers' requirements so that they would seek other suppliers.

We incur significant cash outlays over long-term periods in order to research, develop, manufacture and market new products that may never reach market or may have limited market acceptance. We make significant cash expenditures to engineer, research, develop and market new products. For example, we incurred $87.7 million, $55.3 million and $50.9 million for engineering, research and development expense in 2014, 2013 and 2012, respectively. The development period for a product can be very long. Following development, it may take a number of years for sales of that product to reach a substantial level, if ever. We cannot be certain of the success of a new product. A product concept may never progress beyond the development stage or may only achieve limited acceptance in the marketplace. If this occurs, we do not receive a direct return on our expenditures and may not even realize any indirect benefits. Additionally, capacity expansion may be necessary in order to manufacture a new product. If sales levels do not increase to offset the additional fixed operating expenses associated with any such expansion, our profitability could decline and our prospects could be harmed. For example, as noted above, while we have made significant capital investments to develop the capability to manufacture shippers and FOUPs for 450 mm wafers, the size and timing of the development of the market for 450 mm wafer shippers and FOUPs remains uncertain. Major semiconductor manufacturers have delayed the implementation of 450 mm manufacturing while others have announced that they would not initiate 450 mm manufacturing until

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after 2020, so we cannot assure you that we will be able to successfully sell significant quantities of our 450 mm shipper and FOUP products or realize a return on our investment in the near term or ever.

We are subject to a variety of environmental laws that could cause us to incur significant expenses. In addition to other regulatory requirements affecting our business, we are subject to a variety of federal, state, local and non-U.S. regulatory requirements relating to the use, disposal, clean-up of, and human exposure to, hazardous chemicals. We generate and handle materials that are considered hazardous waste under applicable law. Certain of our manufacturing operations require the discharge of substantial quantities of wastewater into publicly owned waste treatment works which require us to assure that our wastewater complies with volume and content limitations. If we fail to comply with any present or future regulations, we could be subject to future liabilities or the suspension of production. In addition, compliance with these or future laws could restrict our ability to expand our facilities or to build or acquire new facilities or may require us to acquire costly equipment, incur other significant expenses, such as remediation of contamination found on any site that we may acquire, or modify our manufacturing processes.

We are continually evaluating our manufacturing operations within our plants in order to achieve efficiencies and gross margin improvements. If we are unable to successfully manage transfers or realignments of our manufacturing operations, our ability to deliver products to our customers could be disrupted and our business, financial condition and results of operations could be adversely affected. In order to enhance the efficiency and cost effectiveness of our manufacturing operations, we have in the past and may in the future move several product lines from one of our plants to another and to consolidate manufacturing operations in certain of our plants. Our product lines involve technically complex manufacturing processes that require considerable expertise to operate. If we are unable to establish stable processes to efficiently and effectively produce high quality products in relocated manufacturing processes in the destination plant, production may be disrupted and we may not be able to deliver these products to meet customer orders in a timely manner, which may cause us to lose credibility with our customers and harm our business. There can be no assurance that these complex manufacturing processes can be stabilized and that the cost savings that we anticipate will be achieved.

Loss of our key personnel could harm our business because of their experience in the semiconductor industry and their technological expertise. Similarly, our inability to attract and retain new qualified personnel could inhibit our ability to operate and grow our business successfully. We depend on the services of our key senior executives and technological experts because of their experience in the semiconductor industry and their technical expertise. The loss of the services of one or several of our key employees or an inability to attract, train and retain qualified and skilled employees, specifically research and development and engineering personnel, could result in the loss of customers or otherwise inhibit our ability to operate and grow our business successfully. In the past and currently, during downturns in the semiconductor industry our predecessor companies have, and we have, had to impose salary reductions on senior employees and freeze or eliminate merit increases in an effort to maintain our financial position. These actions may have an adverse effect on employee loyalty and may make it more difficult for us to attract and retain key personnel.

We face the risk of product liability claims. The manufacture and sale of our products involve the risk of product liability claims. In addition, a failure of one of our products at a customer site could interrupt the business operations of the customer. Our existing insurance coverage limits may not be adequate to protect us from all liabilities that we might incur in connection with the manufacture and sale of our products if a successful product liability claim or series of product liability claims were brought against us.

If we are unable to protect our intellectual property rights, our business and prospects could be harmed. Our future success and competitive position depend in part upon our ability to obtain and maintain proprietary technology used in our principal product families. We rely, in part, on patent, trade secret and trademark law to protect that technology. We routinely enter into confidentiality agreements with our employees and with third parties. However, there can be

no assurance that these agreements will not be breached, that we will have adequate remedies for any breach or that our confidential and proprietary information and technology will not be independently developed by or become otherwise known to third parties. We have obtained a number of patents relating to our products and have filed applications for additional patents. We cannot assure you that any of our pending patent applications will be approved, that we will develop additional proprietary technology that is patentable, that any patents owned by or issued to us will provide us with competitive advantages or that these patents will not be challenged by third parties. Patent filings by third parties, whether made before or after the date of our filings, could render our intellectual property less valuable. Competitors may misappropriate our intellectual property, and disputes as to ownership of intellectual property may arise. In addition, if we do not obtain sufficient international protection for our intellectual property, our competitiveness in international markets could be significantly impaired, which would limit our growth and future revenue. Furthermore, there can be no assurance that third parties will not design around our patents.

Protection of our intellectual property rights has in the past resulted and may continue to result in costly litigation. We may from time to time be required to institute litigation in order to enforce our patents, copyrights or other intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others or to defend against claims of

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infringement. Such litigation could result in substantial costs and diversion of resources and could negatively affect our sales, profitability and prospects regardless of whether we are able to successfully enforce our rights. For example, in January 2011 we settled multiple patent litigations with Pall Corporation. We prosecuted and defended these cases vigorously and incurred substantial costs in pursuing them. It may become necessary for us to initiate other costly patent litigation against this or other competitors in order to protect and/or perfect our intellectual property rights. We cannot predict how any existing or future litigation will be resolved or what their impact will be on us.

If we infringe on the proprietary technology of others, our business and prospects could be harmed. Our commercial success will depend, in part, on our ability to avoid infringing or misappropriating any patents or other proprietary rights owned by third parties. If we are found to infringe or misappropriate a third party's patent or other proprietary rights, we could be required to pay damages to such third party, alter our products or processes, obtain a license from the third party or cease activities utilizing such proprietary rights, including making or selling products utilizing such proprietary rights. If we are required to obtain a license from a third party, there can be no assurance that we will be able to do so on commercially favorable terms, if at all.

International Risks

We conduct a significant amount of our sales activity and manufacturing efforts outside the United States, which subjects us to additional business risks and may cause our profitability to decline due to increased costs. Sales to customers outside the United States accounted for approximately 75%, 71% and 69%, respectively, of our net sales in 2014, 2013 and 2012, respectively. We anticipate that international sales will continue to account for a majority of our net sales. In addition, a number of our key domestic customers derive a significant portion of their revenues from sales in international markets. We also manufacture a significant portion of our products outside the United States and are dependent on international suppliers for many of our parts. We intend to continue to pursue opportunities in both sales and manufacturing internationally. Our international operations are subject to a number of risks and potential costs that could adversely affect our revenue and profitability, including:

- unexpected changes in regulatory requirements that could impose additional costs on our operations or limit our ability to operate our business;
- greater difficulty in collecting our accounts receivable and longer payment cycles than are typical in domestic operations;
- changes in labor conditions and difficulties in staffing and managing foreign operations;
- expense and complexity of complying with U.S. and foreign import and export regulations;
- liability for foreign taxes assessed at rates higher than those applicable to our domestic operations; and
- political and economic instability.

In the past, we have incurred costs or experienced disruptions due to the factors described above and expect to do so in the future. For example, our operations in Asia, and particularly South Korea, Taiwan and Japan, have been negatively impacted in the past as a result of regional economic instability. In addition, Taiwan and South Korea account for a growing portion of the world's semiconductor manufacturing. There have historically been strained relations between China and Taiwan and there are continuing tensions between North Korea and other countries, including South Korea and the United States. Any adverse developments in those relations could significantly disrupt the worldwide production of semiconductors, which may lead to reduced sales of our products. Furthermore, we incur additional legal compliance costs associated with our international operations and could become subject to legal penalties in foreign countries if we do not comply with local laws and regulations, which may be substantially different from those in the United States. In a number of foreign countries, some companies engage in business practices that are prohibited by U.S. law applicable to us such as the Foreign Corrupt Practices Act. Although we implement policies and procedures designed to ensure compliance with these laws, there can be no assurance that all of our employees, contractors and agents, as well as those companies to which we outsource certain of our business operations, including

those based in countries where practices that violate such U.S. laws may be customary or common, will not take actions in violation of our policies. Any such violation, even if prohibited by our policies, could have an adverse effect on our business and results of operations.

We will lose sales if we are unable to obtain government authorization to export certain of our products or to import certain of our products into foreign markets, and we would be subject to legal and regulatory consequences if we do not comply with applicable export and import control laws and regulations. Exports of certain of our products are subject to export controls imposed by the U.S. Government and administered by the U.S. Departments of State and Commerce. In certain instances, these regulations may require pre-shipment authorization from the administering department. For products subject to the Export Administration Regulations (EAR) administered by the Department of Commerce's Bureau of Industry and Security, the requirement for a license is dependent on the type and end use of the product, the final destination, the identity of the end user and whether a license exception might apply. Virtually all exports of products subject to the International Traffic in Arms Regulations (ITAR) administered by the Department of State's Directorate of Defense Trade Controls, require a license. Certain of our products are subject to EAR and ITAR. Products developed and manufactured in our foreign locations are subject to export controls of the applicable foreign nation.

