

W R GRACE & CO

Form 10-K

February 25, 2016

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

FORM 10-K

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

For the fiscal year ended December 31, 2015

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 1-13953

W. R. GRACE & CO.

Delaware

65-0773649

(State or other jurisdiction of incorporation or organization)

(I.R.S. Employer Identification Number)

7500 Grace Drive, Columbia, Maryland 21044-4098

(Address of principal executive offices) (Zip code)

(410) 531-4000

(Registrant's telephone number, including area code)

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

Title of each class

Name of each exchange on which registered

Common Stock, \$.01 par value per share

New York Stock Exchange, Inc.

Preferred Stock Purchase Rights

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

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

Yes ý No o

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

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 ý No o

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate website, 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 ý No o

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer," and "smaller

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reporting company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer

Accelerated filer

Non-accelerated filer  (Do not check if a smaller reporting company)

Smaller reporting company

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

The aggregate market value of W. R. Grace & Co. voting and non-voting common equity held by non-affiliates as of June 30, 2015 (the last business day of the registrant's most recently completed second fiscal quarter) based on the closing sale price of \$100.30 as reported on the New York Stock Exchange was \$7,218,117,083.

Indicate by check mark whether the registrant has filed all documents and reports required to be filed by Section 12, 13 or 15(d) of the Securities Exchange Act of 1934 subsequent to the distribution of securities under a plan confirmed by a court. Yes  No

At January 31, 2016, 70,538,445 shares of W. R. Grace & Co. Common Stock, \$.01 par value, were outstanding.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the definitive Proxy Statement to be delivered to stockholders in connection with the Annual Meeting of Stockholders to be held on May 5, 2016, are incorporated by reference into Part III.

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Grace®, the Grace® logo and, except as otherwise indicated, the other trademarks, service marks or trade names used in the text of this report are trademarks, service marks or trade names of operating units of W. R. Grace & Co. or its affiliates and/or subsidiaries. RESPONSIBLE CARE® is a trademark, registered in the United States and/or other countries, of the American Chemistry Council. UNIPOL® is a trademark of The Dow Chemical Company or an affiliated company of Dow. W. R. Grace & Co.—Conn. and/or its affiliates are licensed to use the UNIPOL® trademark in the area of polypropylene.

Unless the context otherwise indicates, in this document the terms "Grace," "we," "us," and "our" mean W. R. Grace & Co. and/or its consolidated subsidiaries and affiliates, and "the Company" means "W. R. Grace & Co." Unless otherwise indicated, the contents of websites mentioned in this report are not incorporated by reference or otherwise made a part of this Report.

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PART I

Item 1. BUSINESS

BUSINESS OVERVIEW

W. R. Grace & Co. is engaged in the production and sale of specialty chemicals and specialty materials on a global basis through three operating segments: Grace Catalysts Technologies, which includes catalysts and related products and technologies used in refining, petrochemical and other chemical manufacturing applications; Grace Materials Technologies, which includes packaging technologies and engineered materials used in consumer, industrial, and pharmaceutical applications; and Grace Construction Products, which includes specialty construction chemicals and specialty building materials used in commercial, infrastructure and residential construction. We entered the specialty chemicals industry in 1954, when we acquired both the Dewey and Almy Chemical Company and the Davison Chemical Company. Grace is the successor to a company that began in 1854 and originally became a public company in 1953.

On February 5, 2015, Grace announced a plan to separate into two independent, publicly traded companies, intended to improve Grace's strategic focus, simplify its operating structure, and allow for more efficient capital allocation. On January 27, 2016, Grace entered into a separation agreement with GCP Applied Technologies Inc. (GCP), then a wholly-owned subsidiary of Grace, pursuant to which Grace agreed to transfer its Grace Construction Products operating segment and the packaging technologies business, operated under the "Darex" name, of its Grace Materials Technologies operating segment to GCP, referred to herein as the Separation. The Separation occurred on February 3, 2016, by means of a pro rata distribution to Grace stockholders of all of the outstanding shares of GCP common stock, referred to herein as the Distribution. Under the Distribution, one share of GCP common stock was distributed for each share of Grace common stock held as of the close of business on January 27, 2016. No fractional shares were distributed. As a result of the Distribution, GCP is now an independent public company and its common stock is listed under the symbol "GCP" on the New York Stock Exchange.

On December 2, 2013, we completed the acquisition of the assets of the polypropylene licensing and catalysts business of The Dow Chemical Company for a cash purchase price of \$500 million, subject to customary working capital and post-closing adjustments.

In 2001, Grace and 61 of its United States subsidiaries and affiliates filed voluntary petitions for reorganization under Chapter 11 of the United States Bankruptcy Code in the United States Bankruptcy Court for the District of Delaware. On February 3, 2014, the joint plan of reorganization (the "Joint Plan") filed by Grace and certain other parties became effective, concluding Grace's status as a debtor under Chapter 11.

Our principal executive offices are located at 7500 Grace Drive, Columbia, Maryland 21044, telephone (410) 531-4000. As of December 31, 2015, we had approximately 6,700 global employees.

Grace Catalysts Technologies produces and sells catalysts and related products and technologies used in refining, petrochemical and other chemical manufacturing applications, as follows:

Fluid catalytic cracking catalysts, also called FCC catalysts, that help to "crack" the hydrocarbon chain in distilled crude oil to produce transportation fuels, such as gasoline and diesel fuels, and other petroleum-based products; and FCC additives used to reduce sulfur in gasoline, maximize propylene production from refinery FCC units, and reduce emissions of sulfur oxides, nitrogen oxides and carbon monoxide from refinery FCC units.

Hydroprocessing catalysts (HPC), most of which are marketed through our Advanced Refining Technologies LLC, or ART, joint venture with Chevron Products Company in which we hold a 50% economic interest, that are used in process reactors to upgrade heavy oils into lighter, more useful products by removing impurities such as nitrogen, sulfur and heavy metals, allowing less expensive feedstocks to be used in the petroleum refining process (ART is not consolidated in our financial statements so ART's sales are excluded from our sales).

Polyolefin catalysts and catalyst supports, also called specialty catalysts (SC), for the production of polypropylene and polyethylene thermoplastic resins, which can be customized to enhance the



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performance of a wide range of industrial and consumer end-use applications including high pressure pipe, geomembranes, food packaging, automotive parts, medical devices, and textiles; chemical catalysts used in a variety of industrial, environmental and consumer applications; and gas-phase polypropylene process technology, which provides our licensees with a reliable capability to manufacture polypropylene products for a broad array of end-use applications.

Grace Materials Technologies produces and sells specialty materials, coatings and sealants and related products used in coatings, consumer, industrial, pharmaceutical, and packaging applications, as follows:

Engineered materials, including silica-based and silica-alumina-based materials, used in:

- Coatings and print media applications, including functional additives that provide matting effects and corrosion protection for industrial and consumer coatings and media and paper products to enhance quality in ink jet coatings.

- Consumer applications, as a free-flow agent, carrier or processing aid in food and personal care products; as a toothpaste abrasive and thickener; and for the processing and stabilization of edible oils and beverages.

- Industrial applications, such as tires and rubber, precision investment casting, refractory, insulating glass windows, adsorbents for use in petrochemical and natural gas processes and biofuels, various functions such as reinforcement, high temperature binding and moisture scavenging.

- Pharmaceutical, life science and related applications including silica-based separation media, excipients and pharmaceutical intermediates; complementary purification products, chromatography consumables, and instruments; and CO<sub>2</sub> absorbents used in anesthesiology and mine safety applications.

- Packaging products (Darex), including can and closure sealants used to seal and enhance the shelf life of can and bottle contents; coatings for cans and closures that prevent metal corrosion, protect package contents from the influence of metal and ensure proper adhesion of sealing compounds; and scavenging technologies designed to reduce off-taste and extend the shelf-life of packaged products.

Grace Construction Products produces and sells construction chemicals and building materials, as follows:

- Specialty construction chemicals (SCC) used to improve the performance of portland cement and materials based on portland cement including:

- Concrete admixtures that are sold to ready-mix, precast, and sprayed concrete producers to improve the rheology, workability, quality, durability and other engineering properties of concrete, reduce production costs and provide differentiated product offerings. Certain of our concrete admixtures include polyolefin fibers which are used to improve the strength of concrete and enables the replacement of steel reinforcement, in certain cases.

- Cement additives that are sold to manufacturers of portland cement to improve energy efficiency in cement milling operations and to enhance the characteristics of finished cement. Our additives are also used by cement manufacturers to meet national standards for cement quality at lower production cost and with a reduced environmental footprint, including lower CO<sub>2</sub> emissions.

- Specialty building materials (SBM) used in both new construction and renovation/repair projects including:

- Sheet and liquid membrane systems that protect commercial buildings, residential buildings and infrastructure from above- and below-grade water penetration and above-grade vapor and air penetration and underlayments used to protect sloped roofs from wind and water penetration.

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### Global Scope

We operate our business on a global scale with approximately 69% of our 2015 sales outside the United States. We conduct business in over 40 countries and in more than 50 currencies. We manage our operating segments on a global basis, to serve global markets. Currency fluctuations affect our reported results of operations, cash flows, and financial position.

### Strategy Overview

Our strategy is to increase enterprise value by profitably growing our specialty chemicals and specialty materials businesses in the global marketplace and achieving high levels of efficiency and cash flow. To meet these objectives, we plan to:

- invest in research and development activities, with the goal of introducing new high-performance, technically differentiated products and services and enhancing manufacturing processes and operations;
- expand sales and manufacturing into emerging regions, including China, India, other economies in Asia, Eastern Europe, the Middle East and Latin America;
- pursue selected acquisitions and alliances that complement our current product offerings or provide opportunities for faster penetration of desirable market or geographic segments; and
- continue our commitment to process and productivity improvements and cost-management, such as rigorous controls on working capital and capital spending, integration of functional support services worldwide, and programs for improving operations and supply chain management.

## PRODUCTS AND MARKETS

### Specialty Chemicals and Materials Industry Overview

Specialty chemicals and specialty materials are high value-added products used as catalysts, intermediates, components, protectants or additives in a wide variety of products and applications. They are generally produced in relatively small volumes (compared with commodity chemicals) and must satisfy well-defined performance requirements and specifications. Specialty chemicals and specialty materials are often critical components of end products, catalysts for the production of end products and components used in end products. Consequently, they are tailored to meet customer needs, which generally results in a close relationship between the producer and the customer.

We focus our business on the following, which we believe are important competitive factors in the specialty chemicals and specialty materials industry:

- value-added products, technologies and services, sold at competitive prices;
- customer service, including rapid response to changing customer needs;
- technological leadership (resulting from investment in research and development and technical customer service); and
- reliability of product and supply.

We believe that our focus on these competitive factors enables us to deliver increased value to customers and competitive operating margins notwithstanding the increased customer service and research and development costs that this focus entails.

### Grace Catalysts Technologies Operating Segment

Catalysts Technologies principally applies alumina, zeolite and inorganic support technologies in the design and manufacture of products to create significant value for our diverse customer base. Our customers include major oil refiners and plastics and chemicals manufacturers. We believe that our technological expertise provides a competitive advantage, allowing us to quickly design products that help our customers create value in their markets.

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The following table sets forth Catalysts Technologies sales of similar products, technologies, and services as a percentage of Grace total revenue.

(In millions)	2015		2014		2013			
	Sales	% of Grace Revenue	Sales	% of Grace Revenue	Sales	% of Grace Revenue		
Refining Catalysts	\$764.5	25.1	% \$845.5	26.0	% \$832.4	27.2	%	
Polyolefin and Chemical Catalysts	397.6	13.0	% 401.3	12.4	% 291.6	9.5	%	
Total Catalysts Technologies Revenue	\$1,162.1	38.1	% \$1,246.8	38.4	% \$1,124.0	36.7	%	

The following table sets forth Catalysts Technologies sales by region as a percentage of Catalysts Technologies total revenue.

(In millions)	2015		2014		2013			
	Sales	% of Catalysts Technologies Revenue	Sales	% of Catalysts Technologies Revenue	Sales	% of Catalysts Technologies Revenue		
North America	\$375.9	32.4	% \$392.9	31.5	% \$359.8	32.0	%	
Europe Middle East Africa	402.5	34.6	% 459.1	36.8	% 459.2	40.9	%	
Asia Pacific	293.0	25.2	% 291.4	23.4	% 223.0	19.8	%	
Latin America	90.7	7.8	% 103.4	8.3	% 82.0	7.3	%	
Total Catalysts Technologies Revenue	\$1,162.1	100.0	% \$1,246.8	100.0	% \$1,124.0	100.0	%	

#### Grace Catalysts Technologies—Refining Catalysts FCC Catalysts

We are a global leader in developing and manufacturing fluid catalytic cracking, or FCC, catalysts and additives that enable petroleum refiners to increase profits by improving product yields, value and quality. Our FCC products also enable refiners to reduce emissions from their FCC units and reduce sulfur content in the transportation fuels they produce. Oil refining is a highly specialized discipline and FCC catalysts must be tailored to meet local variations in crude oil feedstocks and a refinery's product mix. We work regularly with our customers to identify the most appropriate catalyst and additive formulations for their changing needs.

Since our customers are refiners, our business is highly dependent on the economics of the petroleum refining industry. In particular, demand for our FCC products is affected by refinery throughput, the type and quality of refinery feedstocks and the demand for transportation fuels and other refinery products, such as propylene. Refinery throughput, or the extent to which refiners utilize the available capacity of their FCC units, is generally determined by demand for transportation fuels and petrochemical products and the availability of crude oil supply. In recent years, global economic growth, especially in emerging regions, has increased the global demand for transportation fuels and petrochemical products. Retail gasoline and diesel fuel prices and the level of economic activity has also directly influenced transportation fuel demand as have government policies that encourage the use of non-petroleum-based fuels, discourage the use of petroleum-based fuels and encourage greater vehicular fuel economy. In general, as a refinery utilizes more of its FCC capacity, it needs a greater amount of FCC catalyst. Refinery crude oil feedstocks vary in quality from light and sweet to heavy and sour. Light and sweet feedstocks are typically more expensive than heavy and sour feedstocks and yield a greater proportion of high-value petroleum products. They also yield a lower proportion of residual oil, or "resid," which is generally the lowest value feedstock contained in crude oil. Although heavy and sour feedstocks with high resid content are typically less expensive than higher quality feedstocks, the processing of high-resid feedstocks is more difficult because these feedstocks have more impurities and higher boiling points. Our customers generally determine the feedstocks to be used in their refineries based on relative pricing and availability of various quality feedstocks.



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Refinery configuration and complexity also plays a role in feedstock selection; more complex refineries tend to process a higher proportion of heavy and sour feedstocks. In general, as a refinery uses more heavy and sour feedstocks, it uses a greater amount of FCC catalyst. In addition, refiners use special high value-added formulations of FCC catalysts for efficient refining of heavy and sour feedstocks. We have designed our MIDAS<sup>®</sup> catalyst, IMPACT<sup>®</sup> catalyst, NEKTOR<sup>™</sup> catalyst, and GENESIS<sup>®</sup> catalyst product portfolios to enable our customers to increase the efficiency and yield of high-resid feedstock refining.

Heavy and sour crude oil has a relatively high level of metals, nitrogen and sulfur contamination. Many countries and regions, including the U.S., European Union, Japan, Russia, India and China have imposed regulatory limitations on the sulfur content of gasoline and diesel fuel. We have developed a portfolio of products designed to assist refiners in meeting their gasoline sulfur-reduction targets, including our D-PRISM<sup>®</sup> and GSR<sup>®</sup> additives and our SURCA<sup>®</sup> catalyst family.

Within certain limits, refiners have the ability to adjust their relative output of transportation fuels versus petrochemicals. Global economic growth, especially in emerging regions, has increased the demand for plastics. As a result, some of our refinery customers have sought increased profits from petrochemicals by increasing the yield of propylene from their FCC units. Our ZSM-5-based technology, including our OLEFINSMAX<sup>®</sup> and OLEFINSULTRA<sup>®</sup> additive products, is designed to maximize the propylene output of FCC units.

Many U.S. petroleum refiners have entered into consent decrees with the U.S. Environmental Protection Agency (the "EPA") under which the refiners have agreed to reduce emissions of nitrogen oxides and sulfur oxides. The European Union has also imposed requirements on refineries with respect to nitrogen oxides and sulfur oxides emissions. FCC units are generally the largest emitters of these pollutants in a refinery. Our additives are designed to assist refineries in meeting their obligations to reduce these pollutants. Our Super DESOX<sup>®</sup> additive reduces sulfur oxides emissions from commercial FCC units. Our DENOX<sup>®</sup> additives are designed to achieve reductions in nitrogen oxides emissions comparable to those obtained from capital intensive alternatives available to a refinery, while our non-platinum-based combustion promoters XNOX<sup>®</sup> and CP<sup>®</sup>P enable refiners to control carbon monoxide emissions without increasing nitrogen oxides.

Competition in FCC catalysts and additives is based on technology, product performance, customer service and price. Our principal global FCC catalyst competitors are Albemarle Corp., BASF, and SINOPEC. Our principal global competitors in FCC additives are BASF and Johnson Matthey. We also have multiple regional competitors for FCC catalysts and additives.

### Hydroprocessing Catalysts

We market hydroprocessing catalysts primarily through ART, our joint venture with Chevron. We established ART to combine our technology with that of Chevron and to develop, market and sell hydroprocessing catalysts to customers in the petroleum refining industry worldwide.

As discussed above, our business is dependent on the economics of the petroleum industry. We are a leading supplier of hydroprocessing catalysts designed for processing high resid content feedstocks. We offer products for fixed-bed resid hydrotreating, on-stream catalyst replacement and ebullating-bed resid hydrocracking processes.

We also offer a full line of catalysts, customized for individual refiners, used in distillate hydrotreating to produce ultra-low sulfur content gasoline and diesel fuel, including our SMART CATALYST SYSTEM<sup>®</sup> and APART<sup>®</sup> catalyst systems. As discussed above, regulatory limitations on the sulfur content of gasoline and diesel fuel are becoming more common. These products are designed to help refiners to reduce the sulfur content of their products. We have rights to sell hydrocracking and lubes hydroprocessing catalysts to licensees of Chevron Lummus Global and other petroleum refiners for unit refills. These rights allow us to streamline hydroprocessing catalyst supply and improve technical service for refining customers by establishing ART as their single point of contact for all their hydroprocessing catalyst needs.

Competition in the hydroprocessing catalyst industry is based on technology, product performance, customer service and price. Criterion, Albemarle, Haldor Topsoe, UOP and Axens are our leading global competitors in hydroprocessing catalysts. We also have multiple regional competitors.



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### Grace Catalysts Technologies—Polyolefin Catalysts, Catalyst Supports and Polypropylene Process Technology

We are a leading provider of catalyst systems and catalyst supports to the polyolefins industry for a variety of polyethylene and polypropylene process technologies. These types of catalysts are used for the manufacture of polyethylene and polypropylene thermoplastic resins used in products such as plastic film, high-performance plastic pipe, automobile parts, household appliances and household containers. We use a combination of proprietary catalyst and support technology and technology licensed from third parties to provide unique catalyst-based solutions to our customers and to provide a broad technology portfolio for enhancing collaboration opportunities with technology leaders.

Our MAGNAPORE<sup>®</sup> polymerization catalyst is used to produce high performance polyethylene in the slurry loop process for pipe and film applications. Our POLYTRAK<sup>®</sup> polymerization catalyst is designed to achieve improved polypropylene performance, particularly for impact resistant applications such as automobile bumpers and household appliances.

Our standard and customized DAVICAT<sup>®</sup> catalysts offer a wide range of chemical and physical properties based on our material science technology for supported catalysts, polystyrene, herbicide, neutraceuticals and on-purpose olefins. Our RANEY<sup>®</sup> nickel, cobalt and copper hydrogenation and dehydrogenation catalysts are used for the synthesis of organic compounds for the fibers, polyurethanes, engineered plastics, pharmaceuticals, sweeteners and petroleum industries.

Our non-phthalate CONSISTA<sup>®</sup> and traditional SHAC<sup>®</sup> catalysts along with CONSISTA<sup>®</sup> and ADT donors have been designed for the UNIPOL<sup>®</sup> gas-phase polypropylene process technology but are also adaptable to a variety of other polypropylene gas-phase and slurry-phase polymerization processes.

The polyolefin catalyst and supports industry is technology-intensive and suppliers must provide products formulated to meet customer specifications. There are many manufacturers of polyolefin catalysts and supports including Univation, LyondellBasell, BASF, Albemarle and PQ, and most sell their products worldwide.

We are also a leading licensor of gas-phase polypropylene process technology to polypropylene manufacturers. Our aforementioned UNIPOL<sup>®</sup> polypropylene technology is designed to have fewer moving parts and require less equipment than other competing technologies in order to reduce operating costs. This technology provides our licensees with a reliable capability to manufacture products for a broad array of end-use applications. The polypropylene process licensing industry is technology-intensive and licensors must adapt the technology and the related licenses to meet individual customer needs. The major competing polypropylene process licensors are LyondellBasell, Lummus Novolen Technology, and INEOS Technologies.

### Grace Catalysts Technologies—Manufacturing, Marketing and Raw Materials

Our Catalysts Technologies products are manufactured by a network of globally coordinated plants. Our integrated planning organization is responsible for the effective utilization of our manufacturing capabilities.

We use a global organization of technical professionals with extensive experience in refining processes, catalyst development, and catalyst applications to market our refining catalysts and additives. These professionals work to tailor our technology to the needs of each specific customer. We generally negotiate prices for our refining catalysts because our formulations are specific to the needs of each customer and each customer receives individual attention and technical service. We sell a significant portion of our hydroprocessing catalysts through multiple-year supply agreements with our geographically diverse customer base.

We use a global direct sales force for our polyolefin catalysts, supports and technologies and chemical catalysts that seeks to maintain close working relationships with our customers. These relationships enable us to cooperate with major polymer and chemical producers to develop catalyst technologies that complement their process or application developments. We have geographically distributed our sales and technical service professionals to make them responsive to the needs of our geographically diverse customers. We typically operate under long-term contracts with our customers.

Seasonality does not have a significant overall effect on our Catalysts Technologies operating segment. However, sales of FCC catalysts tend to be lower in the first calendar quarter prior to the shift in production by refineries from home heating oil for the winter season to gasoline production for the summer season. FCC catalysts and

ebullating-bed hydroprocessing catalysts are consumed at a relatively steady rate and are replaced

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regularly. Fixed-bed hydroprocessing catalysts are consumed over a period of years and are replaced in bulk in an irregular pattern. Since our customers periodically shut down their refining processes to replace fixed-bed hydroprocessing catalysts in bulk, our hydroprocessing catalyst sales to any customer can vary substantially over the course of a year and between years based on that customer's catalyst replacement schedule.

The principal raw materials for Catalysts Technologies products include molybdenum salts, rare earths, tungsten salts, alumina, caustic soda, sodium silicate, sodium aluminate, aluminum sulfate, nickel, nickel salts, aluminum chlorohydrate, and aluminum. Multiple suppliers are generally available for each of these materials; however, some of our raw materials may be provided by single sources of supply. We seek to mitigate the risk of using single source suppliers by identifying and qualifying alternative suppliers or, for unique materials, by using alternative formulations from other suppliers or by passing price increases on to customers. In some instances, we produce our own raw materials and intermediates.

Prices for many of our raw materials, including metals, have been volatile in recent years. In response to increases in raw material costs, we generally take actions to mitigate the effect of higher costs including increasing prices, developing alternative formulations for our products, increasing productivity, and hedging purchases of certain raw materials.

As in many chemical businesses, we consume significant quantities of natural gas in the production of Catalysts Technologies products. World events and other economic factors have caused volatility in the price of natural gas. Increases or decreases in the cost of natural gas and raw materials can have a significant impact on our operating margins. We have implemented a risk management program under which we hedge natural gas in a way that is designed to provide protection against price volatility. See also disclosure in this Report in Item 7A (Quantitative and Qualitative Disclosures about Market Risk).

#### Grace Materials Technologies Operating Segment

Materials Technologies principally applies specialty silica, zeolite and resin technologies in the design and manufacture of products to create significant value for our diverse customer base. Our customers include coatings manufacturers, consumer product manufacturers, plastics manufacturers, producers of rigid food and beverage packaging, and pharmaceutical companies. We believe that our technological expertise and broad technology platform provide a competitive advantage, allowing us to quickly design products that help our customers create value in their markets.

The following table sets forth Materials Technologies sales of similar products as a percentage of Grace total revenue.

(In millions)	2015		2014		2013			
	Sales	% of Grace Revenue	Sales	% of Grace Revenue	Sales	% of Grace Revenue		
Engineered Materials	\$470.8	15.4	% \$515.8	15.9	% \$494.4	16.2	%	
Packaging Products	326.2	10.7	% 374.8	11.6	% 384.1	12.5	%	
Total Materials Technologies Revenue	\$797.0	26.1	% \$890.6	27.5	% \$878.5	28.7	%	

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The following table sets forth Materials Technologies sales by region as a percentage of Materials Technologies total revenue.

(In millions)	2015		2014		2013			
	Sales	% of Materials Technologies Revenue	Sales	% of Materials Technologies Revenue	Sales	% of Materials Technologies Revenue	Sales	% of Materials Technologies Revenue
North America	\$183.6	23.0	% \$187.5	21.1	% \$176.7	20.1	%	
Europe Middle East Africa	324.8	40.8	% 373.5	41.9	% 367.8	41.9	%	
Asia Pacific	176.8	22.2	% 198.7	22.3	% 197.4	22.5	%	
Latin America	111.8	14.0	% 130.9	14.7	% 136.6	15.5	%	
Total Materials Technologies Revenue	\$797.0	100.0	% \$890.6	100.0	% \$878.5	100.0	%	

## Grace Materials Technologies—Engineered Materials

We provide enabling technologies that are silica- and silica-alumina-based functional additives and process aids, such as silica gel, colloidal silica, zeolitic adsorbents, precipitated silica and silica-aluminas, for a wide variety of applications. Our product portfolio includes:

Application	Use	Key Brands
Coatings and Print Media	Matting agents, anticorrosion pigments, TiO <sub>2</sub> extenders and moisture scavengers for paints and lacquers Additives and formulations for matte, semi-glossy and glossy ink receptive coatings on high performance ink jet papers, photo paper, and commercial wide-format print media Paper retention aids, functional fillers, paper frictionizers	SYLOID <sup>®</sup> , SHIELDEX <sup>®</sup> , SYLOSIV <sup>®</sup> , SYLOWHITE <sup>™</sup> SYLOJET <sup>®</sup> , DURAFILL <sup>®</sup> , LUDOX <sup>®</sup>
Consumer	Toothpaste abrasives and thickening agents, free-flow agents, anticaking agents, tableting aids, cosmetic additives and flavor carriers Edible oil refining agents, beer stabilizers and clarification aids for beer, juices and other beverages	DURAFILL <sup>®</sup> , LUDOX <sup>®</sup> SYLOID <sup>®</sup> FP, SYLODENT <sup>®</sup> , SYLOID <sup>®</sup> , SYLOBLANC <sup>®</sup> , SYLOSIV <sup>®</sup> DARACLAR <sup>®</sup> , TRISYL <sup>®</sup>
Industrial	Reinforcing agents for rubber and tires Inorganic binders and surface smoothening aids for precision investment casting and refractory applications Adsorbents for dual pane windows and industrial applications, desiccant granules, beads, powders and bags and polyurethane moisture scavengers Chemical metal polishing aids and formulations for chemical mechanical planarization/electronics applications Polymer additives for producers and processors of plastic products that prevent layers of polymer film from sticking together, improve dispersal of pigments and ease removal from molds Process adsorbents used in petrochemical and natural gas processes for such applications as ethylene-cracked-gas-drying, natural gas drying and sulfur removal	PERKASIL <sup>®</sup> LUDOX <sup>®</sup> PHONOSORB <sup>®</sup> , SYLOBEAD <sup>®</sup> , SYLOSIV <sup>®</sup> , CRYOSIV <sup>®</sup> , SAFETYSORB <sup>®</sup> POLIEDGE <sup>®</sup> SYLOBLOC <sup>®</sup> SYLOBEAD <sup>®</sup>
Discovery Sciences	Pharmaceutical excipients and intermediates Fine chemical intermediates	SYLOID <sup>®</sup> FP SYNTHETECH <sup>™</sup>

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Preparative scale purification products including media,  
column hardware, and equipment

Flash chromatography systems and consumables

Analytical scale high performance liquid chromatography  
(HPLC) columns and detectors

CO<sub>2</sub> absorbents for anesthesiology and re-breathing  
applications

DAVISIL<sup>®</sup>, VYDAC<sup>®</sup>,  
MODCOL<sup>®</sup>, SPRING<sup>®</sup>,  
MULTIPACKER<sup>®</sup>  
REVELERIS<sup>®</sup>, REVEALX<sup>™</sup>,  
GRACERESOLV<sup>™</sup>  
VISIONHT<sup>®</sup>, VYDAC<sup>®</sup>,  
ALLTECH<sup>®</sup>, ALLTIMA<sup>®</sup>  
SODASORB<sup>®</sup>

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Our silica-based engineered materials are integrated into our customers' manufacturing processes and, when combined with our technical support, increase the efficiency and performance of their products. By working closely with our customers, we help them to respond quickly to the changing needs of brand owners and consumers. We focus on high-growth segments and seek to develop and introduce new products that add additional value to the current and future needs of our customers. For example, our customers have incorporated our products into higher resolution print media, less abrasive high cleaning toothpastes and technologies that are friendly to the environment such as water-based and VOC-compliant coatings, green tires with lower roll resistance and environmentally friendly anticorrosion alternatives. Our Discovery Sciences products are used in a wide range of applications, including drug discovery and purification for the healthcare, pharmaceutical and biotechnology industries, environmental analysis, forensics, petrochemical analysis and the manufacture of food, cosmetics, vitamins and biofuels. We also market chromatography consumables and analytical and preparative columns packed with our specialty media. We can modify the base silica and surface chemistry for analytical, preparative and process-scale customers in order to enhance our product performance for their unique applications.