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Given the current global political climate, obtaining export licenses can be difficult and time-consuming. Failure to obtain export licenses for these shipments could significantly reduce our revenue and materially and adversely affect our business, financial condition and results of operations. Compliance with U.S. Government regulations may also subject us to additional fees and costs. The absence of comparable restrictions on competitors in other countries may adversely affect our competitive position.

In addition, certain countries require import and other special licenses in order for certain of our products to be imported into or sold in that country. Our inability to satisfy these requirements in a timely manner has in the past, and may continue to, prevent us from meeting our customers' expectations in these countries and to lose sales.

Our results of operations could be adversely affected by changes in taxation. We have facilities in foreign countries and, as a result, are subject to taxation and audit by a number of taxing authorities. Tax rates vary among the jurisdictions in which we operate. Our results of operations could be affected by market opportunities or decisions we make that cause us to increase or decrease operations in one or more countries, or by changes in applicable tax rates or audits by the taxing authorities in countries in which we operate. In addition, we are subject to laws and regulations in various locations that govern the determination of which is the appropriate jurisdiction to decide when and how much profit has been earned and is subject to taxation in that jurisdiction. Changes in these laws and regulations could affect the locations where we are deemed to earn income, which could in turn affect our results of operations. We have deferred tax assets on our balance sheet. Changes in applicable tax laws and regulations could affect our ability to realize those deferred tax assets, which could also affect our results of operations. Each quarter we forecast our tax liability based on our forecast of our performance for the year. If that performance forecast changes, our forecasted tax liability may change.

In connection with the Merger we have undertaken a complex internal reorganization of our foreign subsidiaries in order to rationalize and streamline our foreign operations, focus our management efforts on certain local opportunities and to take advantage of favorable business conditions in certain localities. While we have exercised diligence in undertaking this internal reorganization, there can be no assurance that this reorganization, or any future internal reorganization, will not result in adverse tax consequences in the United States or in foreign countries in which we have operations. This could adversely impact our profitability from foreign operations and result in a material reduction in our results of operations.

We may be subject to increased import duties as we seek to source more of the materials from which our products are made from foreign countries. In an effort to reduce the cost of our products or to obtain the highest quality materials, we expect that our purchases of raw materials and components from foreign countries will increase. Those of our products manufactured in the United States or other countries from these materials and components may consequently be burdened by import duties imposed by the United States or those other countries, and these additional costs may be substantial and may put our products at a competitive disadvantage.

Fluctuations in the value of the U.S. dollar in relation to other currencies may lead to lower net income and shareholders' equity or may cause us to raise prices, which could result in reduced net sales. Foreign currency exchange rate fluctuations could have an adverse effect on our net sales, results of operations and shareholders' equity. Foreign currency fluctuations against the U.S. dollar could require us to increase prices to foreign customers, which could result in lower net sales by us to such customers. Alternatively, if we do not adjust the prices for our products in response to foreign currency fluctuations, our profitability could decline. In addition, sales made by our foreign subsidiaries are generally denominated in the currency of the country in which these products are sold, and the currency we receive in payment for such sales could be less valuable at the time of receipt versus the time of sale as a result of foreign currency exchange rate fluctuations.

We are subject to restrictions on the transfer of currency from certain countries in which we conduct operations that could impair our ability to transfer our funds from one of our subsidiaries to another. These regulations are complex and may interfere with the conduct of our business operations in the ordinary course. In some jurisdictions even an unintentional violation of these regulations can result in criminal penalties.

Volatility in the global economy could adversely affect our results. Financial markets in the United States, Europe and Asia have been experiencing extreme disruption in recent years, including, among other things, volatility in securities prices, severely diminished liquidity and credit availability, rating downgrades of sovereign debt and declining valuation of certain investments, declines in consumer confidence, declines in economic growth, volatility in unemployment rates, and uncertainty about economic stability. In the past such conditions have had a significant adverse impact on our industry and financial condition and results of operations. There may be further changes in the global economy, which could lead to further challenges in our business and negatively impact our financial results. Tightness of credit in financial markets could adversely affect the ability of our customers and suppliers to obtain financing for significant purchases and operations and could result in a decrease in orders and spending for our products and services. We are unable to predict the likely duration and severity of any disruption in European or global

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financial markets and adverse economic conditions and the effects they may have on our business and financial condition. If uncertain economic conditions return or deteriorate, our business and results of operations could be further materially and adversely affected.

An increased concentration of wafer manufacturing in Japan could result in lower sales of our wafer shipper products. A large percentage of the world's 300 mm raw silicon wafer manufacturing currently takes place in Japan. Our market share in Japan is currently lower than in other regions we serve. Further, we expect that a large percentage of 450 mm raw silicon wafer manufacturing will, in the future, take place in Japan. If we are unable to persuade these wafer suppliers to use our new 450 mm shippers, we may not be able to achieve a significant market share and may not be able to benefit from our investment in 450 mm shipper manufacturing capacity.

Terrorist attacks, such as the attacks that occurred in New York and Washington, D.C. on September 11, 2001, and other acts of violence or war may affect the markets in which we operate or our operations and hurt our ability to manufacture products and our profitability. Terrorist attacks may negatively affect our operations and any security we issue. There can be no assurance that there will not be future terrorist attacks against the United States or U.S. businesses. These attacks or other armed conflicts may directly impact our physical facilities or those of our suppliers or customers. Our primary facilities include headquarters, research and development and manufacturing facilities in the United States; sales, research and development and manufacturing facilities in Japan, South Korea, Taiwan and Malaysia; and sales and service facilities in Europe and Asia. Attacks may also disrupt the global insurance and reinsurance industries with the result that we may not be able to obtain insurance at historical terms and levels for our facilities. Furthermore, such attacks may make travel and the transportation of our supplies and products more difficult and more expensive and may ultimately affect the sales of our products in the United States and overseas. As a result of terrorism, the United States may enter into additional armed conflicts, which could have a further impact on our domestic and international sales, our supply chain, our production capacity and our ability to deliver products to our customers. The consequences of these armed conflicts and the associated instability are unpredictable, and we may not be able to foresee events that could have an adverse effect on our business and any security we issue.

Risks Related to Owning our Securities

The price of our common stock has been volatile in the past and may be volatile in the future. The price of our common stock has been volatile in the past and may be volatile in the future. While in 2014 the closing price of our stock on The NASDAQ Global Select Market ("NASDAQ") ranged from a low of $10.28 to a high of $14.02, in past years the price of our common stock showed greater volatility.

The trading price of our common stock is subject to significant volatility in response to various factors, some of which are beyond our control, including the following: the failure to meet the published expectations of securities analysts; changes in financial estimates by securities analysts; press releases or announcements by, or changes in market values of, comparable companies; volatility in the markets for high-technology stocks, general stock market price and volume fluctuations, which are particularly common among securities of high-technology companies; stock market price and volume fluctuations attributable to inconsistent trading volume levels; the cyclicality of the semiconductor industry and current industry downturn; our performance; our ability to repay when due any debt obligations we may incur in the future; our ability to respond to rapid shifts in demand; our ability to compete effectively; loss of key customers or decline in order volumes for new and existing products; our high fixed costs; manufacturing difficulties; risks associated with our significant foreign operations; additions or departures of key personnel; involvement in or adverse results from litigation; and perceived dilution from stock issuances.

Furthermore, stock prices for many companies fluctuate widely for reasons that may be unrelated to their operating results. Those fluctuations and general economic, political and market conditions, such as recessions, terrorist or other military actions, or international currency fluctuations, as well as public perception of equity values of publicly traded

companies may adversely affect the market price of our common stock. These market fluctuations may cause the trading price of our common stock to decrease. Future decreases in our stock price may adversely impact our ability to raise sufficient additional capital in the future, if needed.

If our common stock trades below book value or our business outlook erodes, we could be required to record material impairment losses for our long-lived assets, including property, plant and equipment and our identifiable intangibles. In accordance with U.S. generally accepted accounting principles, we review our long-lived assets whenever events or changes in circumstances indicate that the carrying amount of such assets may not be recoverable. If the carrying amount of an asset or group of assets exceeds its undiscounted cash flows, the asset will be written down to its fair value.

The evaluation of the recoverability of long-lived assets requires us to make significant estimates and assumptions. These estimates and assumptions primarily include, but are not limited to, the identification of the asset group at the lowest level of independent

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cash flows and the primary asset of the group; and long-range forecasts of revenue, reflecting management's assessment of general economic and industry conditions, operating income, depreciation and amortization and working capital requirements.

Due to the inherent uncertainty involved in making these estimates, which are made in a particular economic environment, actual results could differ from those estimates. In addition, changes in the underlying assumptions would have a significant impact on the conclusion that an asset group's carrying value is recoverable, or the determination of any impairment charge if it was determined that the asset values were indeed impaired.

Due to the uncertain economic environment within the semiconductor industry, we continually monitor circumstances and events to determine whether asset impairment testing is warranted.

It is possible that in the future we may no longer be able to conclude that there is no impairment of our long-lived assets, nor can we provide assurance that material impairment charges of long-lived assets will not occur in future periods.

Our annual and quarterly operating results are subject to fluctuations as a result of rapid demand shifts and our modest level of backlog, and if we fail to meet the expectations of securities analysts or investors, the market price of our common stock may decrease significantly. Our sales and profitability can vary significantly from quarter to quarter and year to year. Because our expense levels are relatively fixed in the short-term, an unanticipated decline in revenue in a particular quarter could significantly reduce our net income, or lead to a net loss, in that quarter. In addition, we make a substantial portion of our shipments shortly after we receive the order, and therefore we operate with a relatively modest level of backlog. As a consequence of the just-in-time nature of shipments and the modest level of backlog, our results of operations may decline quickly and significantly in response to changes in order patterns or rapid decreases in demand for our products. We anticipate that fluctuations in operating results will continue in the future. Such fluctuations in our results could cause us to fail to meet the expectations of securities analysts or investors, which could cause the market price of our common stock to decline substantially. We believe that period-to-period comparisons of our results of operations may not be meaningful, and you should not rely upon them as indicators of our future performance.