Our silica-based engineered materials sales are global. There are many manufacturers of engineered materials that market their products on a global basis including Evonik, PQ/INEOS, and UOP. Competition is generally based on product performance, technical service and reliability, price, and additional value-added features to address the needs of our customers, end-users and brand owners. Our Discovery Sciences products compete on the basis of distinct technology, product quality, and customer support. Competition for these products is highly fragmented with a large number of companies that sell their products on a global and regional basis, although a number of companies, such as Waters Corporation, Agilent Technologies and Thermo-Fisher, have a substantial global position and a relatively large installed customer base.

## Grace Materials Technologies—Packaging Products

We are a global leader in can and closure sealants that, along with our specialized can and closure coatings, we supply to the packaging industry. Our product portfolio includes:

## Products

Can sealants for rigid containers that ensure a hermetic seal between the lid and the body of beverage, food, aerosol and other cans

## Key Brands

DAREX®

Sealants for metal and plastic bottle closures that are used on pry-off and twist-off metal crowns, as well as roll-on pilfer-proof and plastic closures to seal and enhance the shelf life of food and beverages in glass and plastic bottles and jars

DAREX®, DARAFORM®, DARASEAL®, DARABLEND®, SINCERA®, CELOX®

Coatings for metal packaging that are used in the manufacture of cans and closures to protect the metal against corrosion, protect the contents against the influences of metal, ensure proper adhesion of sealing compounds to metal surfaces, and provide base coats for inks and for decorative purposes

DAREX®, APPERTA®, SISTIAGA®

Our packaging products are designed to address major industry trends such as lighter weight packaging, lower energy consumption, personal convenience, and highly individualized packaging. Our growth is driven by innovation of higher performing products, continuous development of new applications, increasing demand for sustainability and rising disposable income in emerging regions. We seek to capitalize upon our technical customer service, global infrastructure and expertise in global regulatory compliance (including food law compliance) to enhance our growth, especially in emerging regions. We also seek to develop and introduce new products that add additional value to the current and future needs of our customers, such as our introduction of products with oxygen scavenging functionality. Our packaging products sales are global. There are many manufacturers of packaging products that market their products on a global basis including Altana, Akzo Nobel, PPG and Valspar. Competition is generally based on product performance, technical service and reliability, price and additional value-added features to address the needs of our customers, end-users and brand owners.

As part of the Separation, the packaging products product group became part of GCP.



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Grace Materials Technologies—Manufacturing, Marketing and Raw Materials

Our Materials Technologies products are manufactured by a network of globally integrated plants that are positioned to service our customers regionally. Our packaging products are manufactured in both large facilities to permit economies of scale and a network of smaller operations that enable customization to local market conditions. Our integrated planning organization is responsible for the effective utilization of our manufacturing capabilities.

We use country-based direct sales forces that are dedicated to each product line and backed by application-specific technical customer service teams to market our Materials Technologies products. Our sales force seeks to develop long-term relationships with our customers and focuses on consultative sales, technical support and key account growth programs. To ensure full geographic coverage, our direct sales organization is further supplemented by a network of distributors and agents.

Seasonality does not have a significant overall effect on our Materials Technologies operating segment; however, our packaging products and some of our construction-related products such as insulated glass desiccants are affected by seasonal and weather-related factors including the consumption of beverages, the size and quality of food crops and the level of construction activity. These impacts are mitigated by the global scope of our business.

The principal raw materials for Materials Technologies products include resins, sodium silicate, solvents, latexes (including certain food-grade raw materials), polyolefin, and rubber. Multiple suppliers are generally available for each of these materials; however, some of our raw materials may be provided by single sources of supply. We seek to mitigate the risk of using single source suppliers by identifying and qualifying alternative suppliers or, for unique materials, by using alternative formulations from other suppliers or by passing price increases on to customers. In some instances, we produce our own raw materials and intermediates.

Prices for many of our raw materials, including specialty and commodity materials such as latex, rubbers, pigments, resins and solvents, have been volatile in recent years. In response to increases in raw material costs, we generally take actions intended to mitigate the effect of higher costs including increasing prices, developing alternative formulations for our products, increasing productivity, and hedging purchases of certain raw materials.

As in many chemical businesses, we consume significant quantities of natural gas in the production of Materials Technologies products. World events and other economic factors have caused volatility in the price of natural gas. Increases or decreases in the cost of natural gas and raw materials can have a significant impact on our operating margins. We have implemented a risk management program under which we hedge natural gas in a way that is intended to provide protection against price volatility. See also disclosure in this Report in Item 7A (Quantitative and Qualitative Disclosures about Market Risk).

Since we manufacture a substantial portion of our packaging products in emerging regions using raw materials from suppliers in the U.S., Europe and other advanced economies, changes in the values of the currencies of these emerging regions versus the U.S. dollar and the euro may adversely affect our raw material costs.

Grace Construction Products Operating Segment

Construction Products produces and sells specialty construction chemicals and specialty building materials. We are a supplier to the construction industry and the most important uses of our products involve large commercial, infrastructure, and multi-family residential projects. We also supply roofing underlayments for single-family residential construction, repair and restoration.

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The following table sets forth Construction Products sales of similar products as a percentage of Grace total revenue.

(In millions)	2015		2014		2013			
	Sales	% of Grace Revenue	Sales	% of Grace Revenue	Sales	% of Grace Revenue		
Specialty Construction Chemicals	\$665.4	21.8	% \$688.7	21.2	% \$650.4	21.3	%	
Specialty Building Materials	427.0	14.0	% 416.9	12.9	% 407.8	13.3	%	
Total Construction Products Revenue	\$1,092.4	35.8	% \$1,105.6	34.1	% \$1,058.2	34.6	%	

The following table sets forth Construction Products sales by region as a percentage of Construction Products total revenue.

(In millions)	2015		2014		2013			
	Sales	% of Construction Products Revenue	Sales	% of Construction Products Revenue	Sales	% of Construction Products Revenue		
North America	\$471.5	43.2	% \$436.0	39.4	% \$423.2	39.9	%	
Europe Middle East Africa	235.9	21.6	% 270.7	24.5	% 260.9	24.7	%	
Asia Pacific	251.4	23.0	% 257.5	23.3	% 233.7	22.1	%	
Latin America	133.6	12.2	% 141.4	12.8	% 140.4	13.3	%	
Total Construction Products Revenue	\$1,092.4	100.0	% \$1,105.6	100.0	% \$1,058.2	100.0	%	

#### Grace Construction Products—Specialty Construction Chemicals

We supply concrete admixtures and fibers to concrete producers that are used to improve the rheology, workability, quality, durability and other engineering properties of concrete, mortar, masonry and other cementitious construction materials. We also supply cement additives to cement manufactures that are used to improve energy efficiency in cement processing, enhance the characteristics of finished cement and improve ease of use.

Portland cement serves as the binder for the great majority of the concrete produced globally. National standards usually dictate the compressive strength and other properties that must be met by cement. Our additives are used to reduce the energy required to mill cement to the desired fineness and to improve the handling characteristics of the powdered material. Our additives are also used to adjust the performance of portland cement, permitting our customers to optimize production economics by using a broader selection of raw materials and allowing alternative processing conditions. Increasingly, cement manufacturers seek to reduce the environmental impact of their manufacturing processes. By providing greater flexibility in raw materials, our additives enable our customers to achieve environmental improvements such as a reduction in carbon dioxide emissions.

Our concrete admixtures allow concrete producers to optimize the use of a limited selection of locally-sourced raw materials (cement and aggregates). Our products are based on a set of core technologies that are formulated regionally into products tailored to specific local materials and end-use requirements. For example, our MIRA<sup>®</sup> admixture allows concrete to be produced with a lower amount of water, which improves the compressive strength and the long-term durability of the concrete. Our ADVA<sup>®</sup> admixture is used to make flowable "self compacting concrete" which is popular in precast concrete manufacturing where the rapid filling of large molds is a major driver of economics. Our ECLIPSE<sup>®</sup> admixture is used to minimize the formation of shrinkage cracks in critical applications, such as bridge decks. Our STRUX<sup>®</sup> polymeric fibers are used to replace steel reinforcement near the surface of concrete that will be exposed to corrosive de-icing salts. These products allow our customers to differentiate their concrete products for a wide variety of applications.

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Our products include:

Products	Uses	Customers	Key Brands
Concrete admixtures	Concrete admixtures and polymeric fibers used to reduce the production and in-place costs of concrete, increase the performance of concrete and improve the life cycle cost of structures	Ready-mix and precast concrete producers, engineers and specifiers	WRDA <sup>®</sup> , ADVA <sup>®</sup> , STRUX <sup>®</sup> , MIRA <sup>®</sup> , POLARSET <sup>®</sup> , ECLIPSE <sup>®</sup>
Additives for cement processing	Cement additives added to the milling stage of the cement manufacturing process to improve plant energy efficiency, enhance the performance of the finished cement and help our customers meet environmental regulations and reduce their CO <sub>2</sub> footprints	Cement manufacturers	CBA <sup>®</sup> , ESE <sup>®</sup> , SYNCHRO <sup>®</sup> , HEA2 <sup>®</sup> , TDA <sup>®</sup>
Admixtures for masonry concrete	Products for masonry concrete used by block and paver producers for process efficiency and to improve the appearance, durability and water resistance of finished concrete masonry units	Masonry block manufacturers	DRY-BLOCK <sup>®</sup> , OPTEC <sup>®</sup> , QUANTEC <sup>®</sup>
Process control solutions for ready-mix concrete	Services to provide concrete producers quality control and operational efficiencies using sensors and other technologies	Ready-mix concrete manufacturers	VERIFI <sup>®</sup>

Our specialty construction chemicals product sales are global. We compete globally with several large international construction materials suppliers, and regionally and locally with numerous smaller competitors. Competition for our products is based on product performance, technical support and service, brand name recognition in the construction industry and price. Our major global competitors are BASF and Sika.

Grace Construction Products—Specialty Building Materials

We supply building materials used in both new construction and renovation/repair projects. Our products protect buildings and infrastructure from water, vapor, air and fire. They also reduce energy usage and improve long-term durability. Our products include waterproofing membranes and roofing underlayments for commercial and residential buildings, chemical grouts for use in waterproofing and soil stabilization applications, air and vapor barriers, cementitious grouts, passive fire protection, and products used to create decorative/architectural concrete.

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Our products include:

Products	Uses	Customers	Key Brands
Structural waterproofing, vapor and air barrier systems	Structural waterproofing and air barrier systems to prevent water, vapor and/or air infiltration in commercial structures, including self-adhered sheet and liquid membranes, joint sealing materials, drainage composites and waterstops.	Architects and structural engineers; specialty waterproofing and general contractors; specialty waterproofing distributors	BITUTHENE®, PREPRUFE®, ADPRUFE®, HYDRODUCT®, PERM-A-BARRIER®, ADCOR®, SILCOR®
Residential building materials	Specialty roofing membranes and flexible flashings for windows, doors, decks and detail areas, including fully adhered roofing underlayments, synthetic underlayments and self-adhered flashing.	Roofing contractors, home builders and remodelers; specialty roofing distributors, lumberyards and home centers; homeowners; architects and specifiers	ICE & WATER SHIELD®, TRI-FLEX®, VYCOR®
Chemical grouts	Products for repair and remediation in waterproofing applications and soil stabilization	Contractors; specialty distributors; municipalities; and other owners of large infrastructure facilities	DE NEEF® HYDRO ACTIVE® Cut, DE NEEF® AC-400, DE NEEF® SWELLSEAL® WA, DE NEEF® MC-500™
Fire protection	Fire protection products spray-applied to the structural steel frame, encasing and insulating the steel and protecting the building in the event of fire.	Local contractors and specialty subcontractors and applicators; building materials distributors; industrial manufacturers; architects and structural engineers	MONOKOTE®
Specialty grouts and mortars	Cementitious grouts and mortars used for under filling and gap filling	Specialty contractors engaged in the repair of concrete, installation of new precast concrete elements and infrastructure repair	BETEC®
Products for architectural concrete	Products for architectural concrete include surface retarders, coatings, pigments and release agents used by concrete producers and contractors to enhance the surface appearance and aesthetics of concrete	Precast concrete producers and architects	PIERI®

Our specialty building materials product sales are global. Global architectural and contracting firms as well as local specifiers, engineers and contractors influence the buying decisions for our products. We compete globally with several large international construction materials suppliers, and regionally and locally with numerous smaller competitors. Competition for our products is based on product performance, technical support and service, brand name recognition in the construction industry and price. Our major global competitor is Sika.

Grace Construction Products—Manufacturing, Marketing and Raw Materials

In view of our diversity of customers and customer requirements, and because specialty construction chemicals and specialty building materials require intensive sales and customer service efforts, we maintain specialized direct sales and technical teams to support sales in over 100 countries. Our specialized teams sell products under global contracts,

under U.S. or regional contracts, and on a job-by-job basis. They have developed deep segment knowledge that is important to our customers. These teams work with architects and engineers to have our products specified for construction projects in their local areas and internationally. We also use distributors in both U.S. and non-U.S. markets.

Our research and development and marketing organizations utilize a growth and innovation process to develop and continually improve our products to meet the changing needs of our customers. In addition to new product introductions, we have grown in emerging regions where increasing construction activity, improvement in

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building codes, and sophistication of construction practices have increased demand for our products. We work with code-writing bodies in emerging regions to create standards that increase the sophistication and quality of construction. We have expanded our commercial and manufacturing capabilities in emerging regions to serve this demand.

We manufacture our products in our own plants or we have third parties toll manufacture to our specifications. The low capital needed for our plants and third-party manufacturers gives us flexibility in the manner in which we service our customers and the range of technologies we can employ. Several of the plants ship internationally to leverage capacity, but most are intended to serve local markets.

The key raw materials we use in our products are obtained from a variety of suppliers, including basic chemical and petrochemical producers. Many of our raw materials are organic chemicals derived from olefins. We also make significant purchases of inorganic materials such as gypsum, as well as specialty materials including specialty films, papers and fibers. In most instances, our raw materials are sourced locally to the manufacturing facility and are available from multiple sources. Global supply and demand factors, changes in currency exchange rates, and petroleum prices can significantly impact the price and availability of our key raw materials.

Since we manufacture a portion of our construction products in emerging regions using raw materials from suppliers in the U.S., Europe and other advanced economies, changes in the values of the currencies of these emerging regions versus the U.S. dollar and the euro may adversely affect our raw material costs.

The construction business is cyclical, in response to economic conditions, as well as seasonal, driven by weather conditions. Demand for our products is primarily driven by global non-residential construction activity and U.S. residential construction activity. We seek to increase profitability and minimize the impact of cyclical downturns in regional economies by introducing technically advanced high-performance products and expanding geographically. As part of the Separation, the Construction Products operating segment became part of GCP.

### FINANCIAL INFORMATION ABOUT INDUSTRY SEGMENTS AND GEOGRAPHIC AREAS

Disclosure of financial information about industry segments and geographic areas for 2015, 2014 and 2013 is provided in this Report in Item 8 (Financial Statements and Supplementary Data) in the Financial Supplement under Note 17 (Operating Segment Information) to the Consolidated Financial Statements, which disclosure is incorporated herein by reference. Disclosure of risks attendant to our foreign operations is provided in this Report in Item 1A (Risk Factors).

### BACKLOG OF ORDERS

While at any given time there may be some backlog of orders, this backlog is not material in respect to our total annual sales, nor are the changes, from time to time, significant.

### INTELLECTUAL PROPERTY; RESEARCH ACTIVITIES

Competition in the specialty chemicals and specialty materials industry is often based on technological superiority and innovation. Our ability to maintain our margins and effectively compete with other suppliers depends on our ability to introduce new products based on innovative technology, as well as our ability to obtain patent or other intellectual property protection. Our research and development programs emphasize development of new products and processes, improvement of existing products and processes and application of existing products and processes to new industries and uses. Most research activity is conducted in North America and Europe.

We routinely file and obtain patents in a number of countries around the world that are significant to our businesses in order to protect our investments in innovation, research, and product development. Numerous patents and patent applications protect our products, formulations, manufacturing processes, equipment, and improvements. We also benefit from the use of trade secret information, including know-how and other proprietary information relating to many of our products and processing technologies. There can be no assurance, however, that our patents, patent applications and precautions to protect trade secrets and know-how will provide sufficient protection for our intellectual property. In addition, other companies may independently develop technology that could replicate, and thus diminish the advantage provided by, our trade secrets. Other companies may also



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develop alternative technology or design-arounds that could circumvent our patents or may acquire patent rights applicable to our business which might interpose a limitation on expansion of the business in the future. Research and development expenses were approximately \$70 million, \$80 million, and \$65 million in 2015, 2014, and 2013, respectively. These amounts include depreciation and amortization expenses related to research and development and expenses incurred in funding external research projects. The amount of research and development expenses relating to government- and customer-sponsored projects (rather than projects that we sponsor) was not material during these periods. Grace also conducts research and development activities with our ART joint venture, which are not included in the amounts above.

**ENVIRONMENT, HEALTH AND SAFETY MATTERS**

We are subject, along with other manufacturers of specialty chemicals, to stringent regulations under numerous U.S. federal, state and local and foreign environment, health and safety laws and regulations relating to the generation, storage, handling, discharge, disposition and stewardship of chemicals and other materials. Environmental laws require that certain responsible parties, as defined in the relevant statute, fund remediation actions regardless of legality of original disposal or ownership of a disposal site. We are involved in various response actions to address the presence of chemical substances as required by U.S. federal, state and local and foreign laws.

We have expended substantial funds to comply with environmental laws and regulations and expect to continue to do so in the future. The following table sets forth our expenditures in the past three years, and our estimated expenditures in 2016 and 2017, for (i) the operation and maintenance of manufacturing facilities and the disposal of wastes; (ii) capital expenditures for environmental control facilities; and (iii) site remediation:

Year (In millions)	Operation of Facilities and Waste Disposal	Capital Expenditures	Site Remediation	
2013	\$59	\$17	\$14	
2014	59	25	12	
2015	52	19	13	
2016(1)	51	15	19	(2)
2017(1)	50	11	17	(2)

(1) Amounts reflect estimates based on activities following the Separation.

Amounts are based on environmental response matters for which sufficient information is available to estimate (2) costs. We do not have sufficient information to estimate all of Grace's possible future environmental response costs. As we receive new information, our estimate of such costs may change materially.

Additional information about our environmental remediation activities is provided in this Report in Item 8 (Financial Statements and Supplementary Data) in the Financial Supplement under Note 10 (Commitments and Contingent Liabilities) to the Consolidated Financial Statements.

We continuously seek to improve our environment, health and safety performance. To the extent applicable, we extend the basic elements of the American Chemistry Council's RESPONSIBLE CARE® program to all our locations worldwide, embracing specific performance objectives in the key areas of management systems, product stewardship, employee health and safety, community awareness and emergency response, distribution, process safety and pollution prevention. We have implemented key elements of the RESPONSIBLE CARE® Security Code for our operations and systems. We have completed a review of our existing security (including cyber-security) vulnerability and have taken actions to enhance our security systems and protect our assets. We have undertaken certain activities to comply with the Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards, including identifying facilities subject to the standards, conducting security vulnerability assessments and developing site security plans, as necessary.

**EMPLOYEE RELATIONS**

As of December 31, 2015, we employed approximately 6,700 persons, of whom approximately 2,700 were employed in the United States. Of our total employees, approximately 4,800 were salaried and 1,900 were hourly.



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As of February 15, 2016, after the Separation, we employed approximately 3,800 persons, of whom approximately 2,000 were employed in the United States. Of our total employees, approximately 2,400 were salaried and 1,400 were hourly.

As of February 15, 2016, approximately 660 of our manufacturing employees in the United States are represented for collective bargaining purposes by 4 different local collective bargaining groups. We have operated without a labor work stoppage for more than 10 years.

As of February 15, 2016, we have works councils representing the majority of our European sites serving approximately 1,100 employees.

### AVAILABILITY OF REPORTS AND OTHER DOCUMENTS

We maintain an Internet website at [www.grace.com](http://www.grace.com). Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports, filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, are available, free of charge, on our website as soon as reasonably practicable after such reports are electronically filed with, or furnished to, the Securities and Exchange Commission, or SEC. These reports may be accessed through our website's investor information page. In addition, the charters for the Audit, Compensation, Nominating and Governance, and Corporate Responsibility Committees of our Board of Directors, our corporate governance guidelines and code of ethics are available, free of charge, on our website at [www.grace.com/en-us/corporate-leadership/pages/governance.aspx](http://www.grace.com/en-us/corporate-leadership/pages/governance.aspx). Printed copies of the charters, governance guidelines and code of ethics may be obtained free of charge by contacting Grace Shareholder Services at 410-531-4167.

The information on our website is not, and shall not be deemed to be, a part of this report or incorporated into any other filings we make with the SEC.

Our Chief Executive Officer and Chief Financial Officer have submitted certifications to the SEC pursuant to the Sarbanes Oxley Act of 2002 as exhibits to this Report.

### EXECUTIVE OFFICERS

See "Executive Officers of the Registrant" following Part I, Item 4 of this Report for information about our Executive Officers.

### Item 1A. RISK FACTORS

This Report, including the Financial Supplement, contains, and our other public communications may contain, forward-looking statements; that is, information related to future, not past, events. Such statements generally include the words "believes," "plans," "intends," "targets," "will," "expects," "suggests," "anticipates," "outlook," "continues" or similar expressions. Forward-looking statements include, without limitation, all statements regarding: expected financial positions; results of operations; cash flows; financing plans; business strategy; budgets; capital and other expenditures; competitive positions; growth opportunities for existing products; benefits from new technology and cost reduction initiatives; plans and objectives; and markets for securities. For these statements, we claim the protection of the safe harbor for forward-looking statements contained in Section 27A of the Securities Act and Section 21E of the Exchange Act. Like other businesses, we are subject to risks and uncertainties that could cause our actual results to differ materially from our projections or that could cause other forward-looking statements to prove incorrect. Factors that could cause actual events to materially differ from those contained in the forward-looking statements include those factors set forth below and elsewhere in this Annual Report on Form 10-K. Our reported results should not be considered as an indication of our future performance. Readers are cautioned not to place undue reliance on our projections and forward-looking statements, which speak only as of the date thereof. We undertake no obligation to publicly release any revisions to the projections and forward-looking statements contained in this document, or to update them to reflect events or circumstances occurring after the date of this document. In addition to general economic, business and market conditions, we are subject to other risks and uncertainties, including, without limitation, the following:

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### Risks Related to the Business

The global scope of our operations subjects us to the risks of doing business in foreign countries, which could adversely affect our business, financial condition and results of operations.

We operate our business on a global scale with approximately 69% of our 2015 sales outside the United States. We conduct business in over 40 countries and in more than 50 currencies. We currently have many production facilities, research and development facilities and administrative and sales offices located outside North America, including facilities and offices located in Europe, the Middle East, Africa, Asia and Latin America. We expect non-U.S. sales to continue to represent a substantial majority of our revenue. Accordingly, our business is subject to risks related to the differing legal, political, social and regulatory requirements and economic conditions of many jurisdictions. Risks inherent in non-U.S. operations include the following:

- commercial agreements may be more difficult to enforce and receivables more difficult to collect;
- intellectual property rights may be more difficult to enforce;
- increased shipping costs, disruptions in shipping or reduced availability of freight transportation;
- we may have difficulty transferring our profits or capital from foreign operations to other countries where such funds could be more profitably deployed;
- we may experience unexpected adverse changes in export duties, quotas and tariffs and difficulties in obtaining export licenses;
- some foreign countries have adopted, and others may impose, additional withholding taxes or adopt other restrictions on foreign trade or investment, including currency exchange and capital controls;
- foreign governments may nationalize private enterprises;
- our business and profitability in a particular country could be affected by political or economic repercussions on a domestic, country specific or global level from terrorist activities and the response to such activities;
  - we may be affected by unexpected adverse changes in foreign laws or regulatory requirements;
  - and
- unanticipated events, such as geopolitical changes, could adversely affect our foreign operations.

Our success as a global business will depend, in part, upon our ability to succeed in differing legal, regulatory, economic, social and political conditions by developing, implementing and maintaining policies and strategies that are effective in each location where we do business.

We are exposed to currency exchange rate changes that impact our profitability.

We are exposed to currency exchange rate risk through our U.S. and non-U.S. operations. Changes in currency exchange rates may materially affect our operating results. For example, changes in currency exchange rates may affect the relative prices at which we and our competitors sell products in the same region and the cost of materials used in our operations. A substantial portion of our net sales and assets are denominated in currencies other than the U.S. dollar. When the U.S. dollar strengthens against other currencies, at a constant level of business, our reported sales, earnings, assets and liabilities are reduced because the non-U.S. currencies translate into fewer U.S. dollars. In addition, since we manufacture a substantial portion of our construction products and packaging products in emerging regions using raw materials from suppliers in the U.S., Europe and other advanced economies, changes in the values of the currencies of these emerging regions versus the U.S. dollar and the euro may adversely affect our raw material costs.

We incur a currency transaction risk whenever one of our operating subsidiaries enters into either a purchase or a sales transaction using a currency different from the operating subsidiary's functional currency. Given the volatility of exchange rates, we may not be able to manage our currency transaction risks effectively, or volatility in currency exchange rates may expose our financial condition or results of operations to a significant additional risk.

Prices for certain raw materials are volatile and can have a significant effect on our manufacturing and supply chain strategies as we seek to maximize our profitability. If we are unable to successfully adjust our strategies in response to volatile raw materials and energy prices, such volatility could have a negative effect on our earnings in future periods. We use petroleum-based materials, metals, natural gas and other materials in the manufacture of our products. Prices for these materials are volatile and can have a significant effect on our pricing, sales, manufacturing and supply chain

strategies as we seek to maximize our profitability. Our ability to successfully adjust strategies in response to volatile raw material and energy prices is a significant factor in maintaining or improving our profitability. If we are unable to successfully adjust our strategies in response to volatile prices, such volatility could have a negative effect on our sales and earnings in future periods.

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A substantial portion of our raw materials are commodities whose prices fluctuate as market supply and demand fundamentals change.

We attempt to manage exposure to price volatility of major commodities through:

• long-term supply contracts;

• contracts with customers that permit adjustments for changes in prices of commodity-based materials and energy;

• forward buying programs that layer in our expected requirements systematically over time; and

• limited use of financial instruments.

Although we regularly assess our exposure to raw material price volatility, we cannot always predict the prospects of volatility and we cannot always cover the risk in a cost effective manner.

We have a policy of maintaining, when available, multiple sources of supply for raw materials. However, certain of our raw materials may be provided by single sources of supply. We may not be able to obtain sufficient raw materials due to unforeseen developments that would cause an interruption in supply. Even if we have multiple sources of supply for raw materials, these sources may not make up for the loss of a major supplier.

The length and depth of product and industry business cycles in our segments may result in periods of reduced sales, earnings and cash flows, and portions of our business are subject to seasonality.

Sales of FCC catalysts tend to be lower in the first calendar quarter prior to the shift in production by refineries from home heating oil for the winter season to gasoline production for the summer season. Fixed-bed hydroprocessing catalysts are consumed over a period of years and are replaced in bulk in an irregular pattern. Since our customers periodically shut down their refining processes to replace fixed-bed hydroprocessing catalysts in bulk, our hydroprocessing catalyst sales to any customer can vary substantially over the course of a year and between years based on that customer's catalyst replacement schedule.

If we are not able to continue our technological innovation and successful introduction of new products, our customers may turn to other suppliers to meet their requirements.

The specialty chemicals industry and the end-use markets into which we sell our products experience ongoing technological change and product improvements. A key element of our business strategy is to invest in research and development activities with the goal of introducing new high-performance, technically differentiated products. We may not be successful in developing new technology and products that successfully compete with products introduced by our competitors, and our customers may not accept, or may have lower demand for, our new products. If we fail to keep pace with evolving technological innovations or fail to improve our products in response to our customers' needs, then our business, financial condition and results of operations could be adversely affected as a result of reduced sales of our products.

We spend large amounts of money for environmental compliance in connection with our current and former operations.

As a manufacturer of specialty chemicals and specialty materials, we are subject to stringent regulations under numerous U.S. federal, state, local and foreign environmental, health and safety laws and regulations relating to the generation, storage, handling, discharge, disposition and stewardship of chemicals and other materials. We have expended substantial funds to comply with such laws and regulations and have established a policy to minimize our emissions to the environment. Nevertheless, legislative, regulatory and economic uncertainties (including existing and potential laws and regulations pertaining to climate change) make it difficult for us to project future spending for these purposes and if there is an acceleration in new regulatory requirements, we may be required to expend substantial additional funds to remain in compliance.

We are subject to environmental clean-up costs, fines, penalties and damage claims that have been and continue to be costly.

We are subject to lawsuits and regulatory actions, in connection with current and former operations (including some divested businesses and off-site disposal facilities), that seek clean-up or other remedies. We are also subject to similar risks outside of the U.S.

We operated a vermiculite mine in Libby, Montana, until 1990. Some of the vermiculite ore that was mined at the Libby mine contained naturally occurring asbestos. We are cooperating with EPA to investigate the Libby vermiculite

mine and the surrounding area and determine a final remedy. During 2010, EPA began reinvestigating

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up to 105 facilities where vermiculite concentrate from the Libby mine may have been used, stored or processed. We are cooperating with EPA on this reinvestigation including remediation at several facilities. It is probable that EPA will request additional remediation at other facilities. We do not have sufficient information to identify other sites that might require additional remediation or to estimate the costs. We will evaluate our estimated remediation liability for other sites as we receive additional information from EPA.

We have established accounting accruals for all environmental matters for which a loss is considered to be probable and sufficient information is available to reasonably estimate the loss. We do not have sufficient information to accrue for all of our environmental risks. These accruals do not include the cost to remediate the Libby vermiculite mine or costs related to any additional EPA claims, whether resulting from EPA's reinvestigation of vermiculite facilities or otherwise, which may be material but are not currently estimable. Due to these vermiculite-related matters, it is probable that our ultimate liability for environmental matters will exceed our current estimates by material amounts. We require liquidity to service our debt and to fund operations, capital expenditures, research and development efforts, acquisitions and other corporate expenses.

Our ability to fund operations, capital expenditures, research and development efforts, acquisitions and other corporate expenses, including repayment of our debt, depends on our ability to generate cash through future operating performance, which is subject to economic, financial, competitive, legislative, regulatory and other factors. Many of these factors are beyond our control. We cannot be certain that our businesses will generate sufficient cash or that future borrowings will be available to us in amounts sufficient to fund all of our requirements. If we are unable to generate sufficient cash to fund all of our requirements, we may need to pursue one or more alternatives, such as to:

- reduce or delay planned capital expenditures, research and development spending or acquisitions;
- obtain additional financing or restructure or refinance all or a portion of our debt on or before maturity;
- sell assets or businesses; and
- sell additional equity.

Any reduction or delay in planned capital expenditures, research and development spending or acquisitions or sale of assets or businesses may materially and adversely affect our future revenue prospects. In addition, we cannot be certain that we will be able to raise additional equity capital, restructure or refinance any of our debt or obtain additional financing on commercially reasonable terms or at all.

Our indebtedness may materially affect our business, including our ability to fulfill our obligations, react to changes in our business and incur additional debt to fund future needs.

We have a substantial amount of debt. As of December 31, 2015, we had \$1,033.4 million of unsecured indebtedness outstanding and \$1,195.5 million of secured indebtedness outstanding. Our indebtedness may have material effects on our business, including to:

- require us to dedicate a substantial portion of our cash flow to debt payments, thereby reducing funds available for working capital, capital expenditures, acquisitions, research and development, distributions to stockholders and other purposes;
- restrict us from making strategic acquisitions or taking advantage of favorable business opportunities;
- limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we operate;
- increase our vulnerability to adverse economic, credit and industry conditions, including recessions;
- make it more difficult for us to satisfy our debt service and other obligations;
- place us at a competitive disadvantage compared to our competitors that have relatively less debt; and
- limit our ability to borrow additional funds, or to dispose of assets to raise funds, if needed, for working capital, capital expenditures, acquisitions, research and development and other purposes.

If we incur additional debt, the risks related to our indebtedness may intensify.

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Restrictions imposed by agreements governing our indebtedness may limit our ability to operate our business, finance our future operations or capital needs, or engage in other business activities. If we fail to comply with certain restrictions under these agreements, our debt could be accelerated and we may not have sufficient cash to pay our accelerated debt.

The agreements governing our indebtedness contain various covenants that limit, among other things, our ability, and the ability of certain of our subsidiaries, to:

- incur certain liens;
- enter into sale and leaseback transactions; and
- consolidate, merge or sell all or substantially all of our assets or the assets of our guarantors.

As a result of these covenants, we will be limited in the manner in which we can conduct our business, and may be unable to engage in favorable business activities or finance future operations or capital needs. Accordingly, these restrictions may limit our flexibility to operate our business. A failure to comply with the restrictions contained in these agreements, including maintaining the financial ratios required by our credit facilities, could lead to an event of default which could result in an acceleration of the indebtedness. We cannot assure you that our future operating results will be sufficient to enable us to comply with the covenants contained in the agreements governing our indebtedness or to remedy any such default. In addition, in the event of an acceleration, we may not have or be able to obtain sufficient funds to make any accelerated payments.

Our indebtedness exposes us to interest expense increases if interest rates increase.

As of December 31, 2015, \$943.6 million, or approximately 42%, of our borrowings were at variable interest rates and expose us to interest rate risk. If interest rates increase, our debt service obligations on the variable rate indebtedness would increase even though the amount borrowed would remain the same, and our net income would decrease. An increase of 100 basis points in the interest rates payable on our variable rate indebtedness would increase our annual estimated debt-service requirements by \$9.4 million, assuming our consolidated variable interest rate indebtedness outstanding as of December 31, 2015, remains the same.

We have unfunded and underfunded pension plan liabilities. We will require future operating cash flow to fund these liabilities. We have no assurance that we will generate sufficient cash to satisfy these obligations.

We maintain U.S. and non-U.S. defined benefit pension plans covering current and former employees who meet or met age and service requirements. Our net pension liability and cost is materially affected by the discount rate used to measure pension obligations, the longevity and actuarial profile of our workforce, the level of plan assets available to fund those obligations and the actual and expected long-term rate of return on plan assets. Significant changes in investment performance or a change in the portfolio mix of invested assets can result in corresponding increases and decreases in the valuation of plan assets or in a change in the expected rate of return on plan assets. Assets available to fund the pension benefit obligation of the U.S. advance-funded pension plans at December 31, 2015, were approximately \$1,148 million, or approximately \$109 million less than the measured pension benefit obligation on a U.S. GAAP basis. In addition, any changes in the discount rate could result in a significant increase or decrease in the valuation of pension obligations, affecting the reported funded status of our pension plans as well as the net periodic pension cost in the following years. Similarly, changes in the expected return on plan assets can result in significant changes in the net periodic pension cost in the following years.

Our obligation to make payments to the PD Trust in respect of asbestos PD Claims (other than ZAI PD Claims) is not capped and we may be obligated to make additional payments.

Under the Joint Plan, an asbestos property damage trust has been established and funded under Section 524(g) of the Bankruptcy Code. The order of the Bankruptcy Court confirming the Joint Plan contains a channeling injunction which provides that all pending and future asbestos-related property damage claims and demands, PD Claims, can only be brought against the PD Trust. The PD Trust contains two accounts. One of these accounts, the PD Account, is funded solely in respect of PD Claims other than those PD Claims related to our former ZAI attic insulation product.

Unresolved and future non-ZAI PD Claims are to be litigated pursuant to procedures to be approved by the Bankruptcy Court and, to the extent such PD claims are determined to be allowed claims, are to be paid in cash by the PD Trust. We are obligated to make a payment to the PD Trust every six months in the amount of any non-ZAI PD

Claims allowed during the preceding six months plus interest (if any) and the amount of PD Trust expenses for the preceding six months (the "PD Obligation"). The aggregate amount we are required to pay under the PD Obligation is not capped so we may have to make additional payments to the PD Account in

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respect of the PD Obligation. We are also obligated to make a payment of \$30 million to the PD Trust on February 3, 2017, and up to 10 contingent deferred payments to the PD Trust of \$8 million during the 20-year period beginning February 3, 2019, in respect of ZAI PD Claims in the event the ZAI PD Account's assets fall below \$10 million in the preceding year. We have accrued liabilities for probable PD Claims but have not accrued any liability for the contingent ZAI PD payments as we do not believe they are probable.

Our ability to use tax deductions to reduce future tax payments may be limited if there is a change in ownership of Grace or if Grace does not generate sufficient U.S. taxable income.

Our ability to use future tax deductions, including net operating losses, is dependent on our ability to generate sufficient future taxable income in the U.S. In addition, our ability to use future tax deductions may be limited by Section 382 of the Internal Revenue Code resulting from future changes in the ownership of outstanding Company common stock. Our Amended and Restated Certificate of Incorporation provides that under certain circumstances, our Board of Directors would have the authority to impose restrictions on the transfer of Company common stock with respect to certain 5% shareholders in order to preserve these future tax deductions.

We intend to pursue acquisitions, joint ventures and other transactions that complement or expand our businesses. We may not be able to complete proposed transactions and even if completed, the transactions may involve a number of risks that may materially and adversely affect our business, financial condition and results of operations.

We intend to continue to pursue opportunities to buy other businesses or technologies that could complement, enhance or expand our current businesses or product lines or that might otherwise offer us growth opportunities. We may have difficulty identifying appropriate opportunities or, if we do identify opportunities, we may not be successful in completing transactions for a number of reasons. Any transactions that we are able to identify and complete may involve a number of risks, including:

- the diversion of management's attention from our existing businesses to integrate the operations and personnel of the acquired or combined business or joint venture;
- possible adverse effects on our operating results during the integration process;
- failure of the acquired business to achieve expected operational objectives; and
- our possible inability to achieve the intended objectives of the transaction.

In addition, we may not be able to successfully or profitably integrate, operate, maintain and manage any newly acquired operations or their employees. We may not be able to maintain uniform standards, controls, procedures and policies, which may lead to operational inefficiencies.

We work with dangerous materials that can injure our employees, damage our facilities and disrupt our operations. Some of our operations involve the handling of hazardous materials that may pose the risk of fire, explosion, or the release of hazardous substances. Such events could result from terrorist attacks, natural disasters, or operational failures, and might cause injury or loss of life to our employees and others, environmental contamination, and property damage. These events might cause a temporary shutdown of an affected plant, or portion thereof, and we could be subject to penalties or claims as a result. A disruption of our operations caused by these or other events could have a material adverse effect on our results of operations.

Some of our employees are unionized, represented by works councils or employed subject to local laws that are less favorable to employers than the laws in the United States.

As of February 15, 2016, we had approximately 3,800 global employees. Approximately 660 of our approximately 2,000 U.S. employees are unionized. In addition, a large number of our employees are employed in countries in which employment laws provide greater bargaining or other rights to employees than the laws in the United States. Such employment rights require us to work collaboratively with the legal representatives of the employees to effect any changes to labor arrangements. For example, most of our employees in Europe are represented by works councils that have co-determination rights on any changes in conditions of employment, including salaries and benefits and staff changes, and may impede efforts to restructure our workforce. A strike, work stoppage or slowdown by our employees or significant dispute with our employees, whether or not related to these negotiations, could result in a significant disruption of our operations or higher ongoing labor costs.



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We may be subject to claims of infringement of the intellectual property rights of others, which could hurt our business.

From time to time, we face infringement claims from our competitors or others alleging that our processes or products infringe on their proprietary technologies. Any claims that our products or processes infringe the intellectual property rights of others, regardless of the merit or resolution of the claims, could cause us to incur significant costs in responding to, defending and resolving the claims, and may divert the efforts and attention of our management and technical personnel from our business. If we are found to be infringing on the proprietary technology of others, we may be liable for damages, and we may be required to change our processes, redesign our products, pay others to use the technology or stop using the technology or producing the infringing product. Even if we ultimately prevail, the existence of the lawsuit could prompt our customers to switch to products that are not the subject of infringement suits.

We are subject to business continuity risks associated with centralization of certain administrative functions.

We have centralized certain administrative functions, primarily in North America, Europe and Asia, to improve efficiency and reduce costs. To the extent that these central locations are disrupted or disabled, key business processes, such as invoicing, payments and general management operations, could be interrupted.

A failure of our information technology infrastructure could adversely impact our business and operations.

We rely upon the capacity, reliability and security of our information technology (IT) infrastructure and our ability to expand and continually update this infrastructure in response to the changing needs of our business. If we experience a problem with the functioning of an important IT system or a security breach of our IT systems, the resulting disruptions could have an adverse effect on our business.

We and certain of our third-party vendors receive and store personal information in connection with our human resources operations and other aspects of our business. Despite our implementation of security measures, our IT systems are vulnerable to damages from computer viruses, natural disasters, unauthorized access, cyber attack and other similar disruptions. Any system failure, accident or security breach could result in disruptions to our operations. A material network breach in the security of our IT systems could include the theft of our intellectual property, trade secrets or customer information. To the extent that any disruptions or security breach results in a loss or damage to our data, or an inappropriate disclosure of confidential or customer information, it could cause significant damage to our reputation, affect our relationships with our customers, lead to claims against Grace and ultimately harm our business. In addition, we may be required to incur significant costs to protect against damage caused by these disruptions or security breaches in the future.

### Risks Related to the Separation

Grace and GCP will each be subject to restrictions under a Tax Sharing Agreement between them, and a violation of the Tax Sharing Agreement may result in tax liability to Grace and its shareholders.

We entered into a Tax Sharing Agreement with GCP to preserve the tax-free treatment, for U.S. federal income tax purposes, of the separation and distribution of GCP common stock to Grace shareholders. Under this Tax Sharing Agreement, we and GCP will be restricted from engaging in certain transactions that could result in the Separation becoming taxable to us and our shareholders. Compliance with the Tax Sharing Agreement and the restrictions therein may limit our near-term ability to pursue certain strategic transactions or engage in activities that might be beneficial from a business perspective. This may result in missed opportunities or the pursuit of business strategies that may not be as beneficial for us and which may negatively affect our anticipated profitability. If GCP fails to comply with the restrictions in the Tax Sharing Agreement and as a result the Separation was determined to be taxable for U.S. federal income tax purposes, we and our shareholders at the time of the Separation that are subject to U.S. federal income tax could incur significant U.S. federal income tax liabilities. Although the Tax Sharing Agreement provides that GCP is required to indemnify us for taxes incurred that may arise were GCP to fail to comply with its obligations under the Tax Sharing Agreement, there is no assurance that GCP will have the funds to satisfy that liability. Also, GCP will not be required to indemnify our shareholders for any tax liabilities they may incur for its violation of the Tax Sharing Agreement.



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In connection with the Separation, GCP will indemnify us and we will indemnify GCP for certain liabilities. There can be no assurance that the indemnities from GCP will be sufficient to insure us against the full amount of such liabilities, or that GCP's ability to satisfy its indemnification obligation will not be impaired in the future.

Pursuant to the Separation and Distribution Agreement and other agreements we entered into in connection with the Separation, GCP agreed to indemnify us for certain liabilities, and we agreed to indemnify GCP for certain liabilities. However, third parties might seek to hold us responsible for liabilities that GCP agreed to assume or retain under these agreements, and there can be no assurance that GCP will be able to fully satisfy its indemnification obligations under these agreements.

A court could deem the Distribution in the Separation to be a fraudulent conveyance and void the transaction or impose substantial liabilities upon us.

If the transaction is challenged by a third party, notwithstanding the fact that we received an opinion from a nationally recognized financial firm that we were solvent and had adequate surplus to make the Distribution, a court could deem the distribution of GCP common stock or certain internal restructuring transactions undertaken by us in connection with the Separation to be a fraudulent conveyance or transfer. Fraudulent conveyances or transfers are defined to include transfers made or obligations incurred with the actual intent to hinder, delay or defraud current or future creditors or transfers made or obligations incurred for less than reasonably equivalent value when the debtor was insolvent, or that rendered the debtor insolvent, inadequately capitalized or unable to pay its debts as they become due. In such circumstances, a court could void the transactions or impose substantial liabilities upon us, which could adversely affect our financial condition and our results of operations. Among other things, the court could require our shareholders to return to us some or all of the shares of GCP common stock issued in the Distribution or require us to fund liabilities of other companies involved in the Separation for the benefit of creditors. Whether a transaction is a fraudulent conveyance or transfer will vary depending upon the laws of the applicable jurisdiction.

## Item 1B. UNRESOLVED STAFF COMMENTS

None.

## Item 2. PROPERTIES

We operate manufacturing plants and other facilities (including offices, warehouses, labs and other service facilities) throughout the world. Some of these plants and facilities are shared by our operating segments. We consider our major operating properties to be in good operating condition and suitable for their current use. We believe that, after taking planned expansion into account, the productive capacity of our plants and other facilities is generally adequate for current operations. The table below summarizes our primary facilities by operating segment and region as of December 31, 2015:

	Number of Facilities(1)				Total
	North America	Europe Middle East Africa (EMEA)	Asia Pacific	Latin America	
Catalysts Technologies	9	4	1	—	14
Materials Technologies(2)	7	10	8	4	29
Construction Products(3)	17	13	25	12	67

(1) Shared facilities are counted in all applicable operating segments. The total number of facilities included in the above table, without regard to sharing amongst operating segments, is 96.

(2) Following the Separation, Materials Technologies retained 5, 4, 5, and 1 facilities in North America, EMEA, Asia Pacific, and Latin America, respectively.

(3) All Construction Products facilities were transferred to GCP as part of the Separation.

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	Number of Facilities—Leased(1)				Total
	North America	EMEA	Asia Pacific	Latin America	
Catalysts Technologies	2	3	1	—	6
Materials Technologies	3	5	5	1	14
Construction Products	4	8	20	8	40
	Number of Facilities—Owned(1)				Total
	North America	EMEA	Asia Pacific	Latin America	
Catalysts Technologies	7	1	—	—	8
Materials Technologies	4	5	3	3	15
Construction Products	13	5	5	4	27

(1) Shared facilities are counted in all applicable operating segments. The total number of facilities included in the above table, without regard to sharing amongst operating segments, is 96 of which we leased 57 and owned 39. We own our principal facilities. With respect to our other facilities, we either own, lease or hold them under a land lease arrangement. Our corporate headquarters is in Columbia, Maryland, and we also lease and operate a shared services facility in Manila, Philippines. Our largest Catalysts Technologies facilities are located in Baltimore, Maryland; Lake Charles, Louisiana; and Worms, Germany. Our largest Materials Technologies facilities are located in Baltimore, Maryland, and Worms, Germany.

Our largest Construction Products facilities are located in Chicago, Illinois; Cambridge, Massachusetts; and Mount Pleasant, Tennessee, in addition to the numerous smaller locations around the world. SCC requires a greater number of facilities to service its customers than Catalysts Technologies and Materials Technologies as many of its products are water-based and are delivered to numerous distributors, concrete production locations, cement production locations, and job sites. Also, these facilities are generally smaller and less capital intensive than our Catalysts Technologies and Materials Technologies facilities.

For information on our net properties and equipment by region and country, see disclosure set forth in Item 8 (Financial Statements and Supplementary Data) in the Financial Supplement under Note 17 (Operating Segment Information) to our Consolidated Financial Statements, which disclosure is incorporated herein by reference.

In connection with our credit agreement, we have executed security agreements with respect to certain of our larger United States facilities. As of December 31, 2015, mortgages or deeds of trust were in effect with respect to facilities in the following locations: Chicago, Illinois; Lake Charles, Louisiana; Baltimore and Columbia, Maryland; Albany, Oregon; and Mount Pleasant, Tennessee. For a description of our credit agreement see Item 8 (Financial Statements and Supplementary Data) in the Financial Supplement under Note 5 (Debt) to the Consolidated Financial Statements.

### Item 3. LEGAL PROCEEDINGS

#### CHAPTER 11 PROCEEDINGS

Disclosures provided in this Report in Item 1 (Business) and Item 8 (Financial Statements and Supplementary Data), and in the Financial Supplement under Note 1 (Basis of Presentation and Summary of Significant Accounting and Financial Reporting Policies, under the caption "Chapter 11 Proceedings"), Note 10 (Commitments and Contingent Liabilities, under the caption "Asbestos-Related Liabilities"), and Note 19 (Chapter 11 and Joint Plan of Reorganization) to the Consolidated Financial Statements, are incorporated herein by reference.

#### ASBESTOS LITIGATION

Disclosures provided in this Report in Item 8 (Financial Statements and Supplementary Data) and in the Financial Supplement under Note 10 (Commitments and Contingencies) and Note 19 (Chapter 11 and Joint Plan of Reorganization) to the Consolidated Financial Statements are incorporated herein by reference.

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**ENVIRONMENTAL INVESTIGATIONS AND CLAIMS**

Disclosures provided in this Report in Item 1 (Business) under the caption "Environment, Health and Safety Matters" and Item 8 (Financial Statements and Supplementary Data), and in the Financial Supplement under Note 10 (Commitments and Contingent Liabilities, under the caption "Environmental Remediation") to the Consolidated Financial Statements, are incorporated herein by reference.

**TAX CLAIMS**

Disclosures provided in this Report in Item 8 (Financial Statements and Supplementary Data) and in the Financial Supplement under Note 7 (Income Taxes) to the Consolidated Financial Statements are incorporated herein by reference.

**OTHER CLAIMS RECEIVED PRIOR TO THE CHAPTER 11 CLAIMS BAR DATE**

Disclosures provided in this Report in Item 8 (Financial Statements and Supplementary Data) and in the Financial Supplement under Note 10 (Commitments and Contingencies) to the Consolidated Financial Statements are incorporated herein by reference.

**Item 4. MINE SAFETY DISCLOSURES**

Information concerning mine safety violations or other regulatory matters required by Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 104 of Regulation S-K (17 CFR 229.104) is included in Exhibit 95 to this Report.

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## EXECUTIVE OFFICERS OF THE REGISTRANT

Pursuant to General Instruction G(3) of Form 10-K, the following list of executive officers of Grace as of February 15, 2016, is included as an unnumbered Item in Part I of this report in lieu of being included in the Grace Proxy Statement relating to the Annual Meeting of Stockholders to be held on May 5, 2016. Our executive officers are elected annually.

Name and Age	Office	First Elected
Alfred E. Festa (56)	Chairman of the Board	01/01/08
	Chief Executive Officer	06/01/05
Hudson La Force III (51)	President and Chief Operating Officer	02/04/16
	Chief Financial Officer	04/01/08
Elizabeth C. Brown (52)	Vice President and Chief Human Resources Officer	01/21/15
Keith N. Cole (57)	Vice President, Government Relations and Environment, Health and Safety	02/10/14
Mark A. Shelnitz (57)	Vice President, General Counsel and Secretary	04/27/05

Messrs. Festa, La Force and Shelnitz have been actively engaged in Grace's business for the past five years.

Ms. Brown joined Grace in 2015. From 2010 until she joined Grace, Ms. Brown held leadership positions in human resources for Tyco International Limited. Prior to joining Tyco, Ms. Brown held leadership positions in human resources for LyondellBasell Industries.

Mr. Cole joined Grace in 2014. From 2002 until he joined Grace, Mr. Cole held leadership positions in government relations and public policy for General Motors Corporation.

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PART II

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

Except as provided below, the disclosure required by this Item appears in this Report in: Item 6 (Selected Financial Data); under the heading "Selected Financial Data" opposite the caption "Other Statistics—Common shareholders of record" in the Financial Supplement; Item 8 (Financial Statements and Supplementary Information) in the Financial Supplement in Note 14 (Shareholders' Equity) and Note 20 (Quarterly Summary and Statistical Information (Unaudited) opposite the caption "Market price of common stock") to the Consolidated Financial Statements; and Item 12 (Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters), and such disclosure is incorporated herein by reference.

SHAREHOLDER RIGHTS AGREEMENT

On March 31, 1998, we paid a dividend of one Preferred Stock Purchase Right on each share of Company common stock. Subject to our prior redemption for \$.01 per right, rights will become exercisable on the earlier of:

• 10 days after an acquiring person, composed of an individual or group, has acquired beneficial ownership of 20% or more of the outstanding Company common stock or

• 10 business days (or a later date fixed by the Board of Directors) after an acquiring person commences (or announces the intention to commence) a tender offer or exchange offer for beneficial ownership of 20% or more of the outstanding Company common stock.

Until these events occur, the rights will automatically trade with the Company common stock, and separate certificates for the rights will not be distributed. The rights do not have voting or dividend rights.

Generally, each right not owned by an acquiring person:

• will initially entitle the holder to buy from Grace one hundredth of a share of the Grace Junior Participating Preferred Stock, at an exercise price of \$100, subject to adjustment;

• will entitle such holder to receive upon exercise, in lieu of shares of Grace junior preferred stock, that number of shares of Company common stock having a market value of two times the exercise price of the right; and

• may be exchanged by Grace for one share of Company common stock or one hundredth of a share of Grace junior preferred stock, subject to adjustment.

Generally, if there is an acquiring person and we are acquired, each right not owned by an acquiring person will entitle the holder to buy a number of shares of common stock of the acquiring company having a market value equal to twice the exercise price of the right.

Each share of Grace junior preferred stock will be entitled to a minimum preferential quarterly dividend payment of \$1.00 per share but will be entitled to an aggregate dividend equal to 100 times the dividend declared per share of Company common stock whenever such dividend is declared. In the event of liquidation, holders of Grace junior preferred stock will be entitled to a minimum preferential liquidation payment of \$100 per share but will be entitled to an aggregate payment equal to 100 times the payment made per share of Company common stock. Each share of Grace junior preferred stock will have 100 votes, voting together with the Company common stock. Finally, in the event of any business combination, each share of Grace junior preferred stock will be entitled to receive an amount equal to 100 times the amount received per share of Company common stock. These rights are protected by customary antidilution provisions.

The terms of the rights may be amended by the Board of Directors without the consent of the holders of the rights.

The rights expire on March 30, 2018. The rights have been approved by the U.S. Bankruptcy Court for the District of Delaware and the Official Committee of Equity Security Holders in connection with our Chapter 11 proceedings.

This summary of the rights does not purport to be complete and is qualified in its entirety by reference to the Rights Agreement, which has been filed with the SEC.