If we fail to maintain an effective system of internal controls, we may not be able to accurately report our financial results. As a result, current and potential stockholders could lose confidence in our financial reporting, which would harm our business and the trading price of our stock. Effective internal controls are necessary for us to provide reliable financial reports. If we cannot provide reliable financial reports, our business and operating results could be harmed. We have in the past discovered, and may in the future, identify material weaknesses in internal control over financial reporting. Each of these past material weaknesses represented a reasonable possibility that a material misstatement of our annual or interim financial statements would not have been prevented or detected.

Any failure to implement and maintain the improvements that we have made to our controls over our financial reporting, or difficulties encountered in the implementation of these improvements in our controls, could cause us to fail to meet our reporting obligations. Any failure in our internal controls that leads to a material weakness could also cause investors to lose confidence in our reported financial information, which could have a negative impact on the trading price of our stock.

Changes effected by the Sarbanes-Oxley Act of 2002 and the Dodd-Frank Wall Street Reform and Consumer Protection Act and related SEC regulations have in the past and are likely to continue to increase our costs. The Sarbanes-Oxley Act of 2002 and the Dodd-Frank Act required changes in some of our corporate governance, securities disclosure and compliance practices. In response to the requirements of those Acts, the Securities and Exchange Commission and the NASDAQ have promulgated new rules and listing standards covering a variety of

subjects. Compliance with these rules and listing standards has increased our legal and financial and accounting costs, and we expect these increased costs to continue indefinitely. We also expect these developments may make it more difficult and more expensive for us to obtain director and officer liability insurance in the future, and we may be forced to accept reduced coverage or incur substantially higher costs to obtain coverage. Likewise, these developments may make it more difficult for us to attract and retain qualified members of our board of directors, particularly independent directors, or qualified executive officers.

Provisions in our charter documents, Delaware law and our shareholder rights plan may delay or prevent an acquisition of us, which could decrease the value of your shares. Our certificate of incorporation and by-laws, Delaware law and our shareholder rights plan contain provisions that could make it harder for a third party to acquire us without the consent of our board of directors. These provisions include limitations on actions by our stockholders by written consent. In addition, our board of directors has the right to issue preferred stock without stockholder approval, which could be used to dilute the stock ownership of a potential hostile acquirer.

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Our restated certificate of incorporation makes us subject to the anti-takeover provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits publicly held Delaware corporations to which it applies from engaging in a "business combination" with an "interested stockholder" for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. This provision could discourage others from bidding for our shares of common stock and could, as a result, reduce the likelihood of an increase in the price of our common stock that would otherwise occur if a bidder sought to buy our common stock.

Our shareholder rights plan will permit our stockholders to purchase shares of our common stock at a 50% discount upon the occurrence of specified events, including the acquisition by anyone of 15% or more of our common stock, unless such event is approved by our board of directors. Delaware law also imposes restrictions on mergers and other business combinations between us and any holder of 15% or more of our outstanding common stock. Although we believe these provisions provide for an opportunity to receive a higher bid by requiring potential acquirers to negotiate with our board of directors, these provisions apply even if the offer may be considered beneficial by stockholders. If a change of control or change in management is delayed or prevented, the market price of our common stock could decline.

Our certificate of incorporation authorizes the issuance of shares of blank check preferred stock. Our certificate of incorporation provides that our board of directors is authorized to issue from time to time, without further stockholder approval, up to 5,000,000 shares of preferred stock in one or more series and to fix and designate the rights, preferences, privileges and restrictions of the preferred stock, including dividend rights, conversion rights, voting rights, redemption rights and terms of redemption and liquidation preferences. Such shares of preferred stock could have preferences over our common stock with respect to dividends and liquidation rights. Our issuance of preferred stock may have the effect of delaying or preventing a change in control. Our issuance of preferred stock could decrease the amount of earnings and assets available for distribution to the holders of common stock or could adversely affect the rights and powers, including voting rights, of the holders of common stock. The issuance of preferred stock could have the effect of decreasing the market price of our common stock.

Your percentage ownership in us may be diluted by future issuances of capital stock, which could reduce your influence over matters on which stockholders vote. Subject to applicable NASDAQ standards, our board of directors has the authority, without action or vote of our stockholders, to issue all or any part of our authorized but unissued shares. Issuances of common stock or the exercise of employee and director stock options would dilute your percentage ownership interest, which will have the effect of reducing your influence over matters on which our stockholders vote. In addition, we may issue substantial quantities of our common stock in order to affect acquisitions which would also dilute your ownership interest. If the issuances are made at prices that reflect a discount from the then current trading price of our common stock, your interest in the book value of our common stock might be diluted.

Item 1B. Unresolved Staff Comments.

Not Applicable.

Item 1B. Unresolved Staff Comments.

Not Applicable.

Item 2. Properties.

Our principal executive offices are located in Billerica, Massachusetts. We also have manufacturing, research and equipment cleaning facilities in the United States, Japan, France, Taiwan, South Korea and Malaysia. Information about our principal facilities is set forth below:

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Location	Principal Function	Approximate Square Feet	Leased/ Owned
Bedford, Massachusetts[1]	Research &Manufacturing	80,000	Owned
Billerica, Massachusetts[1] [2]	Executive Offices, Research & Manufacturing	175,000	Leased
Bloomington, MN[1]	Research & Manufacturing	68,000	Leased
Burnet, TX[3]	Research & Manufacturing	77,000	Owned
Chaska, Minnesota[1]	Executive Offices, Research & Manufacturing	192,000	Owned
Colorado Springs, CO[1]	Manufacturing	82,000	Owned
Colorado Springs, CO[1]	Manufacturing	40,000	Leased
Danbury, CT[3]	Research & Manufacturing	73,000	Leased
Danbury, CT[3]	Executive Offices	31,000	Leased
Decatur, Texas[1]	Manufacturing	359,000	Owned
Hsin-chu, Taiwan[1] [3]	Executive Offices, Research &Manufacturing	50,000	Leased
JangAn, South Korea[3]	Manufacturing	127,000	Owned
Kulim, Malaysia[1]	Manufacturing	195,000	Owned
Montpellier, France[1]	Cleaning Services	53,000	Owned
Suwon, South Korea[1] [3]	Executive Offices & Research	16,000	Leased
Tokyo, Japan[1] [3]	Executive Offices & Research	27,000	Leased
Wonju City, South Korea[1]	Manufacturing	35,000	Owned
Yonezawa, Japan[1]	Manufacturing	196,000	Owned

1. Facility used by our Critical Materials Handling segment.
2. This lease has been extended through March 31, 2019 and is subject to one five-year renewal option.
3. Facility used by our Electronics Materials segment.

We lease approximately 4,200 square feet of manufacturing space in a facility located at 80 Ashby Road, Bedford, Massachusetts owned by EMD Millipore Corporation pursuant to a Membrane Manufacturing and Supply Transition Agreement that expires June 30, 2015. We also lease approximately 13,000 square feet of research and development and manufacturing office space located in San Diego, California, approximately 31,000 square feet of office, research and development and manufacturing space located in Franklin, Massachusetts, an aggregate of approximately 33,000 square feet of manufacturing space in Anseong, South Korea, approximately 15,000 square feet of office space in Round Rock, Texas, and approximately 10,000 square feet of office space in Tempe, Arizona.

We lease approximately 10,000 square feet for our Asia manufacturing management offices in Singapore. In addition, we maintain a worldwide network of sales, service, repair or cleaning centers in the United States, Germany, France, Israel, Japan, Malaysia, Taiwan, Singapore, China and South Korea. Leases for our facilities expire through December 2018. We currently expect to be able to extend the terms of expiring leases or to find suitable replacement facilities on reasonable terms.

We believe that our facilities are well-maintained and suitable for their respective operations. All of our facilities are generally utilized within a normal range of production volume.

Item 3. Legal Proceedings.

On or about February 7 and 28, 2014, two putative class action complaints challenging the Merger between the Company and ATMI, Inc. were filed in the Superior Court of the State of Connecticut, Judicial District of Danbury, captioned Andrew Pace v. ATMI, Inc., et al. and Dolores Carter v. ATMI, Inc., et al., respectively. The complaints were filed on behalf of the public shareholders of ATMI, Inc. and name as defendants ATMI, Inc., the members of the Board of Directors of ATMI, Inc., the Company and the Company’s subsidiary, Atomic Merger Corporation. The

complaints generally alleged that ATMI, Inc.'s directors breached their fiduciary duties to ATMI, Inc.'s shareholders by agreeing to sell ATMI, Inc. for inadequate and unfair consideration and pursuant to an inadequate and unfair process, and that ATMI, Inc., the Company and Atomic Merger Corporation aided and abetted those alleged breaches. The complaint in the Carter action and the second amended complaint in the Pace action also allege purported disclosure deficiencies in the preliminary and definitive proxy statements for the merger that ATMI, Inc. filed with the SEC. The complaints sought, among other things, to enjoin the Merger. The Merger was approved by ATMI, Inc.'s shareholders on April 15, 2014 and was closed on April 30, 2014. The case captioned Dolores Carter v. ATMI, Inc., et al. was subsequently dismissed by the plaintiff. The case captioned Andrew Pace v. ATMI, Inc., et al. was transferred to the Complex Litigation Docket of the Superior Court of the State of Connecticut, Judicial District of Waterbury. On July 21, 2014, ATMI, Inc. and the Company each

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filed a motion to strike the plaintiff's second amended complaint. On December 29, 2014, the court granted the defendant's motion to strike and on January 27, 2015, the case was dismissed by agreement of the parties.

As of December 31, 2014, we were not involved in any legal proceedings that we believe will have a material impact on our consolidated financial position, results of operations or cash flows. From time to time the Company may be a party to litigation involving claims against the Company arising in the ordinary course of our business. We are not aware of any material potential litigation or claims against us which would have a material adverse effect upon our financial statements.