Table of Contents**DIVIDENDS ON COMPANY COMMON STOCK**

We have not paid a cash dividend on Grace common stock since 1997. However, on January 26, 2016, we announced that our Board of Directors approved a policy of paying a regular quarterly cash dividend at an initial annual rate of \$0.68 per share of Grace common stock. We expect our Board to declare a dividend in connection with the announcement of 2016 first quarter earnings. Although our credit agreement and indentures (as described in Item 8 (Financial Statements and Supplementary Data) in the Financial Supplement under Note 5 (Debt) to the Consolidated Financial Statements and filed as an exhibit to this Report) contain certain restrictions on the payment of dividends on, and redemptions of, equity interests and other restricted payments, we believe that such restrictions do not currently materially limit our ability to pay dividends. Any determination to pay cash dividends in the future may be affected by business and market conditions, our views on potential future capital requirements, the restrictions noted above, covenants contained in any agreements we may enter into in the future and changes in federal income tax law.

**SHARE REPURCHASES****Share Repurchase Program**

On February 5, 2015, we announced that the Board of Directors authorized a share repurchase program of up to \$500 million. Repurchases under the program may be made through one or more open market transactions at prevailing market prices; unsolicited or solicited privately negotiated transactions; accelerated share repurchase programs; or through any combination of the foregoing, or in such other manner as determined by management. The timing of the repurchases and the actual amount repurchased will depend on a variety of factors, including the market price of Grace's shares, the strategic deployment of capital, and general market and economic conditions.

The following table presents information regarding the repurchase of Company common stock by Grace or any "affiliated purchaser" of Grace during the three months ended December 31, 2015:

	Total number of shares purchased (#)	Average price paid per share (\$/share)	Total number of shares purchased as part of publicly announced plans or programs (#)	Approximate dollar value of shares that may yet be purchased under the plans or programs (\$ in millions)
10/1/2015 - 10/31/2015	419,391	96.64	419,391	243.1
11/1/2015 - 11/30/2015	61,204	94.77	61,204	237.3
12/1/2015 - 12/31/2015	80,000	93.35	80,000	229.8
Total	560,595	95.97	560,595	229.8

**PI Warrant Settlement**

As of February 3, 2014, the effective date of the Grace Joint Plan of Reorganization, we issued to the WRG Personal Injury Trust warrants (the "PI Warrant") to acquire 10 million shares of Company common stock at a price of \$17 per share. On February 3, 2015, we repurchased the PI Warrant for a payment of \$490 million.

**STOCK TRANSFER RESTRICTIONS**

Under the terms of our Amended and Restated Certificate of Incorporation, as approved by the Bankruptcy Court as part of the confirmation of the Joint Plan, in order to preserve significant tax benefits which are subject to elimination or limitation, the Board of Directors has the authority to impose restrictions on the transfer of Company common stock with respect to certain 5% shareholders. Imposing such restrictions requires at least a 25% ownership shift to occur (as determined under Internal Revenue Code regulations) and at least a two-thirds vote of all of the directors. These restrictions would generally not limit the ability of a person that holds less than 5% of Company common stock to either buy or sell stock on the open market.

This summary does not purport to be complete and is qualified in its entirety by reference to the Amended and Restated Certificate of Incorporation, which has been filed with the SEC and is incorporated by reference as Exhibit 3.1 to this Annual Report on Form 10-K.



Table of Contents**STOCK PERFORMANCE GRAPH**

The following information in Item 5 is not deemed to be "soliciting material" or to be "filed" with the SEC or subject to Regulation 14A or 14C under the Securities Exchange Act of 1934, as amended (the "Exchange Act") or to the liabilities of Section 18 of the Exchange Act, and will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act, except to the extent Grace specifically incorporates it by reference into such a filing.

The line graph and table below compare the cumulative total shareholder return on Company common stock with the cumulative total return of companies on the Standard & Poor's ("S&P") 500 Stock Index, the S&P Composite 1500 Specialty Chemicals Index and S&P 1500 Diversified Chemicals Index. This graph and table assume the investment of \$100 in Company common stock on December 31, 2009. Grace did not pay cash dividends during the period presented.

	2010	2011	2012	2013	2014	2015
W. R. Grace & Co.	\$100	\$131	\$191	\$281	\$272	\$283
S&P 500 Index	100	100	113	147	164	163
S&P 1500 Specialty Chemicals	100	106	145	189	221	213
S&P 1500 Diversified Chemicals	100	92	107	149	156	153

**Item 6. SELECTED FINANCIAL DATA**

The disclosure required by this Item appears in the Financial Supplement under the heading "Selected Financial Data" which disclosure is incorporated herein by reference.

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

The disclosure required by this Item appears in the Financial Supplement under the heading "Management's Discussion and Analysis of Financial Condition and Results of Operations" which disclosure is incorporated herein by reference.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our global operations, raw materials and energy requirements, and debt obligations expose us to various market risks. We use derivative financial instruments to mitigate certain of these risks. The following is a discussion of our primary market risk exposures, how those exposures are managed, and certain quantitative data pertaining to our market risk-sensitive instruments.

Currency Exchange Rate Risk

Because we conduct business in over 40 countries and in more than 50 currencies, our results of operations are exposed to changes in currency exchange rates. We seek to minimize exposure to these changes by matching revenue streams in volatile currencies with expenditures in the same currencies, but it is not always possible to do so. From time to time, we use financial instruments such as currency forward contracts, options, or combinations of them to reduce the risk of certain specific transactions. However, we do not have a policy of hedging all exposures, because management does not believe that such a level of hedging would be cost-effective. We do not hedge translation exposures that are not expected to affect cash flows in the near-term. Significant uses of derivatives to mitigate the effects of changes in currency exchange rates are as follows.

In November 2007, we executed intercompany loans in the aggregate amount of €250 million between our principal U.S. operating subsidiary and a newly established German subsidiary as part of a legal restructuring. In conjunction with the loans, our U.S. subsidiary entered into a series of currency forward contracts in order to fix the dollar/euro exchange rate that will apply to convert the euro principal payments to dollars. Currency fluctuations on these loans and the related forward contracts were recorded as components of operating results. The intercompany loans were repaid, and the related forward contracts were settled, when we emerged from bankruptcy. There were no significant currency forward exchange agreements outstanding at December 31, 2015.

Commodity Price Risk

We operate in markets where the prices of raw materials and energy are commonly affected by cyclical movements in the economy and other factors. The principal raw materials used in our products include molybdenum, amines, polycarboxylates, sodium silicate, rare earths, rubber and latex, tungsten, alumina, caustic soda, solvents, naphthalene sulfonate, lignin, and saccharides. Natural gas is the largest single energy source that we purchase. These commodities are generally available to be purchased from more than one supplier. In order to minimize the risk of increasing prices on certain raw materials and energy, we use a centralized supply chain organization for sourcing in order to optimize procurement activities. We have a risk management committee to review proposals to hedge purchases of raw materials and energy.

We have implemented a risk management program under which we hedge natural gas and aluminum supply in a way that seeks to provide protection against price volatility in the natural gas and aluminum markets. In order to mitigate volatility in natural gas prices, we have entered into both fixed-rate swaps and options contracts to hedge a portion of our U.S. natural gas requirements. Additionally, in order to mitigate volatility in aluminum prices, we have entered into fixed-rate swaps to hedge a portion of our U.S. aluminum requirements.

The following tables provide information about our commodity fixed-rate swaps. For natural gas commodity fixed-rate swaps, contract volumes, or notional amounts, are presented in millions of MMBtu (million British thermal units), weighted average contract prices are presented in U.S. dollars per million MMBtu, and the total contract amount and fair value are presented in millions of U.S. dollars. For aluminum commodity fixed-rate swaps, contract volumes, or notional amounts, are presented in millions of pounds, weighted average contract prices are presented in U.S. dollars per pound, and the total contract amount and fair value are presented in millions of U.S. dollars. The fair values of the commodity fixed-rate swaps represent the excess of the variable price (market price) over the fixed price (pay price) multiplied by the nominal contract volumes. All commodity fixed-rate swaps mature within 12 months.



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Type of Contract	Commodity Derivatives—December 31, 2015			
	Contract Volumes	Weighted Average Price	Total Contract Amount	Fair Value
Natural gas swaps	1.3	\$1.90	\$2.4	\$0.5
Aluminum swaps	1.4	\$0.78	\$1.1	\$—
Type of Contract	Commodity Derivatives—December 31, 2014			
	Contract Volumes	Weighted Average Price	Total Contract Amount	Fair Value
Natural gas swaps	5.0	\$3.54	\$17.5	\$(2.5 )
Aluminum swaps	1.3	\$0.92	\$1.2	\$(0.1 )

The fair value of commodity derivative contracts is presented as other assets or other liabilities and allocated between current and non-current, as appropriate, in the Consolidated Balance Sheets.

The following tables provide information about our natural gas option contracts. Contract volumes, or notional amounts, are presented in millions of MMBtu, both strike prices and futures trading prices are presented in U.S. dollars per million MMBtu, and the fair value is presented in millions of U.S. dollars. The fair values of the natural gas option contracts represent the excess of the futures trading price (market price) over the strike price multiplied by the nominal contract volumes. All natural gas option contracts had been set to mature within 18 months, and the last of them matured in 2015.

Type of Contract	Natural Gas Option Contracts—December 31, 2014			
	Contract Volumes	Strike Price	Futures Trading Price	Fair Value
Natural gas options	0.3	\$5.00	\$2.88 - 2.95	\$—

The fair value of the natural gas option contracts is presented as other assets or other liabilities and allocated between current and non-current, as appropriate, in the Consolidated Balance Sheets. The premium paid for the call options is presented at amortized cost in other assets and allocated between current and non-current, as appropriate, in the Consolidated Balance Sheets.

We have also entered into forward contracts for natural gas and aluminum that qualify for the normal purchases and normal sales exception from Accounting Standards Codification ("ASC") 815 "Derivatives and Hedging," as they do not contain net settlement provisions and therefore result in physical delivery of natural gas and aluminum from suppliers. Accordingly, the fair values of these contracts are not recorded in our Consolidated Balance Sheets.

**Interest Rate Risk**

As of December 31, 2015, approximately \$943.6 million of our borrowings were at variable interest rates and expose us to interest rate risk. As a result, we have been and will continue to be subject to the variations on interest rates in respect of our floating-rate debt. A 100 basis point increase in the interest rates payable on our variable rate debt outstanding as of December 31, 2015, would increase our annual interest expense by approximately \$9.4 million.

In connection with our emergence financing, we entered into an interest rate swap beginning on February 3, 2015, and maturing on February 3, 2020, fixing the LIBOR component of the interest on \$250 million of Grace's term debt at a rate of 2.393%. While we have and may continue to enter into agreements intending to limit our exposure to higher interest rates, any such agreements may not offer complete protection from this risk.

See Item 8 (Financial Statements and Supplementary Data) in the Financial Supplement under Note 6 (Fair Value Measurements and Risk) to the Consolidated Financial Statements for additional disclosure around market risk, which disclosure is incorporated herein by reference.

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**Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA**

The disclosure required by this Item appears in the Financial Supplement which disclosure is incorporated herein by reference.

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

None.

**Item 9A. CONTROLS AND PROCEDURES**

Except as provided below, the disclosure required by this Item appears in the Financial Supplement under the heading "Management's Report on Financial Information and Internal Controls" which disclosure is incorporated herein by reference.

There was no change in Grace's internal control over financial reporting during the quarter ended December 31, 2015, that has materially affected, or is reasonably likely to materially affect, Grace's internal control over financial reporting.

**Item 9B. OTHER INFORMATION**

None.

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PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Incorporated by reference to the sections entitled "Proposal One: Election of Directors," "—Nominees for Election as Directors," "—Continuing Directors," and "—Corporate Governance," "Questions and Answers—Where can I find Grace corporate governance materials?," and "Other Information—Section 16(a) Beneficial Ownership Reporting Compliance" of a definitive proxy statement that Grace will file with the SEC no later than 120 days after December 31, 2015 (the "2016 Proxy Statement"). Required information on executive officers of Grace appears at Part I after Item 4 of this report.

Item 11. EXECUTIVE COMPENSATION

Incorporated by reference to the sections entitled "Proposal One: Election of Directors—Corporate Governance," and "—Director Compensation," and "Executive Compensation" of the 2016 Proxy Statement.

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

Incorporated by reference to the sections entitled "Other Information—Equity Security Ownership of Management and Certain Other Beneficial Owners" and "—Equity Compensation Plan Information" of the 2016 Proxy Statement.

Item 13. CERTAIN RELATIONSHIPS, RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Incorporated by reference to the sections entitled "Proposal One: Election of Directors—Corporate Governance" and "Other Information—Related Party Transactions" of the 2016 Proxy Statement.

Item 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Incorporated by reference to the sections entitled "Proposal Two: Ratification of the Appointment of Independent Registered Public Accounting Firm—Principal Accountant Fees and Services" and "—Audit Committee Pre-Approval Policies and Procedures" of the 2016 Proxy Statement.

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## PART IV

## Item 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

Financial Statements and Schedules. The required information is set forth in the Financial Supplement under the heading "Table of Contents" which is incorporated herein by reference.

Exhibits. The exhibits to this Report are listed below. Other than exhibits that are filed herewith, all exhibits listed below are incorporated by reference.

In reviewing the agreements included as exhibits to this and other Reports filed by Grace with the Securities and Exchange Commission, please remember they are included to provide you with information regarding their terms and are not intended to provide any other factual or disclosure information about Grace or other parties to the agreements. The agreements generally contain representations and warranties by each of the parties to the applicable agreement. These representations and warranties have been made solely for the benefit of the other parties to the applicable agreement. These representations and warranties:

are not statements of fact, but rather are used to allocate risk to one of the parties if the statements prove to be inaccurate;

may have been qualified by disclosures that were made to the other parties in connection with the negotiation of the applicable agreement, which disclosures are not necessarily reflected in the agreement;

may apply standards of materiality in a way that is different from what may be viewed as material to you or other investors; and

were made only as of the date of the applicable agreement or such other date or dates as may be specified in the agreement and do not reflect more recent developments.

Accordingly, these representations and warranties may not describe the actual state of affairs as of the date they were made or at any other time. Additional information about Grace may be found elsewhere in this report and Grace's other public filings, which are available without charge through the Securities and Exchange Commission's website at <http://www.sec.gov>.

Exhibit No.	Exhibit	Location
2.1	Joint Plan of Reorganization of W. R. Grace & Co. and its Debtor Subsidiaries.	Exhibit 2.01 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
2.2	Order Confirming Joint Plan of Reorganization.	Exhibit 2.02 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
2.3	Separation and Distribution Agreement dated as of January 27, 2016 by and among W. R. Grace & Co., W. R. Grace & Co.-Conn. and GCP Applied Technologies Inc.	Exhibit 2.1 to Form 8-K (filed 1/27/16) SEC File No.: 001-13953
3.1	Amended and Restated Certificate of Incorporation.	Exhibit 3.01 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
3.2	Amended and Restated By-laws.	Exhibit 3.01 to Form 8-K (filed 1/23/15) SEC File No.: 001-13953
4.1	Amended and Restated Rights Agreement dated as of March 25, 2008 between W. R. Grace & Co. and Mellon Investor Services LLC, as Rights Agent.	Exhibit 4.1 to Form 10/A (filed 3/25/08) SEC File No.: 001-13953
4.2	Receivables Purchase Agreement dated as of January 23, 2007 between Grace GmbH & Co. KG and Coface Finanz GmbH.	Exhibit 4.10 to Form 10-K (filed 3/02/07) SEC File No.: 001-13953
4.3	Credit Agreement dated as of February 3, 2014 by and among W. R. Grace & Co., W. R. Grace & Co.-Conn., Grace GmbH & Co. KG, a Federal Republic of Germany limited partnership, each lender from time to time party thereto, and Goldman Sachs Bank USA, as Administrative Agent.	Exhibit 4.01 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953



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Exhibit No.	Exhibit	Location
4.4	First Amendment and Consent to Credit Agreement and First Amendment to Security Agreement, by and among W. R. Grace & Co., W. R. Grace & Co.-Conn., Grace GmbH & Co. KG, Alltech Associates, Inc., each lender from time to time party thereto, and Goldman Sachs Bank USA, as Administrative Agent and lender. Credit Agreement dated as of February 3, 2016 by and among GCP	Exhibit 10.1 to Form 8-K (filed 11/25/15) SEC File No.: 001-13953
4.5	Applied Technologies Inc., Grace Construction Products Limited, Grace NV, each lender from time to time party thereto, and Deutsche Bank AG, as Administrative Agent.	Exhibit 10.1 to Form 8-K (filed 2/03/16) SEC File No.: 001-13953
4.6	Deferred Payment Agreement (PI) dated as of February 3, 2014 by and between W. R. Grace & Co.-Conn. and the WRG Asbestos PI Trust.	Exhibit 4.02 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.7	Guarantee Agreement (PI) dated as of February 3, 2014 by and between W. R. Grace & Co. and the WRG Asbestos PI Trust.	Exhibit 4.03 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.8	Obligation Termination Agreement dated August 1, 2014, by and between W. R. Grace & Co.-Conn., W. R. Grace & Co. and the WRG Asbestos PI Trust.	Exhibit 10.1 to Form 8-K (filed 9/9/14) SEC File No.: 001-13953
4.9	Deferred Payment Agreement (PD) dated as of February 3, 2014 by and between W. R. Grace & Co.-Conn. and the WRG Asbestos PD Trust.	Exhibit 4.04 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.10	Guarantee Agreement (PD) dated as of February 3, 2014 by and between W. R. Grace & Co. and the WRG Asbestos PD Trust.	Exhibit 4.05 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.11	Deferred Payment Agreement (PD-ZAI) dated as of February 3, 2014 by and between W. R. Grace & Co.-Conn. and the WRG Asbestos PD Trust.	Exhibit 4.06 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.12	Guarantee Agreement (PD-ZAI) dated as of February 3, 2014 by and between W. R. Grace & Co. and the WRG Asbestos PD Trust.	Exhibit 4.07 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.13	Share Issuance Agreement dated as of February 3, 2014 by and among W. R. Grace & Co., the WRG Asbestos PD Trust and the WRG Asbestos PI Trust.	Exhibit 4.08 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.14	Warrant Agreement dated as of February 3, 2014 by and among W. R. Grace & Co., the WRG Asbestos PI Trust and Computershare.	Exhibit 4.09 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.15	[Warrant] Implementation Letter dated as of October 25, 2012 by and between W. R. Grace & Co., the Official Committee of Asbestos Personal Injury Claimants, the Asbestos PI Future Claimants' Representative and the Official Committee of Equity Security Holders.	Exhibit 4.10 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
4.16	Indenture, dated as of September 16, 2014, by and among W. R. Grace & Co.—Conn., the guarantors party there to and Wilmington Trust, National Association, as trustee.	Exhibit 4.1 to Form 8-K (filed 9/19/14) SEC File No.: 001-13953
4.17	First Supplemental Indenture, dated as of September 16, 2014, by and among W. R. Grace & Co.—Conn., the guarantors party thereto and Wilmington Trust, National Association, as trustee.	Exhibit 4.2 to Form 8-K (filed 9/19/14) SEC File No.: 001-13953
4.18	Form of 5.125% Note due 2021 (included as Exhibit A-1 to Exhibit 4.17)	Exhibit 4.3 (included as Exhibit A-1 to Exhibit 4.2) to Form 8-K (filed

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4.19	Form of 5.625% Note due 2024 (included as Exhibit A-2 to Exhibit 4.17)	9/19/14) SEC File No.: 001-13953 Exhibit 4.4 (included as Exhibit A-2 to Exhibit 4.2) to Form 8-K (filed 9/19/14) SEC File No.: 001-13953
4.20	Indenture, dated as of January 27, 2016, by and among GCP Applied Technologies Inc., the guarantors party thereto and Wilmington Trust, National Association, as trustee.	Exhibit 4.1 to Form 8-K (filed 1/27/16) SEC File No.: 001-13953
4.21	Form of 9.500% Note due 2023 (included as Exhibit A to Exhibit 4.20)	Exhibit 4.2 (included as Exhibit A to Exhibit 4.2) to Form 8-K (filed 1/27/16) SEC File No.: 001-13953

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Exhibit No.	Exhibit	Location
10.1	WRG Asbestos Property Damage Settlement Trust Agreement dated as of February 3, 2014 by and between W. R. Grace & Co., the Asbestos PD Future Claimants' Representative, the Official Committee of Asbestos Property Damage Claimants, the Asbestos PD Trustees, Wilmington Trust Company, and the members of the Zonolite Attic Insulation Trust Advisory Committee.	Exhibit 10.02 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953
10.2	W. R. Grace & Co. 2011 Stock Incentive Plan.	Exhibit 10.1 to Form 8-K (filed 4/13/11) SEC File No.: 001-13953*
10.3	W. R. Grace & Co. Amended and Restated 2011 Stock Incentive Plan.	Exhibit 10.1 to Form 8-K (filed 5/01/13) SEC File No.: 001-13953*
10.4	W. R. Grace & Co. 2014 Stock Incentive Plan.	Exhibit 10.03 to Form 8-K (filed 2/07/14) SEC File No.: 001-13953*
10.5	Form of Performance-based Unit Agreement (2013).	Exhibit 10.2 to Form 10-Q (filed 8/02/13) SEC File No.: 001-13953*
10.6	Form of Performance-based Unit Agreement (2016).	Exhibit 10.2 to Form 8-K (filed 2/09/16) SEC File No.: 001-13953*
10.7	Form of Stock Option Award Agreement (2011).	Exhibit 10.2 to Form 8-K (filed 4/13/11) SEC File No.: 001-13953*
10.8	Form of Stock Option Award Agreement (2016).	Exhibit 10.1 to Form 8-K (filed 2/09/16) SEC File No.: 001-13953*
10.9	Form of Restricted Stock Award Agreement (2014)	Exhibit 10.4 to Form 8-K (filed 5/8/14) SEC File No.: 001-13953*
10.10	Form of Restricted Stock Award Agreement (2016)	Exhibit 10.3 to Form 8-K (filed 2/09/16) SEC File No.: 001-13953*
10.11	W. R. Grace & Co. Supplemental Executive Retirement Plan, as amended.	Exhibit 10.7 to Form 10-K (filed 3/28/02) SEC File No.: 001-13953*
10.12	W. R. Grace & Co. Executive Salary Protection Plan, as amended.	Exhibit 10.8 to Form 10-K (filed 3/28/02) SEC File No.: 001-13953*
10.13	Form of Executive Change in Control Severance Agreement between Grace and certain officers.	Exhibit 10.17 to Form 10-K (filed 3/13/03) SEC File No.: 001-13953*
10.14	Severance Plan for Leadership Team Officers of W. R. Grace & Co.	Exhibit 10.2 to Form 8-K (filed 2/03/16) SEC File No.: 001-13953*
10.15	Annual Incentive Compensation Program.	Exhibit 10.15 to Form 10-Q (filed 5/8/14) SEC File No.: 001-13953*
10.16	2015 Executive Annual Incentive Compensation Plan	Exhibit 10.1 to Form 8-K (filed 5/12/15) SEC File No.: 001-13953*
10.17	Tax Sharing Agreement, dated as of January 27, 2016, by and among W. R. Grace & Co., W. R. Grace & Co.–Conn. and GCP Applied Technologies Inc.	Exhibit 10.1 to Form 8-K (filed 1/27/16) SEC File No.: 001-13953
10.18	Employee Matters Agreement, dated as of January 27, 2016, by and among W. R. Grace & Co., W. R. Grace & Co.–Conn. and GCP Applied Technologies Inc.	Exhibit 10.2 to Form 8-K (filed 1/27/16) SEC File No.: 001-13953
10.19	Transition Services Agreement, dated as of January 27, 2016, by and between W. R. Grace & Co.–Conn. and GCP Applied Technologies Inc.	Exhibit 10.3 to Form 8-K (filed 1/27/16) SEC File No.: 001-13953



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Exhibit No.	Exhibit	Location
10.20	Cross-License Agreement, dated as of January 27, 2016, by and among GCP Applied Technologies Inc., W. R. Grace & Co.–Conn. and Grace GmbH & Co. KG.	Exhibit 10.4 to Form 8-K (filed 1/27/16) SEC File No.: 001-13953
10.21	Grace Transitional License Agreement, dated as of January 27, 2016, by and between W. R. Grace & Co.–Conn. and GCP Applied Technologies Inc.	Exhibit 10.5 to Form 8-K (filed 1/27/16) SEC File No.: 001-13953
10.22	Letter Agreement dated May 27, 2009 between John F. Akers, on behalf of Grace, and Fred Festa (includes indemnification and arbitration provisions).	Exhibit 10.1 to Form 8-K (filed 5/29/09) SEC File No.: 001-13953*
10.23	Letter Agreement dated February 28, 2008 between Fred Festa, on behalf of Grace, and Hudson La Force III (includes indemnification provision).	Exhibit 10.1 to Form 8-K (filed 3/07/08) SEC File No.: 001-13953*
10.24	Letter Agreement dated November 13, 2013, between Fred Festa, on behalf of Grace, and Keith N. Cole (includes indemnification provision).	Exhibit 10.20 to Form 10-K (filed 2/25/15) SEC File No.: 001-13953*
10.25	Letter Agreement dated December 3, 2014, between Fred Festa, on behalf of Grace, and Elizabeth C. Brown (includes indemnification provision).	Exhibit 10.1 to Form 10-Q (filed 5/07/15) SEC File No.: 001-13953*
12	Computation of Ratio of Earnings to Fixed Charges and Combined Fixed Charges and Preferred Stock Dividends.	Filed herewith
21	List of Subsidiaries of W. R. Grace & Co.	Filed herewith
23	Consent of Independent Registered Public Accounting Firm.	Filed herewith
24	Powers of Attorney.	Filed herewith
31.(i).1	Certification of Periodic Report by Chief Executive Officer under Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
31.(i).2	Certification of Periodic Report by Chief Financial Officer under Section 302 of the Sarbanes-Oxley Act of 2002	Filed herewith
32	Certification of Periodic Report by Chief Executive Officer and Chief Financial Officer under Section 906 of the Sarbanes-Oxley Act of 2002	Filed herewith
95	Mine Safety Disclosure Exhibit	Filed herewith
101.INS	XBRL Instance Document	Filed herewith
101.SCH	XBRL Taxonomy Extension Schema	Filed herewith
101.CAL	XBRL Taxonomy Extension Calculation Linkbase	Filed herewith
101.DEF	XBRL Taxonomy Extension Definition Linkbase	Filed herewith
101.LAB	XBRL Taxonomy Extension Label Linkbase	Filed herewith
101.PRE	XBRL Taxonomy Extension Presentation Linkbase	Filed herewith

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\*Management contracts and compensatory plans, contracts or arrangements required to be filed as exhibits to this Report.

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SIGNATURES

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

W. R. GRACE & CO.  
 By: /s/ A. E. FESTA  
 A. E. Festa  
 (Chairman and Chief Executive Officer)  
 By: /s/ HUDSON LA FORCE III  
 Hudson La Force III  
 (President, Chief Operating Officer and  
 Chief Financial Officer)  
 By: /s/ WILLIAM C. DOCKMAN  
 William C. Dockman  
 (Vice President and Controller)

Dated: February 25, 2016

Pursuant to the requirements of the Securities Exchange Act of 1934, this Report has been signed below by the following persons on behalf of the registrant and in the capacities indicated on February 25, 2016.

Signature	Title
H. F. Baldwin*	}
R. F. Cummings, Jr.*	}
D. H. Gulyas*	} Directors
J. N. Quinn*	}
C. J. Steffen*	}
M. E. Tomkins*	}
/s/ A. E. FESTA (A. E. Festa)	Chairman, Chief Executive Officer and Director (Principal Executive Officer)
/s/ HUDSON LA FORCE III (Hudson La Force III)	President, Chief Operating Officer and Chief Financial Officer (Principal Financial Officer)
/s/ WILLIAM C. DOCKMAN (William C. Dockman)	Vice President and Controller (Principal Accounting Officer)

By signing his name hereto, Mark A. Shelnitz is signing this document on behalf of each of the persons indicated \*above pursuant to powers of attorney duly executed by such persons and filed with the Securities and Exchange Commission.