Item 4. Mine Safety Disclosures.

Not applicable.

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PART II

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

Market Information and Holders:

Entegris' Common Stock, $0.01 par value, trades on the NASDAQ Global Select Market under the symbol "ENTG". The following table sets forth the high and low sales prices of the Company shares for each full quarterly period during 2014 and 2013. As of February 18, 2015 there were 1,252 shareholders of record. On February 18, 2015, the last sale price reported on the Nasdaq Global Select Market for our common stock was $13.51 per share.

	2014		2013	
	Low	High	Low	High
First quarter	$10.20	$12.50	$8.96	$10.18
Second quarter	$10.69	$13.86	$8.89	$10.52
Third quarter	$11.43	$14.05	$8.97	$10.64
Fourth quarter	$10.67	$13.96	$9.87	$11.65

Dividend Policy:

The Company has never declared or paid any cash dividends on its capital stock. The Company currently intends to retain all available earnings for use in its business operations and does not anticipate paying any cash dividends in the foreseeable future. Furthermore, our Restated Credit Agreement contains restrictions that limit our ability to pay dividends. On July 27, 2005 the Entegris Board of Directors declared a dividend of one common stock purchase right for each share of Entegris Common Stock outstanding to shareholders of record on August 8, 2005, payable on August 8, 2005. For a description of the Common Stock Rights Plan see "Other Information" in Item 1 above. Each right generally entitles the holder to purchase one one-hundredth of a share of a series of preferred stock of Entegris at a price of $50.

Issuer Sales of Unregistered Securities During the Past Three Years:

None

Comparative Stock Performance

The following graph compares the cumulative total shareholder return on the common stock of Entegris, Inc. from December 31, 2009 through December 31, 2014 with cumulative total return of (1) The NASDAQ Composite Index (NASDAQ), and (2) The Philadelphia Semiconductor Index, assuming $100 was invested at the close of trading December 31, 2009 in Entegris, Inc. common stock, the NASDAQ Composite Index and the Philadelphia Semiconductor Index and that all dividends are reinvested.

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	December 31, 2009	December 31, 2010	December 31, 2011	December 31, 2012	December 31, 2013	December 31, 2014
Entegris, Inc.	$100.00	$141.48	$165.34	$173.86	$219.51	$250.19
NASDAQ Composite	100.00	118.02	117.04	137.47	192.62	221.02
Philadelphia Semiconductor Index	100.00	141.76	127.06	136.21	193.20	253.96

Issuer Purchases of Equity Securities:

On December 12, 2012, the Board of Directors authorized a repurchase program covering up to an aggregate of $50.0 million of the Company's common stock in open market transactions and in accordance with one or more pre-arranged stock trading plans established in accordance with Rule 10b5-1 under the Securities Exchange Act of 1934, as amended. The repurchase program and the pre-arranged stock trading plan expired February 7, 2014 and covered the repurchase of up to $36.2 million of the registrant's common stock. The Company repurchased none of its common stock in 2014.

Item 6. Selected Financial Data.

The table that follows presents selected financial data for each of the last five years from the Company's consolidated financial statements and should be read in conjunction with the Company's Consolidated Financial Statements and the related Notes and with "Management's Discussion and Analysis of Financial Condition and Results of Operations" included elsewhere in this Annual Report on Form 10-K. The selected financial data set forth below as of December 31, 2014 and 2013 and for the years ended December 31, 2014, 2013 and 2012 are derived from our audited financial statements included in this Annual Report on Form 10-K. All other selected financial data set forth below is derived from our audited financial statements not included in this Annual Report on Form 10-K. The selected financial data set forth below as of December 31, 2014 and for the year ended December 31, 2014 includes the results of operations of ATMI, Inc. since April 30, 2014. Our historical results are not necessarily indicative of our results of operations to be expected in the future.

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(In thousands, except per share amounts)	Year ended December 31, 2014	Year ended December 31, 2013	Year ended December 31, 2012	Year ended December 31, 2011	Year ended December 31, 2010
Operating Results					
Net sales	$962,069	$693,459	$715,903	$749,259	$688,416
Gross profit	376,683	294,214	307,383	325,930	310,643
Selling, general and administrative expenses	231,833	137,123	147,405	140,847	147,051
Engineering, research and development expenses	87,711	55,320	50,940	47,980	43,934
Amortization of intangible assets	37,067	9,347	9,594	10,225	13,231
Contingent consideration fair value adjustment	(1,282)	(1,813)	—	—	—
Operating income	21,354	94,237	99,444	126,878	106,427
Income (loss) before income taxes and equity in affiliate net income (loss)	(13,392)	96,195	99,703	127,964	101,481
Income tax (benefit) expense	(21,572)	21,669	30,881	4,217	15,006
Net income	7,887	74,526	68,825	124,246	85,122
Net income attributable to Entegris, Inc.	7,887	74,526	68,825	123,846	84,356
Earnings Per Share Data					
Diluted earnings per share	$0.06	$0.53	$0.50	$0.91	$0.63
Weighted average shares outstanding – diluted	140,062	139,618	138,412	136,223	133,174
Operating Ratios – % of net sales					
Gross profit	39.2 %	42.4 %	42.9 %	43.5 %	45.1 %
Selling, general and administrative expenses	24.1	19.8	20.6	18.8	21.4
Engineering, research and development expenses	9.1	8.0	7.1	6.4	6.4
Amortization of intangible assets	3.9	1.3	1.3	1.4	1.9
Contingent consideration fair value adjustment	(0.1)	(0.3)	—	—	—
Operating income	2.2	13.6	13.9	16.9	15.5
Income (loss) before income taxes and equity in affiliate net income (loss)	(1.4)	13.9	13.9	17.1	14.7
Effective tax rate	161.1	22.5	31.0	3.3	14.8
Net income attributable to Entegris, Inc.	0.8	10.7	9.6	16.5	12.3
Cash Flow Statement Data					
Depreciation and amortization	$83,704	$38,815	$37,607	$37,064	$41,198
Capital expenditures	57,733	60,360	49,929	30,267	16,794
Net cash provided by operating activities	126,423	109,402	115,162	157,286	140,898
Net cash used in investing activities	(860,295)	(47,029)	(72,467)	(28,431)	(11,985)
Net cash provided by (used in) financing activities	747,648	(3,895)	10,890	10,864	(65,709)

Balance Sheet and Other Data									
Current assets	$765,655		$612,305		$579,324		$502,999		$387,091	
Current liabilities	262,520		97,585		93,263		92,594		107,634	
Working capital	503,135		514,720		486,061		410,405		279,457	
Current ratio	2.92		6.27		6.21		5.43		3.60	
Long-term debt, including current maturities	766,796		—		—		—		—	
Shareholders' equity	748,441		756,843		694,799		608,238		459,619	
Total assets	1,762,091		875,294		811,544		724,663		601,385	
Return on average shareholders' equity – %	1.0	%	10.3	%	10.6	%	23.2	%	20.9	%
Shares outstanding at end of period	139,793		138,734		138,458		135,821		132,901	

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

The following discussion and analysis of the Company's consolidated financial condition and results of operations should be read along with the consolidated financial statements and the accompanying notes to the consolidated financial information included elsewhere in this Annual Report on Form 10-K. This discussion contains forward-looking statements that involve numerous risks and uncertainties, including, but not limited to, those described in the "Cautionary Statements" sections of this Item 7 below. The Company's actual results may differ materially from those contained in any forward-looking statements. You should review the Item 1A "Risk Factors" of this Annual Report on Form 10-K for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Cautionary Statements

This Annual Report on Form 10-K and the documents incorporated by reference in this Annual Report on Form 10-K contain "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. The information in this Management's Discussion and Analysis of Financial Condition and Results of Operations, except for the historical information, contains forward-looking statements. These forward-looking statements reflect the Company's current views with respect to future events and financial performance. The words "believe," "expect," "anticipate," "intend," "estimate," "forecast," "project," "may," will," "would," "could," "should" and similar expressions are i identify these "forward-looking statements." You should read statements that contain these words carefully because they discuss future expectations, contain projections of future results of operations or of financial position or state other "forward-looking" information. All forecasts and projections in this report are "forward-looking statements," and are based on management's current expectations of the Company's near-term results, based on current information available pertaining to the Company. The important factors listed below, as well as any cautionary language elsewhere in this Annual Report on Form 10-K, provide examples of risks, uncertainties and events that may cause our actual results to differ materially from the expectations described in these forward-looking statements. The risks which could cause actual results to differ from those contained in such "forward looking statements" include, without limitation, the risks described under Item 1A of this Annual Report on Form 10-K for the year ended December 31, 2014 under the headings "Risks Relating to our Business and Industry," "Additional Risks Related to our Business", Risks Related to our Indebtedness", "Manufacturing Risks," "International Risks" and "Risks Related to Owning Our Securities" as well as in the Company's quarterly reports on Form 10-Q and current reports on Form 8-K as filed with the Securities and Exchange Commission. Any forward-looking statements in this Annual Report on Form 10-K are not guarantees of future performance, and actual results, developments and business decisions may differ from those envisaged by such forward-looking statements, possibly materially. We disclaim any duty to update any forward-looking statements.

Overview

This overview is not a complete discussion of the Company's financial condition, changes in financial condition and results of operations; it is intended merely to facilitate an understanding of the most salient aspects of its financial condition and operating performance and to provide a context for the detailed discussion and analysis that follows and must be read in its entirety in order to fully understand the Company's financial condition and results of operations.
Entegris, Inc. is a leading provider of a wide range of products and services for purifying, protecting and transporting the critical materials used in processing and manufacturing in the microelectronics and other high-technology industries. Entegris derives most of its revenue from the sale of products and services to the semiconductor and related industries. The Company's customers consist primarily of semiconductor manufacturers, semiconductor equipment and materials suppliers as well as thin film transistor-liquid crystal display (TFT-LCD) and hard disk manufacturers, which are served through direct sales efforts, as well as sales and distribution relationships, in the United States, Asia, Europe and the Middle East.
The Company offers a diverse product portfolio which includes more than 19,000 standard and customized products that it believes provide the most comprehensive offering of contamination control solutions and microenvironment

products and services to maintain the purity and integrity of critical materials used by the semiconductor and other high-technology industries. Certain of these products are unit-driven and consumable products that rely on the level of semiconductor manufacturing activity to drive growth, while others are capital-expenditure driven and rely on expansion of manufacturing capacity to drive growth. The Company's unit-driven and consumable products includes membrane-based liquid filters and housings, metal-based gas filters, resin-based gas purifiers, wafer shippers, disk-shipping containers and test assembly and packaging products and consumable graphite and silicon carbide components used in plasma etch, ion implant and chemical vapor deposition processes in semiconductor manufacturing. The Company's capital expense-driven products include components, systems and subsystems that use electro-mechanical, pressure differential and related technologies to permit

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semiconductor and other electronics manufacturers to monitor and control the flow and condition of process liquids used in these manufacturing processes, and process carriers that protect the integrity of in-process wafers.

Key operating factors Key factors, which management believes have the largest impact on the overall results of operations of Entegris, Inc., include:

- Level of sales Since a significant portion of the Company's product costs (except for raw materials, purchased components and direct labor) are largely fixed in the short-to-medium term, an increase or decrease in sales affects gross profits and overall profitability significantly. Also, increases or decreases in sales and operating profitability affect certain costs such as incentive compensation and commissions, which are highly variable in nature. The Company's sales are subject to the effects of industry cyclicality, technological change, substantial competition, pricing pressures and foreign currency fluctuation.
- Variable margin on sales The Company's variable margin on sales is determined by selling prices and the costs of manufacturing and raw materials. This is affected by a number of factors, which include the Company's sales mix, purchase prices of raw material (especially polymers, membranes, stainless steel and purchased components), competition, both domestic and international, direct labor costs, and the efficiency of the Company's production operations, among others.
- Fixed cost structure. The Company's operations include a number of large fixed or semi-fixed cost components, which include salaries, indirect labor and benefits, facility costs, lease expense, and depreciation and amortization. It is not possible to vary these costs easily in the short-term as volumes fluctuate. Accordingly, increases or decreases in sales volume can have a large effect on the usage and productivity of these cost components, resulting in a large impact on the Company's profitability.

Overall Summary of Financial Results for the Year Ended December 31, 2014

On April 30, 2014, the Company acquired ATMI, Inc., a Delaware corporation (ATMI), for approximately $1.1 billion in cash, or $809.4 million net of cash acquired, as described in note 2 to the Company's consolidated financial statements. ATMI is a leading supplier of high-performance materials, materials packaging and materials delivery systems used worldwide in the manufacture of microelectronics devices. The acquisition of ATMI (the Merger) was funded with the issuance of $820 million in debt, described in note 7 to the consolidated financial statements.

Total net sales for the year ended December 31, 2014 were $962 million, up $269 million, or 39%, from sales of $693 million for the year ended December 31, 2013. This sales improvement was principally driven by the inclusion of sales of $245 million from ATMI. Exclusive of the effect of the added ATMI sales and unfavorable foreign currency translation effects of $8 million, the Company's sales increased 4%. Overall demand from the semiconductor industry reflected improved demand from device makers, as wafer starts and semiconductor unit production increased, higher industry fab utilization rates and increased capital spending levels. Based on the information available, the Company believes sales of its products trailed industry growth measures for 2014.

Despite the significant net sales increase, the Company's gross profit rose by only $82 million for the year ended December 31, 2014, to $377 million, up from $294 million for the year ended December 31, 2013. Accordingly, the Company reported a 39.2% gross margin rate compared to 42.4% in 2013. The gross profit and gross margin figures reflect a $49 million charge for fair value write-up of acquired ATMI inventory sold during the year. Excluding that charge, the Company's gross margin for the year was 44.2%.

The Company also incurred significantly higher selling, general and administrative (SG&A) expenses and engineering, research and development (ER&D) expenses for 2014, mainly due to the inclusion in SG&A and ER&D expenses of ATMI's infrastructure, merger-related expenditures and the cost of integration activities.

The Company incurred interest expense of $33 million for the year ended December 31, 2014 compared to a nominal amount a year ago, the increase related to the debt issued in connection with the funding of the ATMI Merger.

The Company’s effective tax benefit rate was 161% in 2014 compared to 23% in 2013. The change in the effective tax rate is primarily due to a change in the Company's geographic composition of income toward jurisdictions with lower tax rates, the nondeductibility of certain acquisition-related expenditures incurred in connection with the ATMI acquisition and the benefit of a foreign dividend.

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As a result of the aforementioned factors, net income for 2014 was $8 million, or $0.06 per diluted share, compared to net income of $75 million, or $0.53 per diluted share, in 2013.

During 2014, the Company's operating activities provided cash flow of $126 million. Cash used for the ATMI Merger, net of cash acquired, was $809 million, while capital expenditures were $58 million. Cash, cash equivalents and short-term investments were $394 million at December 31, 2014 compared with $384 million at December 31, 2013. The Company had long-term borrowings, including current maturities, of $767 million at December 31, 2014 and none at December 31, 2013.

Critical Accounting Policies

Management's discussion and analysis of financial condition and results of operations are based upon the Company's consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these consolidated financial statements requires the Company to make estimates, assumptions and judgments that affect the reported amounts of assets, liabilities, revenues and expenses and related disclosure of contingent assets and liabilities. At each balance sheet date, management evaluates its estimates, including, but not limited to, those related to inventories, long-lived assets (property, plant and equipment, goodwill and identified intangibles), income taxes and business combinations. The Company bases its estimates on historical experience and various other assumptions that are believed to be reasonable under the circumstances. If management made different judgments or utilized different estimates, this could result in material differences in the amount and timing of the Company's results of operations for any period. In addition, actual results could be different from the Company's current estimates, possibly resulting in increased future charges to earnings. The critical accounting policies affected most significantly by estimates, assumptions and judgments used in the preparation of the Company's consolidated financial statements are discussed below.

Inventory Valuation The Company uses certain estimates and judgments to properly value its inventory. The Company's inventories are recorded at the lower of cost or market. The Company evaluates its ending inventories for obsolescence and excess quantities each quarter. This evaluation includes analyses of inventory levels, historical write-off trends, expected product lives, and historical and projected sales levels by product. Inventories that are considered obsolete are written off or a full allowance is recorded. In addition, allowances are established for inventory quantities in excess of forecasted demand. Inventory allowances were $11.9 million and $6.6 million at December 31, 2014 and 2013, respectively.

The Company's inventories include materials and products subject to technological obsolescence, which are sold in highly competitive industries. If future demand or market conditions are less favorable than current conditions or the Company's projected outlook for sales, inventory write-downs or additional allowances may be required and would be reflected in cost of sales in the period the revision is made.

Impairment of Long-Lived Assets As of December 31, 2014, the Company had $313.6 million of net property, plant and equipment and $308.6 million of net intangible assets. The Company routinely considers whether indicators of impairment of the value of its long-lived assets, particularly its manufacturing equipment, and its intangible assets, are present. A long-lived asset (asset group) shall be tested for recoverability whenever events or changes in circumstances (triggering events) indicate that its carrying amount may not be recoverable. The following are examples of such events or changes in circumstances:

a. A significant decrease in the market price of a long-lived asset (asset group)
b. A significant adverse change in the extent or manner in which a long-lived asset (asset group) is being used or in its physical condition
c. A significant adverse change in legal factors or in the business climate that could affect the value of a long-lived asset (asset group), including an adverse action or assessment by a regulator
d. An accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset (asset group)
e.

A current-period operating or cash flow loss combined with a history of operating or cash flow losses or a projection or forecast that demonstrates continuing losses associated with the use of a long-lived asset (asset group)

f. A current expectation that, more likely than not, a long-lived asset (asset group) will be sold or otherwise disposed of significantly before the end of its previously estimated useful life.

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If such indicators are present, it is determined whether the sum of the estimated undiscounted cash flows attributable to the asset group in question is less than its carrying value. If less, an impairment loss is recognized based on the excess of the carrying amount of the assets in the group over its respective fair value. Fair value is determined by discounting estimated future cash flows, appraisals or other methods deemed appropriate. If the asset groups determined to be impaired are to be held and used, the Company recognizes an impairment charge to the extent the fair value attributable to the asset group is less than the assets' carrying value. The fair value of the assets then becomes the assets' new carrying value, which is depreciated or amortized over the remaining estimated useful life of the assets.

The Company's long-lived assets are grouped with other assets and liabilities at the lowest level (asset groups) for which the identifiable cash flows are largely independent of the cash flows of other assets and liabilities. As described above, the evaluation of the recoverability of long-lived assets requires the Company to make significant estimates and assumptions. These estimates and assumptions primarily include, but are not limited to, the identification of the asset group at the lowest level of independent cash flows, the primary asset of the group and long-range forecasts of revenue and costs, reflecting management's assessment of general economic and industry conditions, operating income, depreciation and amortization and working capital requirements.

Due to the inherent uncertainty involved in making estimates, actual results could differ from those estimates. In addition, changes in the underlying assumptions would have a significant impact on the conclusion that an asset group's carrying value is recoverable, or the determination of any impairment charge if it was determined that the asset values were indeed impaired.

Based on current general economic conditions and trends within the semiconductor industry and the absence of any other triggering events, the Company has not been required to perform impairment testing for any of its asset groups. The Company will continue to monitor circumstances and events to determine whether asset impairment testing is warranted. It is possible that in the future the Company may no longer be able to conclude that there is no impairment of its long-lived assets, nor can the Company provide assurance that material impairment charges of long-lived assets will not occur in future periods.