By: /s/ MARK A. SHELNITZ  
 Mark A. Shelnitz  
 (Attorney-in-Fact)

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FINANCIAL SUPPLEMENT  
W. R. GRACE & CO.  
ANNUAL REPORT ON FORM 10-K  
FOR THE YEAR ENDED DECEMBER 31, 2015

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The Financial Statement Schedule should be read in conjunction with the Consolidated Financial Statements and Notes thereto. Financial statements of less than majority-owned persons and other persons accounted for by the equity method have been omitted as provided in Rule 3-09 of the United States Securities and Exchange Commission's (SEC) Regulation S-X. Financial Statement Schedules not included have been omitted because they are not applicable or the required information is shown in the Consolidated Financial Statements or Notes thereto.

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Management's Report on Financial Information and Internal Controls

Responsibility For Financial Information—We are responsible for the preparation, accuracy, integrity and objectivity of the Consolidated Financial Statements and the other financial information included in this report. Such information has been prepared in conformity with accounting principles generally accepted in the United States of America and accordingly, includes certain amounts that represent management's best estimates and judgments. Actual amounts could differ from those estimates.

Responsibility For Internal Controls—We and our management are also responsible for establishing and maintaining adequate internal controls over financial reporting. These internal controls consist of policies and procedures that are designed to assess and monitor the effectiveness of the control environment including risk identification, governance structure, delegations of authority, information flow, communications and control activities. A chartered Disclosure Committee oversees Grace's public financial reporting process and key managers are required to confirm their compliance with Grace's policies and internal controls quarterly. While no system of internal controls can ensure elimination of all errors and irregularities, Grace's internal controls, which are reviewed and modified in response to changing conditions, have been designed to provide reasonable assurance that assets are safeguarded, policies and procedures are followed, transactions are properly executed and reported, and appropriate disclosures are made. The concept of reasonable assurance is based on the recognition that there are limitations in all systems of internal control and that the costs of such systems should be balanced with their benefits. The Audit Committee of the Board of Directors, which is composed solely of independent directors, meets regularly with Grace's senior financial management, internal auditors and independent registered public accounting firm to review audit plans and results, as well as the actions taken by management in discharging its responsibilities for accounting, financial reporting and internal controls. The Audit Committee is responsible for the selection and compensation of the independent registered public accounting firm. Grace's financial management, internal auditors and independent registered public accounting firm have direct and confidential access to the Audit Committee at all times.

Report On Internal Control Over Financial Reporting—We and our management have evaluated Grace's internal control over financial reporting as of December 31, 2015. This evaluation was based on criteria for effective internal control over financial reporting set forth in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, we and our management have concluded that Grace's internal control over financial reporting is effective as of December 31, 2015. Grace's independent registered public accounting firm that audited our financial statements included in Item 15 has also audited the effectiveness of Grace's internal control over financial reporting as of December 31, 2015, as stated in their report, which appears on the following page.

Report On Disclosure Controls And Procedures—As of December 31, 2015, we and our management carried out an evaluation of the effectiveness of the design and operation of Grace's disclosure controls and procedures pursuant to Rule 13a-15 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Based upon that evaluation, we concluded that Grace's disclosure controls and procedures are effective in ensuring that information required to be disclosed in Grace's periodic filings and submissions under the Exchange Act is accumulated and communicated to us and our management to allow timely decisions regarding required disclosures, and such information is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms.

/s/ A. E. FESTA

A. E. Festa  
Chief Executive Officer

February 25, 2016

/s/ HUDSON LA FORCE III

Hudson La Force III  
President, Chief Operating Officer, and  
Chief Financial Officer

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Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors of W. R. Grace & Co.:

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations, of comprehensive income, of equity, and of cash flows present fairly, in all material respects, the financial position of W. R. Grace & Co. and its subsidiaries (the “Company”) at December 31, 2015 and 2014, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2015 in conformity with accounting principles generally accepted in the United States of America. In addition, in our opinion, the financial statement schedule presents fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2015, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). The Company's management is responsible for these financial statements and financial statement schedule, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Financial Information and Internal Controls. Our responsibility is to express opinions on these financial statements, on the financial statement schedule, and on the Company's internal control over financial reporting based on our integrated audits. We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

As discussed in Note 1 to the consolidated financial statements, in 2015 the Company adopted accounting standards update (“ASU”) No. 2015-17, “Balance Sheet Classification of Deferred Taxes”, which changes the presentation of deferred taxes on the consolidated balance sheets.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ PricewaterhouseCoopers LLP  
Baltimore, Maryland  
February 25, 2016

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Consent of Independent Registered Public Accounting Firm

We hereby consent to the incorporation by reference in the Registration Statement on Form S-8 (No. 333-194171, 333-173785, 333-37024) of W. R. Grace & Co. of our report dated February 25, 2016 relating to the financial statements, financial statement schedules, and the effectiveness of internal control over financial reporting, which appears in this Form 10 K.

/s/ PricewaterhouseCoopers LLP  
Baltimore, Maryland  
February 25, 2016

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Table of ContentsW. R. Grace & Co. and Subsidiaries  
Consolidated Statements of Operations

(In millions, except per share amounts)	Year Ended December 31,			
	2015	2014	2013	
Net sales	\$3,051.5	\$3,243.0	\$3,060.7	
Cost of goods sold	1,884.0	2,050.6	1,918.6	
Gross profit	1,167.5	1,192.4	1,142.1	
Selling, general and administrative expenses	574.2	664.0	505.7	
Research and development expenses	69.6	79.5	65.2	
Interest expense and related financing costs	100.1	61.5	43.8	
Interest accretion on deferred payment obligations	0.8	65.7	—	
Repositioning expenses	64.3	—	—	
Loss in Venezuela	59.6	1.0	8.5	
Equity in earnings of unconsolidated affiliate	(20.4	) (19.7	) (22.9	)
Asbestos and bankruptcy-related charges, net	(8.7	) 7.1	21.9	
Chapter 11 expenses, net	5.1	11.0	15.3	
Gain on termination and curtailment of postretirement plans	(4.5	) (39.5	) —	
Default interest settlement	—	—	129.0	
Other expense, net	17.8	27.5	15.0	
Total costs and expenses	857.9	858.1	781.5	
Income before income taxes	309.6	334.3	360.6	
Provision for income taxes	(164.7	) (57.0	) (102.9	)
Net income	144.9	277.3	257.7	
Less: Net income attributable to noncontrolling interests	(0.7	) (1.0	) (1.6	)
Net income attributable to W. R. Grace & Co. shareholders	\$144.2	\$276.3	\$256.1	
Earnings Per Share Attributable to W. R. Grace & Co. Shareholders				
Basic earnings per share:				
Net income attributable to W. R. Grace & Co. shareholders	\$2.00	\$3.67	\$3.35	
Weighted average number of basic shares	72.0	75.3	76.4	
Diluted earnings per share:				
Net income attributable to W. R. Grace & Co. shareholders	\$1.99	\$3.63	\$3.30	
Weighted average number of diluted shares	72.6	76.2	77.7	

The Notes to Consolidated Financial Statements are an integral part of these statements.

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## W. R. Grace &amp; Co. and Subsidiaries

## Consolidated Statements of Comprehensive Income

(In millions)	Year Ended December 31,		
	2015	2014	2013
Net income	\$144.9	\$277.3	\$257.7
Other comprehensive (loss) income:			
Defined benefit pension and other postretirement plans, net of income taxes	(1.0	) (2.6	) 4.6
Currency translation adjustments	(43.3	) (28.0	) (23.6
Gain (loss) from hedging activities, net of income taxes	1.3	(4.5	) (0.2
Other than temporary impairment of investment	—	0.8	—
(Loss) gain on securities available for sale, net of income taxes	—	(0.1	) 0.1
Total other comprehensive income (loss) attributable to noncontrolling interests	0.2	(2.2	) (0.9
Total other comprehensive loss	(42.8	) (36.6	) (20.0
Comprehensive income	102.1	240.7	237.7
Less: comprehensive (income) loss attributable to noncontrolling interests	(0.9	) 1.2	(0.7
Comprehensive income attributable to W. R. Grace & Co. shareholders	\$101.2	\$241.9	\$237.0

The Notes to Consolidated Financial Statements are an integral part of these statements.

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Table of ContentsW. R. Grace & Co. and Subsidiaries  
Consolidated Statements of Cash Flows

(In millions)	Year Ended December 31,		
	2015	2014	2013
<b>OPERATING ACTIVITIES</b>			
Net income	\$144.9	\$277.3	\$257.7
Reconciliation to net cash provided by (used for) operating activities:			
Depreciation and amortization	131.5	137.1	123.1
Equity in earnings of unconsolidated affiliate	(20.4	) (19.7	) (22.9
Dividends received from unconsolidated affiliate	11.8	11.2	2.8
Chapter 11 expenses, net	5.1	11.0	15.3
Asbestos and bankruptcy-related charges, net	(8.7	) 7.1	21.9
Cash paid for Chapter 11 and asbestos	(495.0	) (1,348.1	) (15.0
Cash paid to settle deferred payment obligation	—	(632.0	) —
Provision for income taxes	164.7	57.0	102.9
Cash paid for income taxes, net of refunds	(57.6	) (34.4	) (60.4
Interest expense and accretion	100.9	127.2	43.8
Cash paid for interest on credit arrangements	(91.9	) (28.4	) (5.5
Defined benefit pension expense (income)	72.3	160.3	(23.2
Cash paid under defined benefit pension arrangements	(17.8	) (100.0	) (68.3
Currency and other losses in Venezuela	73.2	1.0	8.5
Repositioning expenses	64.3	—	—
Cash paid for repositioning	(38.6	) —	—
Cash paid for restructuring	(16.4	) (7.9	) (6.4
Cash paid for environmental remediation	(12.7	) (12.4	) (14.0
Default interest settlement	—	—	129.0
Changes in assets and liabilities, excluding effect of currency translation and businesses acquired:			
Trade accounts receivable	(38.9	) (25.8	) 13.5
Inventories	(1.4	) (52.1	) 8.6
Accounts payable	35.9	(17.2	) 4.2
All other items, net	8.2	16.7	0.3
Net cash provided by (used for) operating activities	13.4	(1,472.1	) 515.9
<b>INVESTING ACTIVITIES</b>			
Capital expenditures	(154.8	) (169.8	) (156.2
Businesses acquired, net of cash acquired	—	—	(526.2
Transfer (to) from restricted cash and cash equivalents	(9.4	) 395.4	(197.8
Other investing activities	19.7	9.7	(0.5
Net cash (used for) provided by investing activities	(144.5	) 235.3	(880.7
<b>FINANCING ACTIVITIES</b>			
Borrowings under credit arrangements	343.6	1,123.4	57.5
Repayments under credit arrangements	(106.5	) (770.3	) (69.4
Proceeds from issuance of bonds	—	1,000.0	—
Cash paid for debt financing costs	(2.5	) (46.6	) —
Cash paid for repurchases of common stock	(301.5	) (469.5	) —
Proceeds from exercise of stock options	26.9	23.4	34.4
Purchase of interest in consolidated joint venture	—	(12.4	) —
Other financing activities	1.8	1.9	(30.9

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Net cash (used for) provided by financing activities	(38.2	) 849.9	(8.4	)
Effect of currency exchange rate changes on cash and cash equivalents	(58.3	) (20.4	) 1.1	
Decrease in cash and cash equivalents	(227.6	) (407.3	) (372.1	)
Cash and cash equivalents, beginning of period	557.5	964.8	1,336.9	
Cash and cash equivalents, end of period	\$329.9	\$557.5	\$964.8	
Supplemental disclosure of cash flow information				
Cash paid for interest	\$91.9	\$696.5	\$5.5	

The Notes to Consolidated Financial Statements are an integral part of these statements.

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## W. R. Grace &amp; Co. and Subsidiaries

## Consolidated Balance Sheets

(In millions, except par value and shares)	December 31, 2015	December 31, 2014
<b>ASSETS</b>		
Current Assets		
Cash and cash equivalents	\$329.9	\$557.5
Restricted cash and cash equivalents	9.4	—
Trade accounts receivable, less allowance of \$7.7 (2014—\$5.8)	458.1	481.1
Inventories	304.1	332.8
Other current assets	83.0	84.1
Total Current Assets	1,184.5	1,455.5
Properties and equipment, net of accumulated depreciation and amortization of \$1,746.5 (2014—\$1,818.4)	842.4	833.5
Goodwill	439.0	452.9
Technology and other intangible assets, net	260.8	288.0
Deferred income taxes	746.3	845.8
Overfunded defined benefit pension plans	26.1	44.1
Investment in unconsolidated affiliate	103.2	113.1
Other assets	73.7	60.7
Total Assets	\$3,676.0	\$4,093.6
<b>LIABILITIES AND EQUITY</b>		
Current Liabilities		
Debt payable within one year	\$84.6	\$96.8
Accounts payable	266.7	255.3
PI warrant liability	—	490.0
Other current liabilities	356.1	338.5
Total Current Liabilities	707.4	1,180.6
Debt payable after one year	2,144.3	1,919.0
Deferred income taxes	9.9	19.2
Income tax contingencies	20.9	24.0
Underfunded and unfunded defined benefit pension plans	456.5	457.5
Other liabilities	124.5	124.3
Total Liabilities	3,463.5	3,724.6
Commitments and Contingencies—Note 10		
Equity		
Common stock issued, par value \$0.01; 300,000,000 shares authorized; outstanding: 70,533,515 (2014—72,922,565)	0.7	0.7
Paid-in capital	496.0	526.1
Retained earnings	436.3	292.1
Treasury stock, at cost: shares: 6,923,110 (2014—4,524,688)	(658.4)	(429.2)
Accumulated other comprehensive loss	(66.8)	(23.8)
Total W. R. Grace & Co. Shareholders' Equity	207.8	365.9
Noncontrolling interests	4.7	3.1
Total Equity	212.5	369.0
Total Liabilities and Equity	\$3,676.0	\$4,093.6

The Notes to Consolidated Financial Statements are an integral part of these statements.

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Table of ContentsW. R. Grace & Co. and Subsidiaries  
Consolidated Statements of Equity

(In millions)	Common Stock and Paid-in Capital	Retained Earnings (Accumulated Deficit)	Treasury Stock	Accumulated Other Comprehensive (Loss) Income	Noncontrolling Interests	Total Equity
Balance, December 31, 2012	\$537.3	\$(240.3 )	\$(16.8 )	\$29.7	\$9.9	\$319.8
Net income	—	256.1	—	—	1.6	257.7
Stock based compensation	13.4	—	—	—	—	13.4
Exercise of stock options	17.6	—	16.8	—	—	34.4
Tax benefit related to stock plans	(35.4 )	—	—	—	—	(35.4 )
Shares issued	1.3	—	—	—	—	1.3
Other comprehensive loss	—	—	—	(19.1 )	(0.9 )	(20.0 )
Balance, December 31, 2013	534.2	15.8	—	10.6	10.6	571.2
Net income	—	276.3	—	—	1.0	277.3
Repurchase of common stock	(0.1 )	—	(469.4 )	—	—	(469.5 )
Stock based compensation	12.5	—	—	—	—	12.5
Exercise of stock options	(16.8 )	—	40.2	—	—	23.4
Purchase of noncontrolling interest	(6.1 )	—	—	—	(6.3 )	(12.4 )
Tax benefit related to stock plans	1.2	—	—	—	—	1.2
Shares issued	1.9	—	—	—	—	1.9
Other comprehensive loss	—	—	—	(34.4 )	(2.2 )	(36.6 )
Balance, December 31, 2014	526.8	292.1	(429.2 )	(23.8 )	3.1	369.0
Net income	—	144.2	—	—	0.7	144.9
Repurchase of common stock	—	—	(301.5 )	—	—	(301.5 )
Stock based compensation	13.0	—	—	—	—	13.0
Exercise of stock options	(45.4 )	—	72.3	—	—	26.9
Purchase of noncontrolling interest	(0.7 )	—	—	—	0.7	—
Tax benefit related to stock plans	1.9	—	—	—	—	1.9
Shares issued	1.1	—	—	—	—	1.1
Other comprehensive loss	—	—	—	(43.0 )	0.2	(42.8 )
Balance, December 31, 2015	\$496.7	\$436.3	\$(658.4 )	\$(66.8 )	\$4.7	\$212.5

The Notes to Consolidated Financial Statements are an integral part of these statements.

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## Notes to Consolidated Financial Statements

## 1. Basis of Presentation and Summary of Significant Accounting and Financial Reporting Policies

W. R. Grace & Co., through its subsidiaries, is engaged in specialty chemicals and specialty materials businesses on a global basis through three operating segments: Grace Catalysts Technologies, which includes catalysts and related products and technologies used in refining, petrochemical and other chemical manufacturing applications; Grace Materials Technologies, which includes packaging technologies and engineered materials used in consumer, industrial, coatings, and pharmaceutical applications; and Grace Construction Products, which includes specialty construction chemicals and specialty building materials used in commercial, infrastructure and residential construction.

W. R. Grace & Co. conducts all of its business through a single wholly owned subsidiary, W. R. Grace & Co.—Conn. ("Grace—Conn."). Grace—Conn. owns all of the assets, properties and rights of W. R. Grace & Co. on a consolidated basis, either directly or through subsidiaries.

As used in these notes, the term "Company" refers to W. R. Grace & Co. The term "Grace" refers to the Company and/or one or more of its subsidiaries and, in certain cases, their respective predecessors.

**Separation Transaction** On February 5, 2015, Grace announced a plan to separate into two independent, publicly traded companies, intended to improve Grace's strategic focus, simplify its operating structure, and allow for more efficient capital allocation. On January 27, 2016, Grace entered into a separation agreement with GCP Applied Technologies Inc., then a wholly-owned subsidiary of Grace ("GCP"), pursuant to which Grace agreed to transfer its Grace Construction Products operating segment and the packaging technologies business, operated under the "Darex" name, of its Grace Materials Technologies operating segment to GCP (the "Separation"). The Separation occurred on February 3, 2016, by means of a pro rata distribution to Grace stockholders of all of the outstanding shares of GCP common stock (the "Distribution"). Under the Distribution, one share of GCP common stock was distributed for each share of Grace common stock held as of the close of business on January 27, 2016. No fractional shares were distributed. As a result of the Distribution, GCP is now an independent public company and its common stock is listed under the symbol "GCP" on the New York Stock Exchange.

**Chapter 11 Proceedings** On April 2, 2001, Grace and 61 of its United States subsidiaries and affiliates filed voluntary petitions for reorganization under Chapter 11 of the United States Bankruptcy Code in the United States Bankruptcy Court for the District of Delaware (the "Bankruptcy Court") in order to resolve outstanding asbestos personal injury and property damage claims, including class-action lawsuits alleging damages from Zonolite® Attic Insulation ("ZAI"), a former Grace attic insulation product. In 2008, Grace and other parties filed a joint plan of reorganization with the Bankruptcy Court (as subsequently amended, the "Joint Plan"). Following the confirmation of the Joint Plan in 2011 by the Bankruptcy Court and in 2012 by a U.S. District Court, and the resolution of all appeals, Grace emerged from bankruptcy on February 3, 2014.

**Principles of Consolidation** The Consolidated Financial Statements include the accounts of Grace and entities as to which Grace exercises control over operating and financial policies. Grace consolidates the activities of variable interest entities in circumstances where management determines that Grace is the primary beneficiary of the variable interest entity. Intercompany transactions and balances are eliminated in consolidation. Investments in affiliated companies in which Grace can significantly influence operating and financial policies are accounted for under the equity method, unless Grace's investment is deemed to be temporary, in which case the investment is accounted for under the cost method.

**Noncontrolling Interests in Consolidated Entities** Grace conducts certain of its business through joint ventures with unaffiliated third parties. For joint ventures in which Grace has a controlling financial interest, Grace consolidates the results of such joint ventures in the Consolidated Financial Statements. Grace recognizes a liability for cumulative amounts due to the third parties based on the financial results of the joint ventures, and deducts the amount of income attributable to noncontrolling interests in the measurement of its consolidated net income. During the 2014 fourth quarter, Grace acquired the remaining 50% equity interest in its Construction Products joint venture in Turkey for \$11.7 million, making the business a wholly owned subsidiary of Grace.

**Operating Segments** Grace reports financial results of each of its operating segments that engage in business activities that generate revenues and expenses and whose operating results are regularly reviewed by Grace's Chief Executive Officer.

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## Notes to Consolidated Financial Statements (Continued)

## 1. Basis of Presentation and Summary of Significant Accounting and Financial Reporting Policies (Continued)

**Use of Estimates** The preparation of financial statements in conformity with U.S. generally accepted accounting principles ("U.S. GAAP") requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of contingent assets and liabilities at the date of the Consolidated Financial Statements, and the reported amounts of revenues and expenses for the periods presented. Actual amounts could differ from those estimates, and the differences could be material. Changes in estimates are recorded in the period identified. Grace's accounting measurements that are most affected by management's estimates of future events are:

- Realization values of net deferred tax assets, which depend on projections of future taxable income (see Note 7);
- Pension and postretirement liabilities that depend on assumptions regarding participant life spans, future inflation, discount rates and total returns on invested funds (see Note 8); and
- Contingent liabilities, which depend on an assessment of the probability of loss and an estimate of ultimate obligation, such as litigation (see Note 10), income taxes (see Note 7), and environmental remediation (see Note 10).

**Revenue Recognition** Grace recognizes revenue when all of the following criteria are satisfied: risk of loss and title transfer to the customer; the price is fixed and determinable; persuasive evidence of a sales arrangement exists; and collectability is reasonably assured. Risk of loss and title transfers to customers are based on individual contractual terms which generally specify the point of shipment. Terms of delivery are generally included in customer contracts of sale, order confirmation documents and invoices.

Certain customer arrangements include conditions for volume rebates. Grace accrues a rebate allowance and reduces recorded sales for anticipated selling price adjustments at the time of sale. Grace regularly reviews rebate accruals based on actual and anticipated sales patterns.

Certain customer arrangements, constituting less than 2% of our annual revenues, include licenses of technology combined with other deliverables. Generally, the licenses are non-exclusive, perpetual licenses that permit the licensee to use Grace proprietary technology to design, build, and maintain a polypropylene manufacturing plant, and to make and sell products from the plant. In these multiple-element arrangements, Grace typically bundles the license, the basic process design package, and training and consulting-type services into one fixed price contract. The fixed price contract revenue is accounted for as one unit of accounting and is recognized on a straight-line basis over the period of performance of the contract, which typically ranges from three to five years, except for contingent revenue associated with a final performance guarantee. Revenue associated with the performance guarantee is recognized when customer acceptance is obtained, which is typically at the time that the licensee's plant is operational.

Elements in the fixed price contract are not accounted for as separate units of accounting because they do not have standalone value. Each of the deliverables are necessary components to the successful construction and future operation of the manufacturing plants, and the elements have interdependencies such that there is minimal value in each deliverable without the other bundled elements. Other services and optional software that are sold in connection with license arrangements qualify as separate units of accounting, with revenue recognized when services are rendered and in the case of process control software, when installed and functional. Additional services that are not part of the fixed price contract are billed on a variable basis. The selling prices of the significant deliverables described above are based on Grace's best estimate of selling price, determined using historical business information.

**Cash Equivalents** Cash equivalents consist of liquid instruments and investments with maturities of three months or less when purchased. The recorded amounts approximate fair value.

**Inventories** Inventories are stated at the lower of cost or market. The method used to determine cost is first-in/first-out, or "FIFO." Market values for raw materials are based on current cost and, for other inventory classifications, net realizable value. Inventories are evaluated regularly for salability, and slow moving and/or



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## Notes to Consolidated Financial Statements (Continued)

## 1. Basis of Presentation and Summary of Significant Accounting and Financial Reporting Policies (Continued)

obsolete items are adjusted to expected salable value. Inventory values include direct and certain indirect costs of materials and production. Abnormal costs of production are expensed as incurred.

**Long Lived Assets** Properties and equipment are stated at cost. Depreciation of properties and equipment is generally computed using the straight-line method over the estimated useful life of the asset. Estimated useful lives range from 20 to 40 years for buildings, 3 to 7 years for information technology equipment, 3 to 10 years for operating machinery and equipment, and 5 to 10 years for furniture and fixtures. Interest is capitalized in connection with major project expenditures. Fully depreciated assets are retained in properties and equipment and related accumulated depreciation accounts until they are removed from service. In the case of disposals, assets and related accumulated depreciation are removed from the accounts and the net amount, less any proceeds from disposal, is charged or credited to earnings. Obligations for costs associated with asset retirements, such as requirements to restore a site to its original condition, are accrued at net present value and amortized along with the related asset.

Other intangible assets with finite lives consist of technology, customer lists, trademarks and other intangibles and are amortized over their estimated useful lives, ranging from 1 to 30 years.

Grace reviews long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be fully recoverable. There were impairment charges recorded in 2015 and 2014; no impairment charge was required in 2013 (see Note 11).

**Goodwill** Goodwill arises from certain business combinations. Grace reviews its goodwill for impairment on an annual basis at October 31 and whenever events or changes in circumstances indicate that the carrying amount may not be fully recoverable. Recoverability is assessed at the reporting unit level most directly associated with the business combination that generated the goodwill. For the purpose of measuring impairment under the provisions of ASC 350 "Intangibles—Goodwill and Other," Grace has identified its reporting units at one level below its operating segments. Grace has evaluated its goodwill annually with no impairment charge required in any of the periods presented.

**Financial Instruments** Grace uses commodity forward, swap and/or option contracts and currency forward and/or option contracts to manage exposure to fluctuations in commodity prices and currency exchange rates. Grace does not hold or issue derivative financial instruments for trading purposes. Derivative instruments are recorded in the Consolidated Balance Sheets as either assets or liabilities at their fair value. For derivative instruments designated as fair value hedges, changes in the fair values of the derivative instruments closely offset changes in the fair values of the hedged items in "other expense, net" in the Consolidated Statements of Operations. For derivative instruments designated as cash flow hedges, if the derivative instruments qualify for hedge accounting pursuant to ASC 815, the effective portion of any hedge is reported as "accumulated other comprehensive income" in the Consolidated Balance Sheets until it is cleared to earnings during the same period in which the hedged item affects earnings. The ineffective portion of all hedges, and changes in the fair values of derivative instruments that are not designated as hedges, are recorded in current period earnings. Cash flows from derivative instruments are reported in the same category as the cash flows from the items being hedged.

**Income Taxes** Deferred tax assets and liabilities are recognized with respect to the expected future tax consequences of events that have been recorded in the Consolidated Financial Statements. If it is more likely than not that all or a portion of deferred tax assets will not be realized, a valuation allowance is provided against such deferred tax assets. The assessment of realization of deferred tax assets is performed based on the weight of the positive and negative evidence available to indicate whether the asset is recoverable, including tax planning strategies that are prudent and feasible.

Tax benefits from an uncertain tax position are recognized only if it is more likely than not that the tax position will be sustained upon examination by the taxing authorities based on the technical merits of the position. Tax benefits

recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than fifty percent likelihood of being realized upon ultimate settlement. Grace evaluates such likelihood based on relevant facts and tax law. Grace adjusts its recorded liability for income tax matters due

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## Notes to Consolidated Financial Statements (Continued)

## 1. Basis of Presentation and Summary of Significant Accounting and Financial Reporting Policies (Continued)

to changes in circumstances or new uncertainties, such as amendments to existing tax law. Grace's ultimate tax liability depends upon many factors, including negotiations with taxing authorities in the jurisdictions in which it operates, outcomes of tax litigation, and resolution of disputes arising from federal, state, and foreign tax audits. Due to the varying tax laws in each jurisdiction management, with the assistance of local tax advisors as necessary, assesses individual matters in each jurisdiction on a case-by-case basis. Grace researches and evaluates its income tax positions, including why it believes they are compliant with income tax regulations, and these positions are documented as appropriate.

**Pension Benefits** Grace's method of accounting for actuarial gains and losses relating to its global defined benefit pension plans is referred to as "mark-to-market accounting." Under mark-to-market accounting, Grace's pension costs consist of two elements: 1) ongoing costs recognized quarterly, which include service and interest costs, expected returns on plan assets, and amortization of prior service costs/credits; and 2) mark-to-market gains and losses recognized annually in the fourth quarter resulting from changes in actuarial assumptions, such as discount rates and the difference between actual and expected returns on plan assets. Should a significant event occur, Grace's pension obligation and plan assets would be remeasured at an interim period, and the gains or losses on remeasurement would be recognized in that period.