Goodwill The Company tests goodwill at least annually for impairment. Goodwill is also tested for impairment as changes in circumstances occur indicating that the carrying value may not be recoverable. Goodwill impairment testing requires a comparison of the fair value of each reporting unit to the carrying value. If the carrying value of the reporting unit exceeds fair value, goodwill is considered impaired. At December 31, 2014, the Company had nine reporting units, five of which are assigned goodwill.

As of August 31, 2014, the Company's annual testing date, the Company had five reporting units assigned goodwill. At that date, the estimated fair value of the two reporting units assigned goodwill in prior years was in excess of their respective carrying values. The fair value of the four reporting units to which goodwill was assigned in connection with the ATMI acquisition (see note 2 to the consolidated financial statements) approximates its purchase price, reflecting the recent acquisition thereof. While the Company believes the estimates and assumptions used in determining the fair value of its reporting units are reasonable, significant changes in estimates of future cash flows, such as those caused by unforeseen events or changes in market conditions, could materially impact the fair value of a reporting unit which could result in the recognition of a goodwill impairment charge.

Income Taxes In the preparation of the Company's financial statements, the income tax expense, deferred tax assets and liabilities, and reserves for unrecognized tax benefits reflect management's best assessment of estimated current and future taxes to be paid. The Company is subject to income taxes in both the United States and numerous foreign jurisdictions. Significant judgments and estimates are required in determining consolidated income tax expense.

Deferred income taxes arise from temporary differences between the tax basis of assets and liabilities and their reported amounts in the financial statements, which will result in taxable or deductible amounts in the future. In evaluating the Company's ability to recover its deferred tax assets within the jurisdiction from which they arise, management considers all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax-planning strategies, and results of recent operations. In projecting future taxable income, the Company begins with historical results adjusted for the results of discontinued operations and incorporates assumptions about the amount of future state, federal and foreign pretax operating income adjusted

for items that do not have tax consequences. The assumptions about future taxable income require significant judgment and are consistent with the plans and estimates management is using to manage the underlying business. In evaluating the objective evidence that historical results provide, the Company considers three years of cumulative operating income.

The Company has deferred tax assets related to certain federal and state credit carryforwards, and certain state and foreign net operating loss carryforwards of $15.3 million and $6.8 million as of December 31, 2014 and 2013, respectively. Management believes it is more likely than not that the benefit from a portion of these carryforwards will not be realized. In recognition of this risk, the Company provided a valuation allowance of $11.1 million and $5.4 million as of December 31, 2014 and 2013,

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respectively, relating to these carryforwards. If the Company's assumptions change and it determines it will be able to realize these carryforwards, the tax benefits relating to any reversal of the valuation allowance on the deferred tax assets will be recognized as a reduction of income tax expense.

The calculation of tax liabilities involves dealing with uncertainties in the application of complex tax laws and regulations in a multitude of jurisdictions across our global operations. A tax benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, on the basis of the technical merits. Resolution of these uncertainties in a manner inconsistent with management's expectations could have a material impact on the Company's financial condition and operating results.

Business Acquisitions

The Company accounts for acquired businesses using the acquisition method of accounting which requires that the assets acquired and liabilities assumed be recorded at the date of acquisition at their respective fair values. The judgments made in determining the estimated fair value assigned to each class of assets acquired and liabilities assumed, as well as asset lives, can materially impact net income. Accordingly, for significant items, the Company typically obtains assistance from a third-party valuation firm.

There are several methods that can be used to determine the fair value of assets acquired and liabilities assumed in a business combination. For intangible assets, the Company normally utilizes the "income method." This method starts with a forecast of all of the expected future net cash flows attributable to the subject intangible asset. These cash flows are then adjusted to present value by applying an appropriate discount rate that reflects the risk factors associated with the cash flow streams. Some of the more significant estimates and assumptions inherent in the income method (or other methods) include the projected future cash flows (including timing) and the discount rate reflecting the risks inherent in the future cash flows.

Estimating the useful life of an intangible asset also requires judgment. For example, different types of intangible assets will have different useful lives, influenced by the nature of the asset, competitive environment, and rate of change in the industry. Certain assets may even be considered to have indefinite useful lives. All of these judgments and estimates can significantly impact the determination of the amortization period of the intangible asset, and thus net income.

In connection with the ATMI acquisition consummated in 2014, the final valuation of assets acquired and liabilities assumed is expected to be completed as soon as possible, but no later than one year from the acquisition date. Given the size and complexity of the acquisition, the valuation of certain assets and liabilities, is still being completed, and is subject to final review. Specifically, certain property, plant and equipment and tax accounts are provisional pending the completion and review of such assets and liabilities. To the extent that the Company's estimates require adjustment, the Company will modify the values.

Results of Operations

Year ended December 31, 2014 compared to year ended December 31, 2013

The following table sets forth the results of operations and the relationship between various components of operations, stated as a percent of net sales, for the years ended December 31, 2014 and 2013. The Company's historical financial data was derived from its consolidated financial statements and related notes included elsewhere in this annual report.

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(Dollars in thousands)	2014	% of net sales	2013	% of net sales
Net sales	$962,069	100.0 %	$693,459	100.0 %
Cost of sales	585,386	60.8	399,245	57.6
Gross profit	376,683	39.2	294,214	42.4
Selling, general and administrative expenses	231,833	24.1	137,123	19.8
Engineering, research and development expenses	87,711	9.1	55,320	8.0
Amortization of intangible assets	37,067	3.9	9,347	1.3
Contingent consideration fair value adjustment	(1,282)	(0.1)	(1,813)	(0.3)
Operating income	21,354	2.2	94,237	13.6
Interest expense	33,355	3.5	153	—
Interest income	(1,336)	(0.1)	(317)	—
Other income, net	2,727	0.3	(1,794)	(0.3)
Income (loss) before income taxes and equity in net loss of affiliates	(13,392)	(1.4)	96,195	13.9
Income tax (benefit) expense	(21,572)	(2.2)	21,669	3.1
Equity in net income of affiliates	293	—	—	—
Net income	$7,887	0.8	$74,526	10.7

Net sales For the year ended December 31, 2014, net sales were $962.1 million, up $268.6 million, or 39%, from sales for the year ended December 31, 2013. An analysis of the factors underlying the increase in net sales is presented in the following table:

(In thousands)	2014
Net sales in previous year	$693,459
Increase associated with legacy Entegris volume and pricing	30,733
Decrease associated with effect of foreign currency translation	(7.516)
Increase associated with acquisition of ATMI, Inc	245,393
	$962,069

The unfavorable foreign currency translation effects of $7.5 million related to the year-over-year weakening of most international currencies versus the U.S. dollar, most notably the Japanese yen and Taiwanese dollar, offset partly by a stronger Korean won.

Excluding the net sales of ATMI for the eight months subsequent to the ATMI merger and the unfavorable foreign currency translation effects, net sales rose approximately 4% in 2014 when compared to 2013. The Company believes this sales increase was primarily volume driven and that the effect of selling price erosion was nominal. Overall demand from the semiconductor industry reflected improved demand from device makers, as wafer starts and semiconductor unit production increased, higher industry fab utilization rates and increased capital spending levels. Based on the information available, the Company believes sales of its products trailed industry growth measures for 2014.

On a geographic basis, total sales to North America were 25%, Asia Pacific 51%, Europe 11% and Japan 13% in 2014. Total sales to North America were 29%, Asia Pacific 43%, Europe 13% and Japan 15% in 2013. When comparing 2014 to 2013, all regions experienced year-over-year sales increases, primarily reflecting the ATMI sales. Net sales to customers in North America, Japan, Asia Pacific and Europe increased 18%, 19%, 66% and 17%, respectively, from 2013 to 2014, generally due to the the inclusion of sales from ATMI. Net sales for Japan were affected by unfavorable foreign currency translation effects of $7.8 million.

Demand drivers for the Company’s business primarily consist of semiconductor fab utilization and production (unit-driven) as well as capital spending for new or upgraded semiconductor fabrication equipment and facilities (capital-driven). The Company analyzes sales of its products by these two key drivers. Sales of unit-driven products represented 74% of total sales and sales of capital-driven products represented 26% of total sales in 2014. This compares to a unit-driven to capital-driven ratio of 66%:34% for 2013. The shift toward unit-driven products reflects the inclusion of sales from ATMI, which are primarily unit-driven.

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Gross profit Gross profit for 2014 increased by $82.5 million, to $376.7 million, an increase of 28% from $294.2 million for 2013. The gross margin rate for 2014 was 39.2% versus 42.4% for 2013. An analysis of the factors underlying the increase in gross profit is presented in the following table:

(In thousands)	2014
Gross profit in previous year (legacy Entegris only)	$294,214
Incremental cost of sales associated with fair value step-up related to sale of inventory acquired in ATMI acquisition	(48,586)
Increase associated with ATMI, Inc. net sales	118,431
Increase associated with legacy Entegris volume and pricing	12,624
	$376,683

The increase in gross profit reflects the improvement in legacy Entegris sales and the inclusion of sales from ATMI. Despite the improvement in gross profit, the Company experienced a 39.2% gross margin rate compared to 42.4% in the comparable year-ago period. The gross margin percentage for 2014 was below the comparable year-ago figures primarily due to incremental cost of sales charge of $48.6 million associated with the sale of inventory acquired in the acquisition with ATMI. An inventory write-up of $48.6 million was recorded as part of the purchase price allocation and was amortized over the expected inventory turn of the acquired finished goods inventory. Excluding that charge, the Company's gross margin for the year ended December 31, 2014 was 44.2%. The adjusted gross margin rates exceeded the comparable year-ago figures mainly due to the increase in Company sales levels and, on average, higher margins for ATMI products.