**Stock-Based Compensation** The Company recognizes expenses related to stock-based compensation payment transactions in which it receives employee services in exchange for (a) equity instruments of the Company or (b) liabilities that are based on the fair value of the Company's equity instruments or that may be settled by the issuance of equity instruments. Stock-based compensation cost for restricted stock units (RSUs) and share settled performance based units (PBUs) are measured based on the high/low average of the Company's common stock on the date of grant. Cash settled performance based units (CSPBU) are remeasured at the end of each reporting period based on the closing fair market value of the Company's common stock. Stock-based compensation cost for stock options is estimated at the grant date based on each option's fair value as calculated by the Black-Scholes option pricing model. The Company recognizes stock-based compensation cost as expense ratably on a straight-line basis over the requisite service period.

**Currency Translation** Assets and liabilities of foreign subsidiaries (other than those located in countries with highly inflationary economies, including Venezuela) are translated into U.S. dollars at current exchange rates, while revenues, costs and expenses are translated at average exchange rates during each reporting period. The resulting translation adjustments are included in "accumulated other comprehensive loss" in the Consolidated Balance Sheets. The financial statements of any subsidiaries located in countries with highly inflationary economies are remeasured as if the functional currency were the U.S. dollar; the remeasurement creates translation adjustments that are reflected in net income in the Consolidated Statements of Operations.

Until September 30, 2015, Grace accounted for its results in Venezuela at the official exchange rate of 6.3 bolivars to one U.S. dollar. Based on developments in the 2015 third quarter, including changed expectations about Grace's ability to import raw materials into Venezuela at the official exchange rate in the future and the increase in inflation, Grace determined that it is no longer appropriate to do so. Effective September 30, 2015, Grace is accounting for its results in Venezuela at the SIMADI rate. At December 31, 2015, this rate was 199 bolivars to one U.S. dollar. Grace recorded a pre-tax charge of \$73.2 million in 2015 to reflect the devaluation of monetary assets and the impairment of non-monetary assets, including \$40.5 million for cash, \$28.6 million for working capital and \$4.1 million for properties and equipment. Of this amount, \$13.6 million related to inventory was recorded in cost of goods sold, and \$59.6 million related to other assets and liabilities was recorded as a separate line in the Consolidated Statement of Operations. The remaining assets and liabilities, as well as future sales, earnings and cash flows of Grace's Venezuelan subsidiary are immaterial after September 30, 2015. See "Item 7. Management's Discussion and

Analysis—Venezuela" for further discussion.

Reclassifications Certain amounts in prior years' Consolidated Financial Statements have been reclassified to conform to the current year presentation. Such reclassifications have not materially affected previously reported amounts in the Consolidated Financial Statements.

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## Notes to Consolidated Financial Statements (Continued)

## 1. Basis of Presentation and Summary of Significant Accounting and Financial Reporting Policies (Continued)

**Effect of New Accounting Standards** In April 2014, the FASB issued ASU 2014-08 "Reporting Discontinued Operations and Disclosures of Disposals of Components of an Entity." This update is intended to change the requirements for reporting discontinued operations and enhance convergence of the FASB's and the International Accounting Standard Board's ("IASB") reporting requirements for discontinued operations. Grace adopted this standard in the 2015 first quarter, and it did not have a material effect on the Consolidated Financial Statements at that time.

In May 2014, the FASB issued ASU 2014-09 "Revenue from Contracts with Customers." This update is intended to remove inconsistencies and weaknesses in revenue requirements; provide a more robust framework for addressing revenue issues; improve comparability of revenue recognition practices across entities, industries, jurisdictions and capital markets; provide more useful information to users of financial statements through improved disclosure requirements; and simplify the preparation of financial statements by reducing the number of requirements to which an entity must refer. The new requirements were to be effective for fiscal years beginning after December 15, 2016, and for interim periods within those fiscal years, with early adoption not permitted. In August 2015, the FASB issued ASU 2015-14 "Revenue from Contracts with Customers—Deferral of the Effective Date," deferring the effective date by one year but permitting adoption as of the original effective date. The revised standard allows for two methods of adoption: (a) full retrospective adoption, meaning the standard is applied to all periods presented, or (b) modified retrospective adoption, meaning the cumulative effect of applying the new standard is recognized as an adjustment to the opening retained earnings balance. Grace does not intend to adopt the standard early and is in the process of determining the adoption method as well as the effects the adoption will have on the Consolidated Financial Statements.

In April 2015, the FASB issued ASU 2015-03 "Simplifying the Presentation of Debt Issuance Costs." This update is part of the FASB's Simplification Initiative and is also intended to enhance convergence with the IASB's treatment of debt issuance costs. The update requires that debt issuance costs related to a recognized debt liability be presented in the balance sheet as a direct deduction from the carrying amount of that debt liability, consistent with debt discounts. In August 2015, the FASB issued ASU 2015-15 "Presentation and Subsequent Measurement of Debt Issuance Costs Associated with Line-of-Credit Arrangements." The update clarifies ASU 2015-03, allowing debt issuance costs related to line of credit arrangements to be deferred and presented as an asset and subsequently amortized ratably over the term of the line-of-credit arrangement, regardless of whether there are any outstanding borrowings on the line-of-credit arrangement. The new requirements are effective for fiscal years beginning after December 15, 2015, and for interim periods within those fiscal years, with early adoption permitted. Grace is currently evaluating the effect of these updates on the Consolidated Financial Statements and will adopt them in the 2016 first quarter. As of December 31, 2015 and 2014, capitalized financing fees included in other assets in the Consolidated Balance Sheets were \$34.2 million and \$37.7 million, respectively.

In July 2015, the FASB issued ASU 2015-11 "Simplifying the Measurement of Inventory." This update is part of the FASB's Simplification Initiative and is also intended to enhance convergence with the IASB's measurement of inventory. The update requires that inventory be measured at the lower of cost or net realizable value for entities using FIFO or average cost methods. The new requirements are effective for fiscal years beginning after December 15, 2016, and for interim periods within those fiscal years, with early adoption permitted. Grace is currently evaluating the timing of adoption and does not expect the update to have an effect on the Consolidated Financial Statements. In November 2015, the FASB issued Accounting Standards Update 2015-17, "Balance Sheet Classification of Deferred Taxes" as an amendment to ASC 740 "Income Taxes." As part of the FASB's Simplification Initiative, this update requires that all deferred tax assets and liabilities, along with any related valuation allowance, be classified as noncurrent on the balance sheet. Thus, each jurisdiction will now only present one net noncurrent deferred tax asset or

liability. The update does not change the existing requirement that only permits offsetting of deferred tax assets and liabilities within a specific jurisdiction. The update is effective for fiscal years beginning after December 15, 2016, and for interim periods within those fiscal years, with early adoption permitted, and may be applied either prospectively or retrospectively. Grace has elected to early adopt this standard retrospectively in

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## Notes to Consolidated Financial Statements (Continued)

## 1. Basis of Presentation and Summary of Significant Accounting and Financial Reporting Policies (Continued)

2015. Consistent with the new guidance, Grace has presented the deferred tax assets or liabilities of each jurisdiction as one net noncurrent deferred tax asset or liability. As a result, for the year ended December 31, 2014, Grace reclassified \$233.8 million previously reported as net current deferred tax assets to net noncurrent deferred tax assets and \$0.1 million previously reported as net current deferred tax liabilities to net noncurrent deferred tax liabilities. The retrospective application of the update results in total net deferred tax assets of \$845.8 million and total net deferred tax liabilities of \$19.2 million as of December 31, 2014.

## 2. Inventories

Inventories are stated at the lower of cost or market, and cost is determined using FIFO. Inventories consisted of the following at December 31, 2015 and 2014:

(In millions)	December 31,	
	2015	2014
Raw materials	\$86.2	\$78.8
In process	39.6	47.2
Finished products	149.6	177.7
Other	28.7	29.1
	\$304.1	\$332.8

## 3. Properties and Equipment

(In millions)	December 31,	
	2015	2014
Land	\$18.9	\$18.5
Buildings	529.3	530.0
Information technology and equipment	180.6	175.6
Machinery, equipment and other	1,756.8	1,825.3
Projects under construction	103.3	102.5
Properties and equipment, gross	2,588.9	2,651.9
Accumulated depreciation and amortization	(1,746.5	) (1,818.4
Properties and equipment, net	\$842.4	\$833.5

Capitalized interest costs amounted to \$1.1 million, \$1.5 million, and \$1.2 million in 2015, 2014, and 2013, respectively. Depreciation and lease amortization expense relating to properties and equipment was \$109.3 million, \$112.5 million, and \$108.6 million in 2015, 2014, and 2013, respectively. Grace's rental expense for operating leases was \$27.0 million, \$27.5 million, and \$28.4 million in 2015, 2014, and 2013, respectively.

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## Notes to Consolidated Financial Statements (Continued)

## 3. Properties and Equipment (Continued)

At December 31, 2015, minimum future non-cancelable payments for operating leases are:

	(In millions)
2016	\$23.9
2017	15.8
2018	11.0
2019	8.0
2020	5.8
Thereafter	21.2
	\$85.7

The above minimum non-cancelable lease payments are net of anticipated sublease income of \$0.5 million in 2016, \$0.3 million in 2017, \$0.2 million in 2018, \$0.1 million in 2019, and \$0.1 million in 2020.

## 4. Goodwill and Other Intangible Assets

The carrying amount of goodwill attributable to each operating segment and the changes in those balances during the years ended December 31, 2015 and 2014, are as follows:

(In millions)	Grace Catalysts Technologies	Grace Materials Technologies	Grace Construction Products	Total Grace
Balance, December 31, 2013	\$293.4	\$41.2	\$122.9	\$457.5
Foreign currency translation	(0.9)	(2.3)	(10.8)	(14.0)
Other adjustments	1.3	11.5	(3.4)	9.4
Balance, December 31, 2014	293.8	50.4	108.7	452.9
Foreign currency translation	(1.0)	(2.0)	(10.8)	(13.8)
Other adjustments	—	—	(0.1)	(0.1)
Balance, December 31, 2015	\$292.8	\$48.4	\$97.8	\$439.0

Other adjustments in 2014 in the table above relate primarily to deferred income taxes for prior acquisitions that were corrected during 2014, including \$8.0 million that was recorded in "benefit from (provision for) income taxes" in the Consolidated Financial Statements. Grace determined that these amounts are not material to 2014 or prior periods.

Grace's net book value of other intangible assets at December 31, 2015 and 2014, was \$260.8 million and \$288.0 million, respectively, detailed as follows:

(In millions)	December 31, 2015	
	Gross Carrying Amount	Accumulated Amortization
Technology	\$254.9	\$60.7
Customer lists	81.1	47.6
Trademarks	34.0	16.3
Other	20.6	5.2
Total	\$390.6	\$129.8

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## Notes to Consolidated Financial Statements (Continued)

## 4. Goodwill and Other Intangible Assets (Continued)

(In millions)	December 31, 2014	
	Gross Carrying Amount	Accumulated Amortization
Technology	\$257.9	\$49.5
Customer lists	88.5	46.2
Trademarks	34.9	15.0
Other	21.5	4.1
Total	\$402.8	\$114.8

Total indefinite-lived trademarks, included above, at December 31, 2015 and 2014, were \$3.8 million and \$4.2 million, respectively. Amortization expense related to intangible assets was \$20.8 million, \$22.9 million, and \$12.7 million in 2015, 2014, and 2013, respectively.

At December 31, 2015, estimated future annual amortization expense for intangible assets is:

	(In millions)
2016	\$17.9
2017	16.7
2018	16.4
2019	14.7
2020	14.3
Thereafter	177.0
	\$257.0

## 5. Debt

## Components of Debt

(In millions)	December 31,	
	2015	2014
U.S. dollar term loan, net of unamortized discount of \$1.7 at December 31, 2015 (2014—\$2.1)	\$933.6	\$692.6
5.125% senior notes due 2021	700.0	700.0
5.625% senior notes due 2024	300.0	300.0
Euro term loan, net of unamortized discount of \$0.4 at December 31, 2015 (2014—\$0.4)	161.3	181.2
Debt payable—unconsolidated affiliate	33.4	31.5
Deferred payment obligation	29.1	28.2
Other borrowings(1)	71.5	82.3
Total debt	2,228.9	2,015.8
Less debt payable within one year	84.6	96.8
Debt payable after one year	\$2,144.3	\$1,919.0
Weighted average interest rates on total debt	4.2	% 4.3

(1) Represents borrowings under various lines of credit and other borrowings, primarily by non-U.S. subsidiaries. See Note 6 for a discussion of the fair value of Grace's debt.

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## Notes to Consolidated Financial Statements (Continued)

## 5. Debt (Continued)

The principal maturities of debt outstanding at December 31, 2015, were as follows:

	(In millions)
2016	\$84.6
2017	47.1
2018	17.7
2019	17.1
2020	15.6
Thereafter	2,046.8
Total debt	\$2,228.9

## Credit Agreement

On February 3, 2014, Grace entered into a Credit Agreement (the "Credit Agreement") in connection with its exit financing. The Credit Agreement provides for:

- (a) a \$700 million term loan due in 2021, with interest at LIBOR +225 bps with a 75 bps floor;
- (b) a €150 million term loan due in 2021, with interest at EURIBOR +250 bps with a 75 bps floor;
- (c) a \$400 million revolving credit facility due in 2019, with interest at LIBOR +175 bps; and
- (d) a \$250 million delayed draw term loan facility available for 12 months, with amounts drawn due in 2021, with interest at LIBOR +225 bps with a 75 bps floor.

The term loans will amortize in equal quarterly installments in aggregate annual amounts equal to 1.00% of the original principal amount thereof.

The Credit Agreement contains customary affirmative covenants, including, but not limited to (i) maintenance of legal existence and compliance with laws and regulations; (ii) delivery of consolidated financial statements and other information; (iii) payment of taxes; (iv) delivery of notices of defaults and certain other material events; and (v) maintenance of adequate insurance. The Credit Agreement also contains customary negative covenants, including but not limited to restrictions on (i) dividends on, and redemptions of, equity interests and other restricted payments; (ii) liens; (iii) loans and investments; (iv) the sale, transfer or disposition of assets and businesses; (v) transactions with affiliates; and (vii) a maximum total leverage ratio. The Credit Agreement contains conditions that would require mandatory principal payments in advance of the term loan maturity date; none of these conditions had been triggered as of December 31, 2015.

Events of default under the Credit Agreement include, but are not limited to: (i) failure to pay principal, interest, fees or other amounts under the Credit Agreement when due, taking into account any applicable grace period; (ii) any representation or warranty proving to have been incorrect in any material respect when made; (iii) failure to perform or observe covenants or other terms of the Credit Agreement subject to certain grace periods; (iv) a cross-default and cross-acceleration with certain other material debt; (v) bankruptcy events; (vi) certain defaults under ERISA; and (vii) the invalidity or impairment of security interests.

To secure its obligations under the Credit Agreement, the Company has granted security interests in the shares of its Grace—Conn. and Alltech Associates, Inc. subsidiaries, substantially all of its U.S. non-real estate assets and property, and certain U.S. real estate.

On January 30, 2015, Grace borrowed on its \$250 million delayed draw term loan facility and used the funds, together with cash on hand, to repurchase the warrant issued to the asbestos personal injury trust for \$490 million. (See Note 10 for Chapter 11 information.)

Grace had no outstanding draws on the revolving credit facility as of December 31, 2015; however, the available credit under that facility was reduced to \$343.2 million by outstanding letters of credit.



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## Notes to Consolidated Financial Statements (Continued)

## 5. Debt (Continued)

During the fourth quarter, Grace entered into an amendment to the Credit Agreement to permit the Separation. The amendment, which became effective upon completion of the Separation, revised certain covenants, reduced the revolving credit facility limit to \$300 million and extended the facility's term to November 1, 2020.

In connection with the Separation, GCP distributed \$750 million to Grace. Using a portion of these proceeds, Grace repaid \$500 million of its euro and U.S. dollar term loans. See Note 21 for information related to the Separation.

## Senior Notes

On September 16, 2014, Grace-Conn. (the "Issuer") issued \$1,000.0 million of senior unsecured notes (the "Notes") in two tranches:

(a) \$700 million in aggregate principal amount of Notes due 2021 at a coupon rate of 5.125%, and

(b) \$300 million in aggregate principal amount of Notes due 2024 at a coupon rate of 5.625%.

The Notes were priced at 100% of par and were offered and sold pursuant to exemptions from registration under the Securities Act of 1933, as amended, (the "Securities Act"). The net proceeds received from issuance were \$985.5 million, a portion of which was used to terminate Grace's obligations under the deferred payment agreement with the PI Trust for \$632.0 million and to repay amounts outstanding under Grace's revolving credit facility. The remaining proceeds from the Notes were used to partially fund the settlement of the warrant issued to the PI Trust (as defined in Note 10) and for other general corporate purposes. Interest is payable on the Notes on each April 1 and October 1, commencing April 1, 2015.

Grace may redeem some or all of the Notes at any time at a price equal to the greater of (i) 100% of the principal amount of the Notes redeemed plus accrued and unpaid interest to, but excluding, the redemption date and (ii) the sum, as determined by an independent investment banker, of the present values of the remaining scheduled payments of principal and interest (exclusive of interest accrued to the date of redemption) discounted to the redemption date on a semiannual basis (assuming a 360-day year consisting of twelve 30-day months) at the treasury rate plus 50 basis points, in each case, accrued and unpaid interest to, but excluding, the date of redemption. In the event of a change in control, Grace will be required to offer to purchase the Notes at a price equal to 101% of the aggregate principal amount outstanding plus accrued and unpaid interest.

The Notes are jointly and severally guaranteed on a full and unconditional senior unsecured basis by the Company and Alltech Associates, Inc., a wholly-owned subsidiary of the Issuer (the "Guarantors"). The Notes and guarantees are senior obligations of the Issuer and the Guarantors, respectively, and will rank equally with all of the existing and future unsubordinated obligations of the Issuer and the Guarantors, respectively. The Notes are effectively subordinated to any secured indebtedness to the extent of the value of the assets securing such indebtedness, and structurally subordinated to the debt and other liabilities of Grace's non-guarantor subsidiaries.

The Notes were issued subject to covenants that limit the Issuer's and certain of its subsidiaries' ability, subject to certain exceptions and qualifications, to (i) create or incur liens on assets, (ii) enter into any sale and leaseback transaction and (iii) in the case of the Issuer, merge or consolidate with another company.

The Notes were also issued subjected to customary events of default which include (subject in certain cases to customary grace and cure periods), among others, nonpayment of principal or interest; breach of other agreements in the Indenture; failure to pay certain other indebtedness; failure to discharge a final judgment for payment of \$75 million or more (excluding any amounts covered by insurance or indemnities) rendered against the Issuer or any of its significant subsidiaries; and certain events of bankruptcy or insolvency. Generally, if any event of default occurs, the trustee or the holders of at least 25% in aggregate principal amount of the then outstanding series of Notes may declare all the Notes of such series to be due and payable immediately.

The Separation had no impact on the payment terms or other terms of the Notes, and they remain obligations of Grace.



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## Notes to Consolidated Financial Statements (Continued)

## 5. Debt (Continued)

This summary of the Credit Agreement, the amendment to the Credit Agreement, the indentures and the Notes does not purport to be complete and is qualified in its entirety by reference to the full text of such agreements, copies of which have been filed with the SEC.

## 6. Fair Value Measurements and Risk

Certain of Grace's assets and liabilities are reported at fair value on a gross basis. ASC 820 "Fair Value Measurements and Disclosures" defines fair value as the value that would be received at the measurement date in the principal or "most advantageous" market. Grace uses principal market data, whenever available, to value assets and liabilities that are required to be reported at fair value.

Grace has identified the following financial assets and liabilities that are subject to the fair value analysis required by ASC 820:

## Fair Value of Debt and Other Financial Instruments

Debt payable is recorded at carrying value as discussed in Note 5. Fair value is determined based on Level 2 inputs, including expected future cash flows (discounted at market interest rates), estimated current market prices and quotes from financial institutions.

At December 31, 2015, the carrying amounts and fair values of Grace's debt were as follows:

(In millions)	December 31, 2015		December 31, 2014	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
U.S. dollar term loan(1)	\$933.6	\$927.1	\$692.6	\$691.3
5.125% senior notes due 2021	700.0	710.5	700.0	720.9
5.625% senior notes due 2024	300.0	302.6	300.0	312.0
Euro term loan(2)	161.3	161.1	181.2	181.4
Other borrowings	134.0	134.0	142.0	142.0
Total debt	\$2,228.9	\$2,235.3	\$2,015.8	\$2,047.6

(1) Carrying amounts are net of unamortized discounts of \$1.7 million and \$2.1 million at December 31, 2015 and 2014, respectively.

(2) Carrying amounts are net of unamortized discounts of \$0.4 million and \$0.4 million at December 31, 2015 and 2014, respectively.

At December 31, 2015, the recorded values of other financial instruments such as cash equivalents and trade receivables and payables approximated their fair values, based on the short-term maturities and floating rate characteristics of these instruments.

## Commodity Derivatives

From time to time, Grace enters into commodity derivatives such as fixed-rate swaps or options with financial institutions to mitigate the risk of volatility of prices of natural gas or other commodities. Under fixed-rate swaps, Grace locks in a fixed rate with a financial institution for future purchases, purchases its commodity from a supplier at the prevailing market rate, and then settles with the bank for any difference in the rates, thereby "swapping" a variable rate for a fixed rate.

The valuation of Grace's fixed-rate natural gas swaps was determined using a market approach, based on natural gas futures trading prices quoted on the New York Mercantile Exchange. Commodity fixed-rate swaps with maturities of not more than 12 months are used and designated as cash flow hedges of forecasted purchases of natural gas. Current open contracts hedge forecasted transactions until March 2016. The effective portion of the gain or loss on the commodity contracts is recorded in "accumulated other comprehensive (loss) income" and reclassified into income in

the same period or periods that the underlying commodity purchase affects income. At

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## Notes to Consolidated Financial Statements (Continued)

## 6. Fair Value Measurements and Risk (Continued)

December 31, 2015, the contract volume, or notional amount, of the commodity contracts was 1.3 million MMBtu (million British thermal units) with a total contract value of \$2.4 million.

The valuation of Grace's natural gas call options was determined using a market approach, based on the strike price of the options and the natural gas futures trading prices quoted on the New York Mercantile Exchange. Commodity option contracts with maturities of not more than 24 months are used and designated as cash flow hedges of forecasted purchases of natural gas. The effective portion of the gain or loss on the commodity contracts is recorded in "accumulated other comprehensive (loss) income" and reclassified into income in the same period or periods that the underlying purchases affect income. At December 31, 2015, there are no outstanding commodity option contracts. The valuation of Grace's fixed-rate aluminum swaps was determined using a market approach, based on aluminum futures trading prices quoted on the London Metal Exchange. Commodity fixed-rate swaps with maturities of not more than 12 months are used and designated as cash flow hedges of forecasted purchases of aluminum. Current open contracts hedge forecasted transactions until November 2016. The effective portion of the gain or loss on the commodity contracts is recorded in "accumulated other comprehensive (loss) income" and reclassified into income in the same period or periods that the underlying commodity purchase affects income. At December 31, 2015, the contract volume, or notional amount, of the commodity contracts was 1.4 million pounds with a total contract value of \$1.1 million.

## Currency Derivatives

Because Grace conducts business in over 40 countries and in more than 50 currencies, results are exposed to fluctuations in currency exchange rates. Grace seeks to minimize exposure to these fluctuations by matching sales in volatile currencies with expenditures in the same currencies, but it is not always possible to do so. From time to time, Grace will use financial instruments such as currency forward contracts, options, or combinations of them to reduce the risk of certain specific transactions. However, Grace does not have a policy of hedging all exposures, because management does not believe that such a level of hedging would be cost-effective.

The valuation of Grace's currency exchange rate forward contracts is determined using both a market approach and an income approach. Inputs used to value currency exchange rate forward contracts consist of: (1) spot rates, which are quoted by various financial institutions; (2) forward points, which are primarily affected by changes in interest rates; and (3) discount rates used to present value future cash flows, which are based on the London Interbank Offered Rate (LIBOR) curve or overnight indexed swap rates.

## Debt and Interest Rate Swap Agreements

Grace uses interest rate swaps designated as cash flow hedges to manage fluctuations in interest rates on variable rate debt. The effective portion of gains and losses on these interest rate cash flow hedges is recorded in "accumulated other comprehensive (loss) income" and reclassified into "interest expense and related financing costs" during the hedged interest period.

In connection with its emergence financing, Grace entered into an interest rate swap beginning on February 3, 2015, and maturing on February 3, 2020, fixing the LIBOR component of the interest on \$250 million of Grace's term debt at a rate of 2.393%. The valuation of this interest rate swap is determined using both a market approach and an income approach, using prevailing market interest rates and discount rates to present value future cash flows based on the forward LIBOR yield curves.