Selling, general and administrative expenses

Selling, general and administrative expense (SG&A) consists primarily of payroll and related expenses for the sales and administrative staff, professional fees (including accounting, legal and technology costs and expenses), and sales and marketing costs. Selling, general and administrative (SG&A) expenses for 2014 increased $94.7 million, or 69%, to $231.8 million from $137.1 million in 2013. An analysis of the factors underlying the increase in SG&A is presented in the following table:

(In thousands)	2014
Selling, general and administrative expenses in previous year (legacy Entegris only)	$137,123
Increase associated with ATMI, Inc. infrastructure	35,714
Increase in professional fees and other related to ATMI acquisition	8,152
Transaction-related expenses, including share-based compensation expense and related taxes associated with the unvested portion of ATMI share-based awards settled in cash	26,776
Integration expenditures	19,652
Other increases, net	4,416
	$231,833

SG&A expenses, as a percent of net sales, increased to 24.1% from 19.8% a year earlier, reflecting the significant increase in SG&A expenditure levels primarily related ATMI merger and subsequent integration expenditures. Expenses associated with ATMI, including certain merger-related expenses, amounted to $66.2 million, or about 70% of the increase. Included in these expenses were costs of $30.5 million related to the ATMI acquisition, specifically $21.3 million for share-based compensation expense and related taxes associated with the unvested portion of ATMI share-based awards settled in cash on the date of the acquisition, as well as integration costs of $9.2 million, consisting primarily of severance and retention costs. In addition, legacy Entegris incurred SG&A expenses of $24.5 million in merger-related expenses, including deal costs, severance and termination costs, and other costs associated with the integration of the two operations.

In addition to the increase in SG&A costs associated with ATMI's infrastructure, the Company expects SG&A costs to be higher than normal during the first half of 2015 as integration costs and related severance and retention costs will continue during this period. The Company expects overall SG&A costs will decline to normalized levels by the third

quarter of 2015. Savings associated with integration efforts, primarily resulting from the combination of corporate staff functions, are expected to be realized in 2015.

Engineering, research and development expenses

Engineering, research and development (ER&D) expenses related to the support of current product lines and the development of new products and manufacturing technologies increased by $32.4 million, or 59%, to $87.7 million in 2014 compared to $55.3 million in 2013. ER&D expenses as a percent of net sales were 9.1% compared to 8.0% a year ago, reflecting the increase in ER&D expenditure levels, offset by the increase in net sales. In 2014, the Company continued to invest in its core

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membrane and coatings technologies to create differentiated and high-value, unit-driven products for the most advanced and demanding semiconductor applications.

ER&D expenses recorded by ATMI and included in the Company's consolidated financial statements amounted to $23.3 million, accounting for approximately 70% of the increase. The increase also reflect higher legacy Entegris ER&D activity levels, including increased employee costs, and customer samples and supplies expense of $6.0 million and $2.7 million for the year December 31, 2014.

The Company expects ER&D costs will increase in 2015 due to the addition of ATMI's ER&D infrastructure. However, these costs are expected to stay relatively stable as a percentage of net sales. The Company’s overall ER&D efforts will continue to focus on the support or extension of current product lines, and the development of new products and manufacturing technologies.

Contingent consideration fair value adjustment In the years ended December 31, 2014 and 2013, the Company recognized an acquisition-related contingent consideration adjustments of $1.3 million and $1.8 million, respectively, reflecting changes in the fair value of contingent consideration liability associated with the Jetalon acquisition described in note 2 in the Company’s consolidated financial statements. These adjustments to the contingent consideration liability reflect changes in Jetalon's revenue and gross profit forecasts for the three years ending December 31, 2015 and the estimated probability of achieving those projections.

Amortization of intangible assets Amortization of intangible assets was $37.1 million in 2014 compared to $9.3 million for 2013. The increase reflected the additional amortization associated with the identifiable intangible assets acquired in the ATMI merger.

Interest expense Interest expense was $33.4 million and $0.2 million in the years ended December 31, 2014 and 2013. The significant increase reflects the interest associated with the borrowings made by the Company in connection with the acquisition of ATMI as described in notes 2 and 7 to the Company's consolidated financial statements. Interest expense included interest on outstanding borrowings, the amortization of debt issuance costs associated with such borrowings and bridge financing costs of $4.0 million recorded in the second quarter.

Other expense (income), net Other expense, net, was $2.7 million in 2014 compared to other income, net, of $1.8 million in 2013. In 2014, other expense includes foreign currency transaction losses of $1.1 million and an $1.9 million impairment loss recorded in connection with an equity investment, partially offset by $0.2 million in net realized gains on the sale of equity investments.

In 2013, other income includes foreign currency transaction gains of $2.3 million, partially offset by charges of $0.8 million associated with the realization of translation losses recorded upon the liquidation of certain of the Company's subsidiaries.

Income tax expense The Company recorded an income tax benefit of $21.6 million in 2014 compared to an income tax expense of $21.7 million in 2013. The Company’s effective tax benefit rate was 161.1% in 2014, compared to an effective tax rate of 22.5% in 2013. The increase in the effective tax rate in 2014 from 2013 was primarily due to a change in the Company's geographic composition of income toward jurisdictions with lower tax rates and the benefit of a foreign dividend, reduced by the nondeductibility of certain acquisition-related expenditures incurred in connection with the ATMI acquisition.

In 2013, the Company’s effective tax rate was lower than the U.S. statutory rate of 35% primarily due to lower rates in various foreign jurisdictions compared to the U.S. statutory rate. The effective tax rate in 2013 included a $1.7 million benefit associated with the reinstatement of the U.S. federal credit for increasing research expenditures, as retroactively signed into law and recorded by the Company in the first quarter of 2013.

Net income Net income was $7.9 million, or $0.06 per diluted share, in 2014 compared to net income of $74.5 million, or $0.53 per diluted share, in 2013. The significant decrease reflects the Company’s aforementioned operating results described in greater detail above, mainly reflecting the effect of the significant costs associated with the ATMI acquisition.

Non-GAAP Measures Information The Company’s consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States (GAAP). The Company also utilizes certain non-GAAP financial measures as a complement to financial measures provided in accordance with GAAP in order to better assess and reflect trends affecting the Company’s business and results of operations. See “Non-GAAP Information” included below in this section for additional detail, including the reconciliation of GAAP measures to the Company’s non-GAAP measures.

The Company’s non-GAAP financial measures are Adjusted EBITDA and Adjusted Operating Income, together with related measures thereof, and non-GAAP Earnings Per Share (EPS).

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Adjusted EBITDA increased 57% to $207.9 million in 2014, compared to $132.2 million in 2013. Adjusted EBITDA, as a percent of net sales, increased to 21.6% from 19.1% a year earlier. Adjusted Operating Income increased 57% to $161.3 million in 2014, compared to $102.7 million in 2013. Adjusted Operating Income, as a percent of net sales, increased to 16.8% from 14.8% a year earlier. Non-GAAP Earnings Per Share increased 19% to $0.69 in 2014, compared to $0.58 in 2013. The improvement in the Adjusted EBITDA and Adjusted Operating Income measures reflect the increase in net sales and related increase in gross profit. In addition, Non-GAAP Earnings Per Share was positively affected by a lower adjusted effective tax rate.

Segment Analysis

In 2014 the Company changed its financial segment reporting to reflect management and organizational changes made by the Company. Under the new structure, the manager of two segments is accountable for results at the segment profit level and reports directly to the Company's Chief Executive Officer, who is responsible for evaluating companywide performance and resource allocation decisions between the segments. Beginning in the second quarter, the Company reported its financial performance based on two reportable segments: Critical Materials Handling (CMH) and Electronic Materials (EM). See note 16 to the consolidated financial statements for additional information on the Company's two segments.

The following table and discussion concern the results of operations of the Company's two reportable segments for the years ended December 31, 2014 and 2013. See note 15 to the consolidated financial statements for additional information on the Company's two segments.

(In thousands)	2014	2013
Critical Materials Handling		
Net sales	$653,964	$609,826
Segment profit	138,379	128,910
Electronic Materials		
Net sales	$308,105	$83,633
Segment profit	90,121	20,034

Critical Materials Handling (CMH)

For the year ended December 31, 2014, CMH net sales increased 7% to $654.0 million, from $609.8 million in 2013, and primarily reflects the inclusion of sales of $30.4 million from ATMI. CMH reported a segment profit of $138.4 million in 2014, up 7% from $128.9 million in 2013 also due to higher sales and a slightly favorable sales mix, partly offset by a 7% increase in operating expenses, mainly consisting of higher ER&D expenditures and costs associated with the ATMI infrastructure.

Electronic Materials (EM)

For the year ended December 31, 2014, EM net sales increased to $308.1 million, up 268%, from $83.6 million in the comparable period last year. The sales increase also reflects the inclusion of sales of $214.4 million from ATMI, while the remainder reflected improved sales of gas microcontamination control systems products. EM reported a segment profit of $90.1 million for the year ended December 31, 2014 compared to a $20.0 million segment profit in the year-ago period. The increase in the segment's profit is primarily associated with higher sales levels reflecting the sales of ATMI products and improved margins related to a more favorable sales mix, offset partly by costs associated with the ATMI infrastructure.

Unallocated general and administrative expenses

Unallocated general and administrative expenses for the year ended December 31, 2014 totaled $122.8 million compared to $47.2 million for the year ended December 31, 2013. The inclusion of unallocated general and administrative expenses of $45.7 million recorded by ATMI accounted for approximately 60% of the increase. Included in the ATMI expenses was $21.3 million for share-based compensation expense and related taxes associated with the unvested portion of ATMI share-based awards settled in cash on the date of the Merger and integration costs of $9.2 million, consisting primarily of severance and retention costs.

In addition, the Company incurred expenses of $9.1 million in connection with the completion of the ATMI merger, as well as the costs of integration of $19.7 million incurred since the date of the ATMI Merger.