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## Notes to Consolidated Financial Statements (Continued)

## 6. Fair Value Measurements and Risk (Continued)

The following tables present the fair value hierarchy for financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2015 and 2014:

Fair Value Measurements at December 31, 2015, Using				
(In millions)	Total	Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets				
Currency derivatives	\$1.1	\$—	\$1.1	\$—
Commodity derivatives	0.6	—	0.6	—
Total Assets	\$1.7	\$—	\$1.7	\$—
Liabilities				
Currency derivatives	\$0.6	\$—	\$0.6	\$—
Interest rate derivatives	7.9	—	7.9	—
Commodity derivatives	0.1	—	0.1	—
Total Liabilities	\$8.6	\$—	\$8.6	\$—
Fair Value Measurements at December 31, 2014, Using				
(In millions)	Total	Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets				
Currency derivatives	\$3.3	\$—	\$3.3	\$—
Total Assets	\$3.3	\$—	\$3.3	\$—
Liabilities				
Currency derivatives	\$0.1	\$—	\$0.1	\$—
Interest rate derivatives	5.5	—	5.5	—
Commodity derivatives	2.6	—	2.6	—
Total Liabilities	\$8.2	\$—	\$8.2	\$—

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## Notes to Consolidated Financial Statements (Continued)

## 6. Fair Value Measurements and Risk (Continued)

The following tables present the location and fair values of derivative instruments included in the Consolidated Balance Sheets as of December 31, 2015 and 2014:

December 31, 2015 (In millions)	Asset Derivatives	Fair Value	Liability Derivatives	Fair Value
	Balance Sheet Location		Balance Sheet Location	
Derivatives designated as hedging instruments under ASC 815:				
Commodity contracts	Other current assets	\$0.6	Other current liabilities	\$0.1
Currency contracts	Other current assets	0.7	Other current liabilities	0.4
Interest rate contracts	Other current assets	—	Other current liabilities	4.1
Currency contracts	Other assets	0.2	Other liabilities	—
Interest rate contracts	Other assets	—	Other liabilities	3.8
Derivatives not designated as hedging instruments under ASC 815:				
Currency contracts	Other current assets	0.2	Other current liabilities	0.2
Total derivatives		\$1.7		\$8.6
December 31, 2014 (In millions)	Asset Derivatives	Fair Value	Liability Derivatives	Fair Value
	Balance Sheet Location		Balance Sheet Location	
Derivatives designated as hedging instruments under ASC 815:				
Commodity contracts	Other current assets	\$—	Other current liabilities	\$2.6
Currency contracts	Other current assets	0.8	Other current liabilities	—
Interest rate contracts	Other current assets	—	Other current liabilities	2.5
Currency contracts	Other assets	0.9	Other liabilities	—
Interest rate contracts	Other assets	—	Other liabilities	3.0
Derivatives not designated as hedging instruments under ASC 815:				
Currency contracts	Other current assets	1.6	Other current liabilities	0.1
Total derivatives		\$3.3		\$8.2

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## Notes to Consolidated Financial Statements (Continued)

## 6. Fair Value Measurements and Risk (Continued)

The following tables present the location and amount of gains and losses on derivative instruments included in the Consolidated Statements of Operations or, when applicable, gains and losses initially recognized in other comprehensive income (loss) ("OCI") for the years ended December 31, 2015, 2014, and 2013:

Year Ended December 31, 2015 (In millions)	Amount of Gain (Loss) Recognized in OCI on Derivatives (Effective Portion)	Location of Gain (Loss) Reclassified from Accumulated OCI into Income (Effective Portion)	Amount of Gain (Loss) Reclassified from OCI into Income (Effective Portion)
Derivatives in ASC 815 cash flow hedging relationships:			
Interest rate contracts	\$ (5.6)	) Interest expense	\$ (3.8)
Currency contracts	6.3	) Other expense	5.6
Currency contracts	0.2	) Cost of goods sold	0.2
Commodity contracts	(1.4)	) Cost of goods sold	(4.6)
Total derivatives	\$ (0.5)	)	\$ (2.6)

Year Ended December 31, 2014 (In millions)	Amount of Gain (Loss) Recognized in OCI on Derivatives (Effective Portion)	Location of Gain (Loss) Reclassified from Accumulated OCI into Income (Effective Portion)	Amount of Gain (Loss) Reclassified from OCI into Income (Effective Portion)
Derivatives in ASC 815 cash flow hedging relationships:			
Interest rate contracts	\$ (5.4)	) Interest expense	\$ —
Currency contracts	2.1	) Other expense	1.3
Commodity contracts	(2.2)	) Cost of goods sold	0.3
Total derivatives	\$ (5.5)	)	\$ 1.6

Derivatives not designated as hedging instruments under ASC 815:

Currency contracts		) Other expense	\$ (0.5)
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Year Ended December 31, 2014 (In millions)	Amount of Gain (Loss) Recognized in OCI on Derivatives (Effective Portion)	Location of Gain (Loss) Reclassified from Accumulated OCI into Income (Effective Portion)	Amount of Gain (Loss) Reclassified from OCI into Income (Effective Portion)
Derivatives in ASC 815 cash flow hedging relationships:			
Interest rate contracts	\$ (5.4)	) Interest expense	\$ —
Currency contracts	2.1	) Other expense	1.3
Commodity contracts	(2.2)	) Cost of goods sold	0.3
Total derivatives	\$ (5.5)	)	\$ 1.6

Derivatives in ASC 815 cash flow hedging relationships:

Interest rate contracts	\$ (5.4)	) Interest expense	\$ —
Currency contracts	2.1	) Other expense	1.3
Commodity contracts	(2.2)	) Cost of goods sold	0.3
Total derivatives	\$ (5.5)	)	\$ 1.6

Year Ended December 31, 2014 (In millions)	Amount of Gain (Loss) Recognized in OCI on Derivatives (Effective Portion)	Location of Gain (Loss) Reclassified from Accumulated OCI into Income (Effective Portion)	Amount of Gain (Loss) Reclassified from OCI into Income (Effective Portion)
Derivatives in ASC 815 cash flow hedging relationships:			
Interest rate contracts	\$ (5.4)	) Interest expense	\$ —
Currency contracts	2.1	) Other expense	1.3
Commodity contracts	(2.2)	) Cost of goods sold	0.3
Total derivatives	\$ (5.5)	)	\$ 1.6

Derivatives not designated as hedging instruments under ASC 815:

Currency contracts		) Other expense	\$ 7.1
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## Notes to Consolidated Financial Statements (Continued)

## 6. Fair Value Measurements and Risk (Continued)

Year Ended December 31, 2013 (In millions)	Amount of Gain (Loss) Recognized in OCI on Derivatives (Effective Portion)	Location of Gain (Loss) Reclassified from Accumulated OCI into Income (Effective Portion)	Amount of Gain (Loss) Reclassified from OCI into Income (Effective Portion)
Derivatives in ASC 815 cash flow hedging relationships:			
Currency contracts	\$2.0	Other expense	\$2.4
Currency contracts	(0.2)	) Cost of goods sold	(0.2)
Commodity contracts	(0.3)	) Cost of goods sold	(0.4)
Total derivatives	\$1.5		\$1.8

	Location of Gain (Loss) Recognized in Income on Derivatives	Amount of Gain (Loss) Recognized in Income on Derivatives
Derivatives not designated as hedging instruments under ASC 815:		
Currency contracts	Other expense	\$(10.9)

## Net Investment Hedges

Grace uses foreign currency denominated debt as nonderivative hedging instruments in certain net investment hedges. The effective portion of gains and losses attributable to these net investment hedges is recorded to "currency translation adjustments" within "accumulated other comprehensive (loss) income." Recognition in earnings of amounts previously recorded to "currency translation adjustments" is limited to circumstances such as complete or substantially complete liquidation of the net investment in the hedged foreign operation. At December 31, 2015, €147.4 million of Grace's term loan principal was designated as a hedging instrument of its net investment in European subsidiaries.

The following tables present the location and amount of gains and losses on nonderivative instruments designated as net investment hedges. There were no reclassifications of the effective portion of net investment hedges out of OCI and into earnings for the periods presented in the tables below.

Year Ended December 31, 2015 (In millions)	Amount of Gain (Loss) Recognized in OCI in Currency Translation Adjustments (Effective Portion)
Nonderivatives in ASC 815 net investment hedging relationships:	
Foreign currency denominated debt	\$18.3
Total nonderivatives	\$18.3
Year Ended December 31, 2014 (In millions)	Amount of Gain (Loss) Recognized in OCI in Currency Translation Adjustments (Effective Portion)

Nonderivatives in ASC 815 net investment hedging relationships:

Foreign currency denominated debt	\$22.7
Total nonderivatives	\$22.7

Credit Risk

Grace is exposed to credit risk in its trade accounts receivable. Customers in the petroleum refining and construction industries represent the greatest exposure. Grace's credit evaluation policies, relatively short collection terms and history of minimal credit losses mitigate credit risk exposures. Grace does not generally

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## Notes to Consolidated Financial Statements (Continued)

## 6. Fair Value Measurements and Risk (Continued)

require collateral for its trade accounts receivable, but may require a bank letter of credit in certain instances, particularly when selling to customers in cash-restricted countries.

Grace may also be exposed to credit risk in its derivatives contracts. Grace monitors counterparty credit risk and currently does not anticipate nonperformance by counterparties to its derivatives. Grace's derivative contracts are with internationally recognized commercial financial institutions.

## 7. Income Taxes

## Provision for Income Taxes

The components of income from consolidated operations before income taxes and the related provision for income taxes for 2015, 2014, and 2013 are as follows:

(In millions)	2015	2014	2013
Income before income taxes:			
Domestic	\$143.2	\$137.5	\$141.4
Foreign	166.4	196.8	219.2
Total	\$309.6	\$334.3	\$360.6
Provision for income taxes:			
Federal—current	\$—	\$59.4	\$1.4
Federal—deferred	(69.4	) (45.8	) (73.1
State and local—current	(1.4	) (0.7	) (0.7
State and local—deferred	(6.3	) (17.6	) 38.2
Foreign—current	(87.6	) (62.5	) (83.5
Foreign—deferred	—	10.2	14.8
Total	\$(164.7	) \$(57.0	) \$(102.9

The preceding allocation of income between jurisdictions does not reflect \$173.1 million, \$38.9 million, and \$25.9 million of domestic income resulting from repatriated earnings in 2015, 2014, and 2013, respectively.

The difference between the provision for income taxes at the U.S. federal income tax rate of 35% and Grace's overall income tax provision is summarized as follows:

(In millions)	2015	2014	2013
Tax provision at U.S. federal income tax rate	\$(108.4	) \$(117.0	) \$(126.2
Change in benefit (provision) resulting from:			
Separation tax costs	(39.1	) —	—
Nondeductible Venezuela charge	(24.7	) —	—
Effect of tax rates in foreign jurisdictions	14.4	17.8	16.6
State and local income taxes, net	(6.4	) (11.9	) (0.7
U.S. tax on foreign earnings	(1.9	) 5.2	3.7
Adjustments to uncertain tax positions	(1.7	) 57.7	(6.8
Release of state valuation allowance	1.6	—	24.4
Nontaxable income/non-deductible expenses	(1.2	) (6.0	) (9.7
Other	2.7	(2.8	) (4.2
Provision for income taxes	\$(164.7	) \$(57.0	) \$(102.9

Separation tax costs are composed of \$19.0 million for repatriation of current and prior year earnings pursuant to the Separation discussed in further detail below under "Unrepatriated Foreign Earnings," \$14.5 million



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## Notes to Consolidated Financial Statements (Continued)

## 7. Income Taxes (Continued)

for nondeductible transaction costs and \$5.6 million for the restructuring of foreign subsidiaries. The nondeductible Venezuela charge is the tax effect of the \$73.2 million nondeductible pre-tax charge recorded during the third quarter of 2015.

## Deferred Tax Assets and Liabilities

At December 31, 2015 and 2014, the tax attributes giving rise to deferred tax assets and liabilities consisted of the following items:

(In millions)	December 31, 2015	December 31, 2014
Deferred tax assets:		
U.S. net operating loss carryforwards	\$366.3	\$371.8
Pension liabilities	127.8	114.2
Federal tax credit carryforwards	124.3	49.6
State net operating loss carryforwards	53.2	51.1
Reserves and allowances	48.4	46.2
Research and development	41.7	34.5
Liability for environmental remediation	20.6	22.7
Foreign net operating loss carryforwards	15.5	18.0
Liability for asbestos-related litigation	10.8	192.4
Other	39.2	45.4
Total deferred tax assets	\$847.8	\$945.9
Deferred tax liabilities:		
Properties and equipment	\$(45.3)	\$(52.8)
Intangible assets	(40.5)	(36.4)
Pension assets	(10.6)	(9.4)
Other	(4.7)	(8.2)
Total deferred tax liabilities	\$(101.1)	\$(106.8)
Valuation allowance:		
Foreign net operating loss carryforwards	(4.6)	(4.2)
State net operating loss carryforwards	\$(3.5)	\$(5.9)
Federal tax credit carryforwards	(2.2)	(2.4)
Total valuation allowance	(10.3)	(12.5)
Net deferred tax assets	\$736.4	\$826.6

Grace's deferred tax assets decreased by \$90.2 million from December 31, 2014 to December 31, 2015. The decrease was primarily related to a reduction in assets for liability for asbestos-related litigation due to repurchase of the warrant held by the PI Trust, partially offset by an increase in assets for federal tax credit carryforwards as a result of foreign tax credits generated on dividend repatriation associated with the Separation.

In the 2016 first quarter, Grace expects to recognize a gain for federal and state income tax purposes on certain Separation transactions, resulting in a partial use of its U.S. deferred tax assets.

Grace has recorded a valuation allowance to reduce its net deferred tax assets to the amount that is more likely than not to be realized. Grace considers forecasted earnings, recent past and future taxable income, the mix of earnings in the jurisdictions in which it operates and, where applicable, prudent and feasible tax planning strategies in determining the need for these valuation allowances. The valuation allowance decreased \$2.2 million from December 31, 2014, to December 31, 2015. The decrease was primarily due to a reduction in the valuation allowance on state NOL

carryforwards.

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## Notes to Consolidated Financial Statements (Continued)

## 7. Income Taxes (Continued)

The realization of deferred tax assets is dependent on the generation of sufficient taxable income in the appropriate tax jurisdictions. Grace believes it is more likely than not that the remaining deferred tax assets will be realized. If Grace were to determine that it would not be able to realize a portion of its net deferred tax assets in the future, for which there is currently no valuation allowance, an adjustment to the net deferred tax assets would be charged to earnings in the period such determination was made. Conversely, if Grace were to make a determination that it is more likely than not that deferred tax assets, for which there is currently a valuation allowance, would be realized, the related valuation allowance would be reduced and a benefit to earnings would be recorded.

As a result of certain realization requirements, the table of deferred tax assets and liabilities shown above does not include certain deferred tax assets as of December 31, 2015 and 2014, that arose directly from tax deductions related to equity compensation in excess of compensation recognized for financial reporting. Under the with and without approach to calculating excess stock compensation, equity will increase by approximately \$92 million when such deferred tax assets are ultimately realized.

## U.S. Federal and State Net Operating Losses and Credit Carryforwards

Grace generated approximately \$1,800 million in U.S. federal tax deductions relating to its emergence from bankruptcy, including approximately \$670 million relating to payments made upon emergence, \$632 million upon payment of the PI deferred payment obligation, and \$490 million upon repurchase of the warrant held by the PI Trust. The deductions generated a U.S. federal and state net operating loss carryforward in 2014, which Grace will carry forward and expects to utilize in subsequent years. Under U.S. federal income tax law, a corporation is generally permitted to carryforward NOLs for a 20-year period for deduction against future taxable income. Grace also expects to generate U.S. federal tax deductions of \$30 million upon payment of the ZAI PD deferred payment obligation in 2017. As of December 31, 2015, Grace had U.S. federal NOLs of approximately \$1,048 million expiring between 2034 and 2035 and state NOLs of approximately \$1,100 million on a post apportioned basis expiring between 2016 and 2035. Grace will need to generate approximately \$1,900 million of U.S. federal taxable income by 2035 (or approximately \$95 million per year during the carryforward period) to fully realize the U.S. federal and a majority of the U.S. state net deferred tax assets. Grace believes that it will generate taxable income during this period sufficient to use all available NOL carryforwards and future tax deductions prior to expiration. Grace has recorded a valuation allowance of \$5.3 million (before federal benefit) on the state NOLs that it believes will not be utilized prior to expiration.

Included in Grace's U.S. federal tax credit carryforwards (\$124.3 million as of December 31, 2015) are approximately \$120 million of foreign tax credits, which expire between 2016 and 2025. Grace has recorded a valuation allowance of \$2.2 million on the credit carryforwards that it believes will not be utilized prior to expiration.

## Unrepatriated Foreign Earnings

Grace has not provided for U.S. federal, state and foreign deferred income taxes on \$793.6 million of undistributed earnings of foreign subsidiaries. Grace expects that these earnings will be permanently reinvested by such subsidiaries except in certain instances where repatriation attributable to current earnings results in minimal or no U.S. tax consequences. The unrecorded deferred tax liability associated with these earnings is \$97.2 million. Grace repatriated earnings of \$173.1 million, \$38.9 million, and \$25.9 million from its non-U.S. subsidiaries in 2015, 2014, and 2013, respectively, incurring an insignificant amount of U.S. income tax expense or benefit in 2013 and 2014. The tax effect of the repatriation of foreign earnings in 2015 is discussed in detail below.

As of December 31, 2014, Grace had the intent and ability to indefinitely reinvest undistributed earnings of its foreign subsidiaries outside the United States. In the 2015 first quarter, Grace announced its plan to separate into two publicly traded companies and has subsequently reassessed the capital structure and financial requirements of both Grace and GCP. Further, in connection with the Separation, Grace repatriated a total of \$173.1 million of foreign earnings from

foreign subsidiaries transferred to GCP pursuant to the Separation. Such amount was determined based on an analysis of each non-U.S. subsidiary's requirements for working capital, debt repayment and strategic initiatives. Grace also considered local country legal and regulatory restrictions. In

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Notes to Consolidated Financial Statements (Continued)

7. Income Taxes (Continued)

2015, Grace included tax expense of \$19.0 million in its effective tax rate for repatriation attributable to both current and prior years' earnings. The tax effect of the repatriation is determined by several variables including the tax rate applicable to the entity making the distribution, the cumulative earnings and associated foreign taxes of the entity and the extent to which those earnings may have already been taxed in the U.S. Grace anticipates that the tax consequences of other transactions pursuant to the Separation may require recognition of additional tax expense for deemed repatriation of undistributed earnings of our foreign subsidiaries. Such tax consequences will be recorded in the 2016 first quarter.

Grace believes that the Separation is a one-time, non-recurring event, and that recognition of deferred taxes of undistributed earnings during 2015 would not have occurred if not for the Separation. Subsequent to separation, Grace expects undistributed prior-year earnings of its foreign subsidiaries to remain permanently reinvested except in certain instances where repatriation of such earnings would result in minimal or no tax. Grace bases this assertion on:

- (1) the expectation that it will satisfy its U.S. cash obligations in the foreseeable future without requiring the repatriation of prior-year foreign earnings;
- (2) plans for significant and continued reinvestment of foreign earnings in organic and inorganic growth initiatives outside the U.S.; and
- (3) remittance restrictions imposed by local governments.

Grace will continually analyze and evaluate its cash needs to determine the appropriateness of its indefinite reinvestment assertion.

Unrecognized Tax Benefits

The balance of unrecognized tax benefits at December 31, 2015, was \$27.0 million (\$23.1 million excluding interest and penalties). The balance of unrecognized tax benefits at December 31, 2014, was \$29.7 million (\$26.5 million excluding interest and penalties). The balance of unrecognized tax benefits at December 31, 2013, was \$84.4 million (\$80.3 million excluding interest and penalties). As of December 31, 2015 and December 31, 2014, unrecognized tax benefits which resulted in the reduction of a deferred tax asset were \$6.1 million and \$5.7 million, respectively. A reconciliation of the unrecognized tax benefits, excluding interest and penalties, for the three years ended December 31, 2015, follows:

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## Notes to Consolidated Financial Statements (Continued)

## 7. Income Taxes (Continued)

(In millions)	Unrecognized Tax Benefits
Balance, January 1, 2013	\$83.1
Additions for current year tax positions	6.3
Additions for prior year tax positions	6.4
Reductions for prior year tax positions and reclassifications(1)	(9.6 )
Reductions for expirations of statute of limitations	(5.9 )
Balance, December 31, 2013	80.3
Additions for current year tax positions	0.9
Additions for prior year tax positions	11.0
Reductions for prior year tax positions and reclassifications	(5.7 )
Reductions for expirations of statute of limitations	(0.4 )
Settlements(2)	(59.6 )
Balance, December 31, 2014	26.5
Additions for current year tax positions	0.1
Additions for prior year tax positions	0.8
Reductions for prior year tax positions and reclassifications	(1.6 )
Reductions for expirations of statute of limitations	(1.5 )
Settlements	(1.2 )
Balance, December 31, 2015	\$23.1

(1) In 2013, \$9.6 million of unrecognized tax benefits representing agreed adjustments resulting from the 2007-2009 IRS examination were reclassified to income taxes payable.

(2) In 2014, \$59.6 million of benefits associated with reserves for unrecognized tax benefits were recognized based on the status of examinations in taxing jurisdictions.

The entire balance of unrecognized tax benefits as of December 31, 2015, of \$23.1 million, if recognized, would affect the effective tax rate. The balance of unrecognized tax benefits as of December 31, 2015, also includes \$5.4 million for tax positions with an indirect tax benefit that results in a corresponding deferred tax asset as of December 31, 2015. Grace accrues potential interest and any associated penalties related to uncertain tax positions in "benefit from (provision for) income taxes" in the Consolidated Statements of Operations. The total amount of interest and penalties accrued on uncertain tax positions as of December 31, 2015, 2014, and 2013 was \$3.9 million, \$3.2 million and \$4.1 million

Grace files U.S. federal income tax returns as well as income tax returns in various state and foreign jurisdictions. Grace's unrecognized tax benefits are related to income tax returns for tax years that remain subject to examination by the relevant taxing authorities. The following table summarizes these open tax years by major jurisdiction:

Tax Jurisdiction(1)	Examination in Progress	Examination Not Initiated
United States—Federal	None	2010-2014
United States—States	2007-2009	2010-2014
Germany	2009-2013	2014
Italy	None	2009-2014
France	None	2012-2014
Canada	2012-2013	2014

(1) Includes federal, state, provincial or local jurisdictions, as applicable.

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## Notes to Consolidated Financial Statements (Continued)

## 7. Income Taxes (Continued)

Grace notes that there are attributes generated in prior years that are otherwise closed by statute and were carried forward into years that are open to examination. Those attributes may still be subject to adjustment to the extent utilized in open years.

As a multinational taxpayer, Grace is under continual audit by various tax authorities. Grace believes it is reasonably possible that in the next 12 months the amount of the liability for unrecognized tax benefits could decrease by approximately \$1 million.

## 8. Pension Plans and Other Postretirement Benefit Plans

**Pension Plans** The following table presents the funded status of Grace's fully-funded, underfunded, and unfunded pension plans:

(In millions)	December 31, 2015	December 31, 2014
Overfunded defined benefit pension plans	\$26.1	\$44.1
Underfunded defined benefit pension plans	(118.9 )	(79.5 )
Unfunded defined benefit pension plans	(337.6 )	(378.0 )
Total underfunded and unfunded defined benefit pension plans	(456.5 )	(457.5 )
Pension liabilities included in other current liabilities	(15.3 )	(15.6 )
Net funded status	\$(445.7 )	\$(429.0 )

Fully-funded plans include several advance-funded plans where the fair value of the plan assets exceeds the projected benefit obligation ("PBO"). This group of plans was overfunded by \$26.1 million as of December 31, 2015, and the overfunded status is reflected as "overfunded defined benefit pension plans" in the Consolidated Balance Sheets.

Underfunded plans include a group of advance-funded plans that are underfunded on a PBO basis. Unfunded plans include several plans that are funded on a pay-as-you-go basis, and therefore, the entire PBO is unfunded. The combined balance of the underfunded and unfunded plans was \$471.8 million as of December 31, 2015.

Grace maintains defined benefit pension plans covering current and former employees of certain business units and divested business units who meet age and service requirements. Benefits are generally based on final average salary and years of service. Grace funds its U.S. qualified pension plans ("U.S. qualified pension plans") in accordance with U.S. federal laws and regulations. Non-U.S. pension plans ("non-U.S. pension plans") are funded under a variety of methods, as required under local laws and customs.

Grace also provides, through nonqualified plans, supplemental pension benefits in excess of U.S. qualified pension plan limits imposed by federal tax law. These plans cover officers and higher-level employees and serve to increase the combined pension amount to the level that they otherwise would have received under the U.S. qualified pension plans in the absence of such limits. The nonqualified plans are unfunded and Grace pays the costs of benefits as they are due to the participants.

At the December 31, 2015, measurement date for Grace's defined benefit pension plans, the PBO was \$1,900.2 million as measured under U.S. GAAP compared with \$2,027.7 million as of December 31, 2014. The PBO basis reflects the present value (using a 4.31% weighted average discount rate for U.S. plans and a 3.00% weighted average discount rate for non-U.S. plans as of December 31, 2015) of vested and non-vested benefits earned from employee service to date, based upon current services and estimated future pay increases for active employees.

On an annual basis a full remeasurement of pension assets and pension liabilities is performed based on Grace's estimates and actuarial valuations. These valuations reflect the terms of the plan and use participant-specific information as well as certain key assumptions provided by management.

**Postretirement Benefits Other Than Pensions** Grace has provided postretirement health care and life insurance benefits for retired employees of certain U.S. business units and certain divested business units. The



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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

postretirement medical plan provided various levels of benefits to employees hired before 1993 who retired from Grace after age 55 with at least 10 years of service. These plans are unfunded and Grace pays a portion of the costs of benefits under these plans as they are incurred. Grace applies ASC 715 "Compensation-Retirement Benefits" to these plans, which requires that the future costs of postretirement health care and life insurance benefits be accrued over the employees' years of service. Actuarial gains and losses are recognized in the Consolidated Balance Sheets as a component of Shareholders' Equity, with amortization of the net actuarial gains and losses that exceed 10 percent of the accumulated postretirement benefit obligation recognized each quarter in the Consolidated Statements of Operations over the average future service period of active employees.

In June 2014, Grace announced that it would discontinue its postretirement medical plan for all U.S. employees effective October 31, 2014, and eliminate certain postretirement life insurance benefits. As a result of these actions, Grace recognized a gain of \$41.9 million in other comprehensive income in the 2014 second quarter. Grace amortized \$39.5 million from accumulated other comprehensive income into the Consolidated Statement of Operations during the five-month period from June to October 2014.

The postretirement plan was further remeasured as of September 30, 2015, due to a plan amendment to eliminate certain other postretirement life insurance benefits, which resulted in a curtailment gain of \$4.5 million.

**Defined Contribution Retirement Plan** Grace sponsors a defined contribution retirement plan for its employees in the United States. This plan is qualified under section 401(k) of the U.S. tax code. Currently, Grace contributes an amount equal to 100% of employee contributions, up to 6% of an individual employee's salary or wages. Grace's cost related to this benefit plan was \$15.2 million, \$13.8 million, and \$13.2 million for the years ended December 31, 2015, 2014, and 2013, respectively.