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Results of Operations

Year ended December 31, 2013 compared to year ended December 31, 2012

The following table sets forth the results of operations and the relationship between various components of operations, stated as a percent of net sales, for the years ended December 31, 2013 and 2012. The Company's historical financial data was derived from its consolidated financial statements and related notes included elsewhere in this annual report.

(Dollars in thousands)	2013	% of net sales	2012	% of net sales
Net sales	$693,459	100.0 %	$715,903	100.0 %
Cost of sales	399,245	57.6	408,520	57.1
Gross profit	294,214	42.4	307,383	42.9
Selling, general and administrative expenses	137,123	19.8	147,405	20.6
Engineering, research and development expenses	55,320	8.0	50,940	7.1
Amortization of intangible assets	9,347	1.3	9,594	1.3
Contingent consideration fair value adjustment	(1,813)	(0.3)	—	—
Operating income	94,237	13.6	99,444	13.9
Other income, net	(1,958)	(0.3)	(259)	—
Income before income taxes and equity in net loss of affiliates	96,195	13.9	99,703	13.9
Income tax expense	21,669	3.1	30,881	4.3
Equity in net income of affiliates	—	—	(3)	—
Net income	$74,526	10.7	$68,825	9.6

Net sales For the year ended December 31, 2013, net sales were $693.5 million, down $22.4 million, or 3%, from sales for the year ended December 31, 2012. The year-over-year declines in net sales primarily reflected continued softness in semiconductor industry spending, though the Company experienced growth and signs of stabilization in the fourth quarter, and changes in foreign currency rates. In line with industry data, overall demand from the Company's semiconductor industry customers for 2013 reflected lower demand from leading edge fabs, aggregate fab utilization rates remained well below peak levels and semiconductor industry capital spending remained restrained. The Company's operating segments experienced mixed sales results. See the "Segment analysis" included below in this section for additional detail.

The sales decrease in 2013 included unfavorable foreign currency translation effects of $18.6 million related to the year-over-year weakening of most international currencies versus the U.S. dollar, most notably the Japanese yen. Excluding this factor, net sales fell approximately 1% in 2013 when compared to 2012.

On a geographic basis, total sales to North America were 29%, Asia Pacific 43%, Europe 13% and Japan 15% in 2013. Total sales to North America were 31%, Asia Pacific 38%, Europe 12% and Japan 19% in 2012. When comparing 2013 to 2012, North America and Japan experienced year-over-year sales decreases, while Europe and Asia Pacific experience year-over-year sales increases. Net sales to customers in North America and Japan decreased 8% and 23%, respectively, while net sales to customers in Asia Pacific and Europe increased 8% and 5%, respectively, from 2012 to 2013. Net sales for Japan were affected by unfavorable foreign currency translation effects of $22.7 million. Net sales to Europe were favorably affected by foreign currency translation effects of $3.6 million. Net of those effects, sales decreased 5% for Japan and increased 1% for Europe.

Demand drivers for the Company's business primarily consist of semiconductor fab utilization and production (unit-driven) as well as capital spending for new or upgraded semiconductor fabrication equipment and facilities (capital-driven). The Company analyzes sales of its products by these two key drivers. Sales of unit-driven products represented 66% of total sales and sales of capital-driven products represented 34% of total sales in 2013. This compares to a unit-driven to capital-driven ratio of 66%:34% for 2012.

Sales of unit-driven products decreased 3% in 2013. Unit-driven products generally have average lives of less than 18 months or need to be replaced based on usage levels. These products include liquid filters used in the photolithography, CMP and wet etch and clean processes, specialized graphite components, and wafer shippers used to ship raw wafers, particularly at wafer sizes of 200mm and below.

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Year-over-year sales of capital-driven products decreased 3% in 2013. Capital-driven products include wafer process carriers, gas microcontamination control systems used in the deployment of advanced photolithography processes, fluid handling systems, including dispense pumps used in the photolithography process, and integrated liquid flow controllers used in various processes around the fab.

The Company believes the sales decreases noted above are primarily volume driven. Based on the information available, the Company believes it improved or maintained market share for its products and that the effect of selling price erosion was nominal. Additionally, given that no single customer accounts for more than 10% of the Company's annual revenue, the decrease in sales has not been driven by any one particular customer or group of customers, but rather by the decline in semiconductor and other high-technology sectors as a whole.

Gross profit Gross profit for 2013 decreased by $13.2 million, to $294.2 million, a decrease of 4% from $307.4 million for 2012. The gross margin rate for 2013 was 42.4% versus 42.9% for 2012.

The year-over-year sales decrease, including a $3.7 million reduction in royalty revenue, primarily accounted for the Company's lower gross profit and gross margin in 2013.

Selling, general and administrative expenses Selling, general and administrative (SG&A) expenses for 2013 decreased $10.3 million, or 7%, to $137.1 million from $147.4 million in 2012. SG&A expenses, as a percent of net sales, decreased to 19.8% from 20.6% a year earlier, reflecting a decrease in SG&A expenditure levels.

Employee costs, which make up approximately two-thirds of SG&A expenses, decreased by $2.4 million for 2013. The decrease also reflected a decline in consulting and professional fees of $1.9 million as well as the $3.9 million reduction in SG&A expense related to the 2012 CEO succession and transition plan. Also included in the decrease in SG&A expenses for 2013 compared to the year-ago period is a $0.7 million reduction in SG&A expense during the second quarter of 2013 related to the sale of a building classified as an asset held for sale, consisting of the gain on sale thereof and an adjustment to the real estate tax accrual for the building and the favorable settlement of value-added tax matters in Europe ($1.2 million). In addition, the decrease in SG&A costs reflected favorable foreign currency translation effects of $2.9 million.

Engineering, research and development expenses Engineering, research and development (ER&D) expenses related to the support of current product lines and the development of new products and manufacturing technologies increased by $4.4 million, or 9%, to $55.3 million in 2013 compared to $50.9 million in 2012. ER&D expenses as a percent of net sales were 8.0% compared to 7.1% a year ago, reflecting both the increase in ER&D expenditure levels and decrease in net sales.

The increase in ER&D expense mainly reflects higher employee costs of $1.8 million and a general increase in overall ER&D expense levels related to the support of current product lines and the development of new products and manufacturing technologies to support the Company's customers' next-generation processes.

Contingent consideration fair value adjustment In the year ended December 31, 2013, the Company recognized an acquisition-related contingent consideration adjustment of $1.8 million reflecting changes in the fair value of contingent consideration associated with the Jetalon acquisition described in note 2 in the Company's consolidated financial statements. This adjustment reflects changes in the revenue and gross profit forecasts for the three years ending December 31, 2015 and the estimated probability of achieving those projections.

Amortization of intangible assets Amortization of intangible assets was $9.3 million in 2013 compared to $9.6 million for 2012.

Other income, net Other income was $2.0 million in 2013 compared to other income of $0.3 million in 2012. In 2013, other income includes foreign currency transaction gains of $2.3 million, partially offset by charges of $0.8 million associated with the realization of translation losses recorded upon the liquidation of certain of the Company's subsidiaries.

In 2012, other income includes a $1.5 million gain recorded in the second quarter related to the remeasurement of the previously held 50% equity investment in a Taiwan joint venture entity in which the Company acquired a 100% interest in April 2012. The other income was partially offset by $1.4 million of foreign currency transaction losses related to the remeasurement of yen-denominated assets and liabilities held by the Company.

Income tax expense The Company recorded income tax expense of $21.7 million in 2013 compared to an income tax expense of $30.9 million in 2012. The Company’s effective tax rate was 22.5% in 2013, compared to 31.0% in 2012. The lower rate in 2013 reflects changes in the Company's geographic composition of income toward jurisdictions with lower tax rates. The effective tax rate in 2013 also included a $1.7 million associated with the reinstatement of the U.S. federal credit

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for increasing research expenditures, as retroactively signed into law in 2013 and recorded by the Company in the first quarter of 2013.

In 2012, the Company's effective tax rate was lower than the U.S. statutory rate of 35% primarily due to lower rates in various foreign jurisdictions compared to the U.S. statutory rate.

Net income Net income was $74.5 million, or $0.53 per diluted share, in 2013 compared to net income of $68.8 million, or $0.50 per diluted share, in 2012. The increase reflects the Company's aforementioned operating results described in greater detail above.

Non-GAAP Measures Information The Company's consolidated financial statements are prepared in conformity with accounting principles generally accepted in the United States (GAAP). The Company also utilizes certain non-GAAP financial measures as a complement to financial measures provided in accordance with GAAP in order to better assess and reflect trends affecting the Company's business and results of operations. See "Non-GAAP Information" included below in this section for additional detail, including the reconciliation of GAAP measures to the Company's non-GAAP measures.

The Company's non-GAAP financial measures are Adjusted EBITDA and Adjusted Operating Income, together with related measures thereof, and non-GAAP Earnings Per Share (EPS).

Adjusted EBITDA decreased 6% to $132.2 million in 2013, compared to $141.0 million in 2012. Adjusted EBITDA, as a percent of net sales, decreased to 19.1% from 19.7% a year earlier. Adjusted Operating Income decreased 9% to $102.7 million in 2013, compared to $113.0 million in 2012. Adjusted Operating Income, as a percent of net sales, decreased to 14.8% from 15.8% a year earlier. Non-GAAP Earnings Per Share increased 5% to $0.58 in 2013, compared to $0.55 in 2012. The decline in the Adjusted EBITDA and Adjusted Operating Income measures reflect the reduction in net sales and related decrease in gross profit. In addition, Non-GAAP Earnings Per Share was positively affected by a lower effective tax rate.

Segment Analysis

The following table and discussion concern the results of operations of the Company's two business segments for the years ended December 31, 2013 and 2012. See note 15 to the consolidated financial statements for additional information on the Company's two segments.

(In thousands)	2013	2012
Critical Materials Handling		
Net sales	$609,826	$630,929
Segment profit	128,910	