**Analysis of Plan Accounting and Funded Status** The following table summarizes the changes in benefit obligations and fair values of retirement plan assets during 2015 and 2014:

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

Change in Financial Status of Retirement Plans (In millions)	Defined Benefit Pension Plans				Total		Other Post-Retirement Plans	
	U.S.		Non-U.S.					
	2015	2014	2015	2014	2015	2014	2015	2014
Change in Projected Benefit Obligation (PBO):								
Benefit obligation at beginning of year	\$1,437.3	\$1,326.8	\$590.4	\$546.4	\$2,027.7	\$1,873.2	\$2.4	\$57.2
Service cost	25.7	23.5	11.7	10.7	37.4	34.2	—	0.1
Interest cost	55.1	60.0	16.1	22.2	71.2	82.2	0.1	1.1
Plan participants' contributions	—	—	0.5	0.6	0.5	0.6	—	—
Amendments	(3.6 )	—	—	—	(3.6 )	—	(2.1 )	(51.5 )
Settlements/curtailments	—	—	(1.0 )	—	(1.0 )	—	—	—
Actuarial (gain) loss	(63.0 )	131.4	(11.4 )	92.4	(74.4 )	223.8	0.4	(1.0 )
Medicare subsidy receipts	—	—	—	—	—	—	1.0	0.2
Benefits paid	(87.0 )	(104.4 )	(20.7 )	(25.8 )	(107.7 )	(130.2 )	(1.1 )	(3.7 )
Currency exchange translation adjustments	—	—	(49.9 )	(56.1 )	(49.9 )	(56.1 )	—	—
Benefit obligation at end of year	\$1,364.5	\$1,437.3	\$535.7	\$590.4	\$1,900.2	\$2,027.7	\$0.7	\$2.4
Change in Plan Assets:								
Fair value of plan assets at beginning of year	\$1,262.6	\$1,145.2	\$336.1	\$306.5	\$1,598.7	\$1,451.7	\$—	\$—
Actual return on plan assets	(34.6 )	112.1	2.9	59.1	(31.7 )	171.2	—	—
Employer contributions	7.3	109.7	10.5	18.1	17.8	127.8	0.1	3.5
Plan participants' contributions	—	—	0.5	0.6	0.5	0.6	—	—
Settlements	—	—	(1.5 )	—	(1.5 )	—	—	—
Medicare subsidy receipts	—	—	—	—	—	—	1.0	0.2
Benefits paid	(87.0 )	(104.4 )	(20.7 )	(25.8 )	(107.7 )	(130.2 )	(1.1 )	(3.7 )
Currency exchange translation adjustments	—	—	(21.6 )	(22.4 )	(21.6 )	(22.4 )	—	—
Fair value of plan assets at end of year	\$1,148.3	\$1,262.6	\$306.2	\$336.1	\$1,454.5	\$1,598.7	\$—	\$—
Funded status at end of year (PBO basis)	\$(216.2 )	\$(174.7 )	\$(229.5 )	\$(254.3 )	\$(445.7 )	\$(429.0 )	\$(0.7 )	\$(2.4 )
Amounts recognized in the Consolidated Balance Sheets consist of:								
Noncurrent assets	\$—	\$—	\$26.1	\$44.1	\$26.1	\$44.1	\$—	\$—
Current liabilities	(7.1 )	(7.1 )	(8.2 )	(8.5 )	(15.3 )	(15.6 )	—	(0.1 )
Noncurrent liabilities	(209.1 )	(167.6 )	(247.4 )	(289.9 )	(456.5 )	(457.5 )	(0.7 )	(2.3 )
Net amount recognized	\$(216.2 )	\$(174.7 )	\$(229.5 )	\$(254.3 )	\$(445.7 )	\$(429.0 )	\$(0.7 )	\$(2.4 )
Amounts recognized in Accumulated Other								

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Comprehensive Loss consist of:

Accumulated actuarial loss	\$—	\$—	\$—	\$—	\$—	\$—	\$5.9	\$6.2
Prior service (credit) cost	(3.1	) 0.8	(0.3	) (0.3	) (3.4	) 0.5	(7.1	) (12.9
Net amount recognized	\$(3.1	) \$0.8	\$(0.3	) \$(0.3	) \$(3.4	) \$0.5	\$(1.2	) \$(6.7

Change in Financial Status of Retirement Plans (In millions)	Defined Benefit Pension Plans						Other Post-Retirement Plans	
	U.S.		Non-U.S.		Total		2015	2014
	2015	2014	2015	2014	2015	2014	2015	2014
Weighted Average Assumptions Used to Determine Benefit Obligations as of December 31:								
Discount rate	4.31	% 3.95	% 3.00	% 2.97	% NM	NM	4.40	% 4.18
Rate of compensation increase	4.70	% 4.70	% 3.35	% 3.24	% NM	NM	NM	NM
Weighted Average Assumptions Used to Determine Net Periodic Benefit Cost for Years Ended December 31:								
Discount rate	3.95	% 4.76	% 2.97	% 4.25	% NM	NM	4.18	% 4.26
Expected return on plan assets	5.75	% 6.00	% 4.11	% 5.06	% NM	NM	NM	NM
Rate of compensation increase	4.70	% 4.70	% 3.24	% 3.41	% NM	NM	NM	NM

NM—Not meaningful

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

Components of Net Periodic Benefit Cost (Income) and Other Amounts Recognized in Other Comprehensive (Income) Loss (In millions)	2015			2014			2013		
	U.S.	Non-U.S.	Other	U.S.	Non-U.S.	Other	U.S.	Non-U.S.	Other
Net Periodic Benefit Cost (Income)									
Service cost	\$25.7	\$11.7	\$—	\$23.5	\$10.7	\$0.1	\$25.2	\$11.1	\$0.2
Interest cost	55.1	16.1	0.1	60.0	22.2	1.1	51.9	20.6	2.2
Expected return on plan assets	(70.4 )	(13.0 )	—	(69.9 )	(15.2 )	—	(68.0 )	(14.0 )	—
Amortization of prior service cost (credit)	0.3	—	(3.4 )	0.7	—	(2.4 )	0.7	—	—
Amortization of net deferred actuarial loss	—	—	0.7	—	—	—	—	—	0.4
Annual mark-to-market adjustment	42.0	(0.1 )	—	89.2	45.4	—	(65.8 )	11.0	—
Gain on termination and curtailment of postretirement plans	—	—	(4.5 )	—	—	(39.5 )	—	—	—
Net curtailment and settlement gain	—	—	—	—	—	—	—	(0.1 )	—
Net periodic benefit cost (income)	\$52.7	\$14.7	\$(7.1 )	\$103.5	\$63.1	\$(40.7 )	\$(56.0 )	\$28.6	\$2.8
Other Changes in Plan Assets and Benefit Obligations Recognized in Other Comprehensive (Income) Loss									
Net deferred actuarial loss (gain)	\$—	\$—	\$0.4	\$—	\$—	\$(1.0 )	\$—	\$—	\$(4.3 )
Net prior service credit	(3.6 )	—	(2.1 )	—	—	(13.6 )	—	—	(1.7 )
Amortization of prior service cost (credit)	(0.3 )	—	3.4	(0.7 )	—	2.4	(0.7 )	—	—
Amortization of net deferred actuarial loss	—	—	(0.7 )	—	—	—	—	—	(0.4 )
Loss on termination and curtailment of postretirement plans	—	—	4.5	—	—	12.2	—	—	—
Total recognized in other comprehensive (income) loss	(3.9 )	—	5.5	(0.7 )	—	—	(0.7 )	—	(6.4 )
Total recognized in net periodic benefit cost (income) and other comprehensive (income) loss	\$48.8	\$14.7	\$(1.6 )	\$102.8	\$63.1	\$(40.7 )	\$(56.7 )	\$28.6	\$(3.6 )

The estimated prior service credit for the defined benefit pension plans that will be amortized from accumulated other comprehensive loss into net periodic benefit cost (income) over the next fiscal year is \$0.2 million. The estimated net deferred actuarial loss and prior service credit for the other postretirement plans that will be amortized from

accumulated other comprehensive loss into net periodic benefit cost (income) over the next fiscal year are \$0.6 million and \$2.6 million, respectively.

Funded Status of U.S. Pension Plans (In millions)	Fully-Funded U.S. Qualified Pension Plans(1)		Underfunded U.S. Qualified Pension Plans(1)		Unfunded Pay-As-You-Go U.S. Nonqualified Plans(2)	
	2015	2014	2015	2014	2015	2014
Projected benefit obligation	\$—	\$—	\$1,257.5	\$1,329.8	\$107.0	\$107.5
Fair value of plan assets	—	—	1,148.3	1,262.6	—	—
Funded status (PBO basis)	\$—	\$—	\$(109.2 )	\$(67.2 )	\$(107.0 )	\$(107.5 )
Benefits paid	\$—	\$—	\$(79.7 )	\$(69.7 )	\$(7.3 )	\$(34.7 )
Funded Status of Non-U.S. Pension Plans (In millions)	Fully-Funded Non-U.S. Pension Plans(1)		Underfunded Non-U.S. Pension Plans(1)		Unfunded Pay-As-You-Go Non-U.S. Pension Plans(2)	
	2015	2014	2015	2014	2015	2014
Projected benefit obligation	\$240.3	\$245.8	\$49.5	\$58.5	\$245.9	\$286.1
Fair value of plan assets	266.4	289.9	39.8	46.2	—	—
Funded status (PBO basis)	\$26.1	\$44.1	\$(9.7 )	\$(12.3 )	\$(245.9 )	\$(286.1 )
Benefits paid	\$(11.3 )	\$(12.3 )	\$(2.3 )	\$(4.7 )	\$(7.1 )	\$(8.8 )

(1) Plans intended to be advance-funded.

(2) Plans intended to be pay-as-you-go.

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

The accumulated benefit obligation for all defined benefit pension plans was approximately \$1,804 million and \$1,933 million as of December 31, 2015 and 2014, respectively.

Pension Plans with Underfunded or Unfunded Accumulated Benefit Obligation (In millions)	U.S.		Non-U.S.		Total	
	2015	2014	2015	2014	2015	2014
Projected benefit obligation	\$1,364.4	\$352.6	\$260.8	\$306.0	\$1,625.2	\$658.6
Accumulated benefit obligation	1,314.1	351.8	229.1	274.5	1,543.2	626.3
Fair value of plan assets	1,148.2	220.8	7.4	9.4	1,155.6	230.2
Estimated Expected Future Benefit Payments Reflecting Future Service and Medicare Subsidy Receipts for the Fiscal Years Ending (In millions)	Pension Plans			Other Postretirement Plans		Total
	U.S. Benefit Payments(2)	Non-U.S.(1) Benefit Payments	Benefit Payments	Medicare Subsidy Receipts	Net of Subsidy	
2013 (actual)	\$79.2	\$22.1	\$4.5	\$(1.4)	\$104.4	
2014 (actual)(2)	104.4	25.8	3.7	(0.2)	133.7	
2015 (actual)	87.0	20.7	1.1	(1.0)	107.8	
2016	85.7	21.8	—	—	107.5	
2017	86.0	20.6	—	—	106.6	
2018	87.0	21.2	—	—	108.2	
2019	87.9	22.1	—	—	110.0	
2020	89.1	23.0	—	—	112.1	
2021 - 2025	457.5	126.1	0.2	—	583.8	

(1) Non-U.S. estimated benefit payments for 2016 and future periods have been translated at the applicable December 31, 2015, exchange rates.

(2) Includes approximately \$28 million of benefit payments from nonqualified plans that were previously restricted by the Bankruptcy Court while the Company was in Chapter 11 and were paid in 2014.

**Discount Rate Assumption** The assumed discount rate for pension plans reflects the market rates for high-quality corporate bonds currently available and is subject to change based on changes in overall market interest rates. For the U.S. qualified pension plans, the assumed weighted average discount rate of 4.31% as of December 31, 2015, was selected by Grace, in consultation with its independent actuaries, based on a yield curve constructed from a portfolio of high quality bonds for which the timing and amount of cash outflows approximate the estimated payouts of the plan.

As of December 31, 2015 and 2014, the United Kingdom pension plan and German pension plans combined represented approximately 87% and 86%, respectively, of the benefit obligation of the non-U.S. pension plans. The assumed weighted average discount rates as of December 31, 2015, for the United Kingdom (3.00%) and Germany (2.57%) were selected by Grace, in consultation with its independent actuaries, based on yield curves constructed from a portfolio of sterling- and euro-denominated high quality bonds for which the timing and amount of cash outflows approximate the estimated payouts of the plans. The assumed discount rates for the remaining non-U.S. pension plans were determined based on the nature of the liabilities, local economic environments and available bond indices.

As of December 31, 2015, Grace changed the approach used to determine the service and interest cost components of defined benefit pension expense. Previously, Grace estimated service and interest costs using a single weighted average discount rate derived from the same yield curve used to measure the projected benefit obligation. For 2016, Grace elected to measure service and interest costs by applying the specific spot rates along that yield curve to the plans' liability cash flows. Grace believes the new approach provides a more precise measurement of service and interest costs by aligning the timing of the plans' liability cash flows to the corresponding spot rates on the yield curve. This change does not affect the measurement of the projected

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

benefit obligation at year-end. Grace considers this a change in accounting estimate, which will be accounted for prospectively beginning in 2016.

**Investment Guidelines for Advance-Funded Pension Plans** The investment goal for the U.S. qualified pension plans subject to advance funding is to earn a long-term rate of return consistent with the related cash flow profile of the underlying benefit obligation. The plans are pursuing a well-defined risk management strategy designed to reduce investment risks as their funded status improves.

The U.S. qualified pension plans have adopted a diversified set of portfolio management strategies to optimize the risk reward profile of the plans:

- **Liability hedging portfolio:** primarily invested in intermediate-term and long-term investment grade corporate bonds in actively managed strategies.

- **Growth portfolio:** invested in a diversified set of assets designed to deliver performance in excess of the underlying liabilities with controls regarding the level of risk.

- **U.S. equity securities:** the portfolio contains domestic equities that are passively managed to the S&P 500 and Russell 2000 benchmark and an allocation to an active portfolio benchmarked to the Russell 2000.

- **Non-U.S. equity securities:** the portfolio contains non-U.S. equities in an actively managed strategy. Currency futures and forward contracts may be held for the sole purpose of hedging existing currency risk in the portfolio.

- **Other investments:** may include (a) high yield bonds: fixed income portfolio of securities below investment grade including up to 30% of the portfolio in non-U.S. issuers; and (b) global real estate securities: portfolio of diversified REIT and other liquid real estate related securities. These portfolios combine income generation and capital appreciation opportunities from developed markets globally.

- **Liquidity portfolio:** invested in short-term assets intended to pay periodic plan benefits and expenses.

For 2015, the expected long-term rate of return on assets for the U.S. qualified pension plans was 5.75%. Average annual returns over one-, three-, five-, and ten-year periods were approximately (3)%, 4%, 6%, and 5%, respectively. The expected return on plan assets for the U.S. qualified pension plans for 2015 was selected by Grace, in consultation with its independent actuaries, using an expected return model. The model determines the weighted average return for an investment portfolio based on the target asset allocation and expected future returns for each asset class, which were developed using a building block approach based on observable inflation, available interest rate information, current market characteristics, and historical results.

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

The target allocation of investment assets at December 31, 2015, and the actual allocation at December 31, 2015 and 2014, for Grace's U.S. qualified pension plans are as follows:

U.S. Qualified Pension Plans Asset Category	Target	Percentage of Plan Assets		
	Allocation	December 31,		
	2015	2015	2014	
U.S. equity securities	11	% 11	% 11	%
Non-U.S. equity securities	7	% 7	% 6	%
Short-term debt securities	6	% 6	% 10	%
Intermediate-term debt securities	28	% 28	% 26	%
Long-term debt securities	46	% 46	% 45	%
Other investments	2	% 2	% 2	%
Total	100	% 100	% 100	%

The following tables present the fair value hierarchy for the U.S. qualified pension plan assets measured at fair value as of December 31, 2015 and 2014.

## Fair Value Measurements at December 31, 2015, Using

(In millions)	Total	Quoted Prices		
		in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. equity group trust funds	\$ 120.1	\$—	\$ 120.1	\$—
Non-U.S. equity group trust funds	81.8	—	81.8	—
Corporate bond group trust funds—intermediate-term	320.4	—	320.4	—
Corporate bond group trust funds—long-term	525.6	—	525.6	—
Other fixed income group trust funds	25.4	—	25.4	—
Common/collective trust funds	57.3	—	57.3	—
Annuity and immediate participation contracts	17.7	—	17.7	—
Total Assets	\$ 1,148.3	\$—	\$ 1,148.3	\$—

## Fair Value Measurements at December 31, 2014, Using

(In millions)	Total	Quoted Prices		
		in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. equity group trust funds	\$ 134.2	\$—	\$ 134.2	\$—
Non-U.S. equity group trust funds	76.8	—	76.8	—
Corporate bond group trust funds—intermediate-term	324.9	—	324.9	—
Corporate bond group trust funds—long-term	567.1	—	567.1	—
Other fixed income group trust funds	23.7	—	23.7	—

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Common/collective trust funds	118.8	—	118.8	—
Annuity and immediate participation contracts	17.1	—	17.1	—
Total Assets	\$1,262.6	\$—	\$1,262.6	\$—

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

Non-U.S. pension plans accounted for approximately 21% of total global pension assets at December 31, 2015 and 2014. Each of these plans, where applicable, follows local requirements and regulations. Some of the local requirements include the establishment of a local pension committee, a formal statement of investment policy and procedures, and routine valuations by plan actuaries.

The target allocation of investment assets for non-U.S. pension plans varies depending on the investment goals of the individual plans. The plan assets of the United Kingdom pension plan represent approximately 85% and 84% of the total non-U.S. pension plan assets at December 31, 2015 and 2014, respectively. In determining the expected rate of return for the U.K. pension plan, the trustees' strategic investment policy has been considered together with long-term historical returns and investment community forecasts for each asset class. The expected return by sector has been combined with the actual asset allocation to determine the 2015 expected long-term return assumption of 3.75%.

The target allocation of investment assets at December 31, 2015, and the actual allocation at December 31, 2015 and 2014, for the U.K. pension plan are as follows:

United Kingdom Pension Plan Asset Category	Target	Percentage of Plan Assets		
	Allocation	December 31,		
	2015	2015	2014	
Diversified growth funds	10	% 10	% 11	%
U.K. gilts	29	% 29	% 42	%
U.K. corporate bonds	8	% 8	% 47	%
Insurance contracts	53	% 53	% —	%
Total	100	% 100	% 100	%

The plan assets of the Canadian pension plan represent approximately 9% and 10% of the total non-U.S. pension plan assets at December 31, 2015 and 2014, respectively. The expected long-term rate of return on assets for the Canadian pension plan was 5.25% for 2015.

The target allocation of investment assets at December 31, 2015, and the actual allocation at December 31, 2015 and 2014, for the Canadian pension plan are as follows:

Canadian Pension Plan Asset Category	Target	Percentage of Plan Assets		
	Allocation	December 31,		
	2015	2015	2014	
Equity securities	27	% 28	% 27	%
Bonds	58	% 57	% 58	%
Other investments	15	% 15	% 15	%
Total	100	% 100	% 100	%

The plan assets of the other country plans represent approximately 6% in the aggregate (with no country representing more than 3% individually) of total non-U.S. pension plan assets at December 31, 2015 and 2014.

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

The following table presents the fair value hierarchy for the non-U.S. pension plan assets measured at fair value as of December 31, 2015.

(In millions)	Fair Value Measurements at December 31, 2015, Using			
	Total	Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Common/collective trust funds	\$159.8	\$—	\$159.8	\$—
Government and agency securities	2.5	—	2.5	—
Corporate bonds	1.4	—	1.4	—
Insurance contracts and other investments(1)	141.8	—	3.3	138.5
Cash	0.7	0.7	—	—
Total Assets	\$306.2	\$0.7	\$167.0	\$138.5

In October 2015, the trustees of the U.K. pension plan entered into a contract with an insurance company to secure the benefits for current retirees and hedge the risk of future inflation and changes in longevity with a buy-in (1) contract. At December 31, 2015, the fair value of the insurance contract has been determined using a discounted cash flow approach that maximizes observable inputs, such as current yields on similar instruments, but includes adjustments for certain risks that may not be observable, such as credit and liquidity risks.

The following table presents a summary of the changes in the fair value of the plans' Level 3 assets for the year ended December 31, 2015.

(In millions)	Insurance Contracts
Balance, December 31, 2014	\$—
Actual return on plan assets relating to assets still held at year-end	(1.2)
Purchases, sales, and settlements, net	145.6
Transfers out for benefit payments	(1.7)
Currency exchange translation adjustments	(4.2)
Balance, December 31, 2015	\$138.5

The following table presents the fair value hierarchy for the non-U.S. pension plan assets measured at fair value as of December 31, 2014.

(In millions)	Fair Value Measurements at December 31, 2014, Using			
	Total	Quoted Prices in Active Markets for Identical Assets or Liabilities (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Common/collective trust funds	\$326.7	\$—	\$326.7	\$—
Government and agency securities	2.6	—	2.6	—

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Corporate bonds	1.1	—	1.1	—
Insurance contracts and other investments	4.6	—	4.6	—
Cash	1.1	1.1	—	—
Total Assets	\$336.1	\$1.1	\$335.0	\$—

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## Notes to Consolidated Financial Statements (Continued)

## 8. Pension Plans and Other Postretirement Benefit Plans (Continued)

**Plan Contributions and Funding** Grace intends to satisfy its funding obligations under the U.S. qualified pension plans and to comply with all of the requirements of the Employee Retirement Income Security Act of 1974 ("ERISA"). For ERISA purposes, funded status is calculated on a different basis than under U.S. GAAP. Based on the U.S. qualified pension plans' status as of December 31, 2015, there are no minimum required payments under ERISA for 2016.

Grace intends to fund non-U.S. pension plans based on applicable legal requirements and actuarial and trustee recommendations. Grace expects to contribute approximately \$12 million to its non-U.S. pension plans in 2016.

## 9. Other Balance Sheet Accounts

(In millions)	December 31, 2015	December 31, 2014
Other Current Liabilities		
Accrued compensation	\$79.2	\$77.0
Income tax payable	49.1	34.1
Customer volume rebates	38.2	37.8
Environmental contingencies	21.8	21.5
Accrued interest	19.0	21.0
Deferred revenue	16.9	19.4
Pension liabilities	15.3	15.6
Other accrued liabilities	116.6	112.1
	\$356.1	\$338.5

Accrued compensation in the table above includes salaries and wages as well as estimated current amounts due under the annual and long-term incentive programs.

## 10. Commitments and Contingent Liabilities

**Asbestos-Related Liabilities** Grace emerged from an asbestos-related Chapter 11 bankruptcy on February 3, 2014 (the "Effective Date"). Under its plan of reorganization, all pending and future asbestos-related claims are channeled for resolution to either a personal injury trust (the "PI Trust") or a property damage trust (the "PD Trust"). The trusts are the sole recourse for holders of asbestos-related claims. The channeling injunctions issued by the bankruptcy court prohibit holders of asbestos-related claims from asserting such claims directly against Grace.

Grace has satisfied all of its financial obligations to the PI Trust. Grace has fixed and contingent obligations remaining to the PD Trust. With respect to property damage claims related to Grace's former attic insulation product installed in the U.S. ("ZAI PD Claims"), the PD Trust was funded with \$34.4 million on the Effective Date. Grace is obligated to make a payment of \$30 million to the PD Trust in respect of ZAI PD Claims on February 3, 2017, and has recorded a liability of \$29.1 million representing the present value of this amount in "debt payable after one year" in the accompanying Consolidated Balance Sheets. Grace is also obligated to make up to 10 contingent deferred payments of \$8 million per year to the PD Trust in respect of ZAI PD Claims during the 20-year period beginning on the fifth anniversary of the Effective Date, with each such payment due only if the assets of the PD Trust in respect of ZAI PD Claims fall below \$10 million during the preceding year. Grace has not accrued for the 10 additional payments as Grace does not currently believe they are probable. Grace is not obligated to make additional payments to the PD Trust in respect of ZAI PD Claims beyond the payments described above. Grace has satisfied all of its financial obligations with respect to Canadian ZAI PD Claims.

With respect to other asbestos property damage claims ("Other PD Claims"), claims unresolved as of the Effective Date are to be litigated in the bankruptcy court and any future claims are to be litigated in a federal district court, in each case pursuant to procedures to be approved by the bankruptcy court. To the extent any such

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## Notes to Consolidated Financial Statements (Continued)

## 10. Commitments and Contingent Liabilities (Continued)

Other PD Claims are determined to be allowed claims, they are to be paid in cash by the PD Trust. Grace is obligated to make a payment to the PD Trust every six months in the amount of any Other PD Claims allowed during the preceding six months plus interest (if applicable) and the amount of PD Trust expenses for the preceding six months (the "PD Obligation"). The aggregate amount to be paid under the PD Obligation is not capped and Grace may be obligated to make additional payments to the PD Trust in respect of the PD Obligation. Grace has accrued for those unresolved Other PD Claims that it believes are probable and estimable. Grace has not accrued for other unresolved or unasserted Other PD Claims as it does not believe that payment is probable.

All payments to the PD Trust required after the Effective Date are secured by the Company's obligation to issue 77,372,257 shares of Company common stock to the PD Trust in the event of default, subject to customary anti-dilution provisions.

In the 2015 first quarter, Grace finalized its accounting for emergence from bankruptcy and recorded a gain of \$9.0 million reflecting the final resolution of certain bankruptcy liabilities.

This summary of the commitments and contingencies related to the Chapter 11 proceeding does not purport to be complete and is qualified in its entirety by reference to the plan of reorganization and the exhibits and documents related thereto, which have been filed with the SEC.

**Environmental Remediation** Grace is subject to loss contingencies resulting from extensive and evolving federal, state, local and foreign environmental laws and regulations relating to the generation, storage, handling, discharge, disposition and stewardship of chemicals and other materials. Grace accrues for anticipated costs associated with response efforts where an assessment has indicated that a probable liability has been incurred and the cost can be reasonably estimated. These accruals do not take into account any discounting for the time value of money.

Grace's environmental liabilities are reassessed whenever circumstances become better defined or response efforts and their costs can be better estimated. These liabilities are evaluated based on currently available information, including the progress of remedial investigation at each site, the current status of discussions with regulatory authorities regarding the method and extent of remediation at each site, existing technology, prior experience in contaminated site remediation and the apportionment of costs among potentially responsible parties.

**Estimated Investigation and Remediation Costs**

At December 31, 2015, Grace's estimated liability for environmental investigation and remediation costs totaled \$55.6 million, compared with \$61.7 million at December 31, 2014, and was included in "other current liabilities" and "other liabilities" in the Consolidated Balance Sheets. These amounts are based on funding and/or remediation agreements in place and Grace's estimate of costs for sites not subject to a formal remediation plan for which sufficient information is available to estimate response costs. These amounts do not include certain response costs for the Libby vermiculite mine area or certain vermiculite expansion facilities, which may be material but are not currently estimable. It is probable that Grace's actual response costs will exceed Grace's current estimates by material amounts.

Grace recorded pre-tax charges of \$6.6 million, \$13.8 million, and \$8.2 million for environmental matters in 2015, 2014, and 2013, respectively. Net cash paid against previously established reserves in 2015, 2014, and 2013 were \$12.7 million, \$12.4 million, and \$14.0 million, respectively. During 2014, claim payments of \$76.5 million were made in connection with Grace's emergence from Chapter 11.

**Vermiculite-Related Matters**

Grace purchased a vermiculite mine in Libby, Montana, in 1963 and operated it until 1990. Vermiculite concentrate from the Libby mine was used in the manufacture of attic insulation and other products. Some of the vermiculite ore contained naturally occurring asbestos. The EPA and Grace are engaged in a remedial investigation of the Libby mine and the surrounding area.



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## Notes to Consolidated Financial Statements (Continued)

## 10. Commitments and Contingent Liabilities (Continued)

During 2010, the EPA began reinvestigating certain facilities on a list of 105 facilities where vermiculite concentrate from the Libby mine may have been used, stored or processed. Grace is cooperating with the EPA on this reinvestigation and has remediated several of these facilities. It is probable that the EPA will request additional remediation at other facilities.

Grace's total estimated liability for response costs that are currently estimable related to its former vermiculite operations in Libby and vermiculite processing sites outside of Libby at December 31, 2015 and 2014, was \$18.7 million and \$19.4 million, respectively. It is probable that Grace's ultimate liability for these vermiculite-related matters will exceed current estimates by material amounts. Grace's current recorded liability will be adjusted as Grace receives new information and amounts become reasonably estimable.

**Non-Vermiculite-Related Matters**

At December 31, 2015 and 2014, Grace's estimated liability for response costs at sites not related to its former vermiculite mining and processing activities was \$36.9 million and \$42.3 million, respectively. This liability relates to Grace's current and former operations, including its share of liability for off-site disposal at facilities. Grace's estimated liability is based upon regulatory requirements and environmental conditions at each site. As Grace receives new information, its estimated liability may change materially.

**Purchase Commitments** Grace uses purchase commitments to ensure supply and to minimize the volatility of major components of direct manufacturing costs including natural gas, certain metals, rare earths, asphalt, amines and other materials. Such commitments are for quantities that Grace fully expects to use in its normal operations.

**Guarantees and Indemnification Obligations** Grace is a party to many contracts containing guarantees and indemnification obligations. These contracts primarily consist of:

- Product warranties with respect to certain products sold to customers in the ordinary course of business. These warranties typically provide that products will conform to specifications. Grace accrues a warranty liability on a transaction-specific basis depending on the individual facts and circumstances related to each sale. Both the liability and annual expense related to product warranties are immaterial to the Consolidated Financial Statements.

- Performance guarantees offered to customers under certain licensing arrangements. Grace has not established a liability for these arrangements based on past performance.

- Licenses of intellectual property by Grace to third parties in which Grace has agreed to indemnify the licensee against third party infringement claims.

- Contracts providing for the sale of a former business unit or product line in which Grace has agreed to indemnify the buyer against liabilities arising prior to the closing of the transaction, including environmental liabilities.

- Guarantees of real property lease obligations of third parties, typically arising out of (a) leases entered into by former subsidiaries of Grace, or (b) the assignment or sublease of a lease by Grace to a third party.

**Financial Assurances** Financial assurances have been established for a variety of purposes, including insurance and environmental matters, trade-related commitments and other matters. At December 31, 2015, Grace had gross financial assurances issued and outstanding of \$126.8 million, composed of \$34.3 million of surety bonds issued by various insurance companies and \$92.5 million of standby letters of credit and other financial assurances issued by various banks.

**Accounting for Contingencies** Although the outcome of each of the matters discussed above cannot be predicted with certainty, Grace has assessed its risk and has made accounting estimates as required under U.S. GAAP.

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## Notes to Consolidated Financial Statements (Continued)

## 11. Restructuring Expenses, Asset Impairments and Repositioning Expenses

## Restructuring Expenses and Asset Impairments

In 2015, Grace incurred costs from restructuring actions as a result of changes in the business environment and its business structure in part due to the Separation, which are included in "other expense, net" in the Consolidated Statements of Operations. Grace incurred \$22.8 million (\$6.1 million in Construction Products, \$4.9 million in Catalysts Technologies, \$1.2 million in Materials Technologies and \$10.6 million in Corporate) of restructuring expenses during 2015, compared with \$8.1 million in 2014 (\$2.7 million in Construction Products, \$1.9 million in Catalysts Technologies, \$0.3 million in Materials Technologies and \$3.2 million in Corporate). These costs are not included in segment operating income. Substantially all costs related to the 2014 programs were paid as of December 31, 2015, while substantially all remaining liabilities related to the 2015 restructuring programs are expected to be paid by December 31, 2016.

During 2014, Grace incurred asset impairment charges of \$14.3 million, of which \$9.8 million related to the concrete production management systems product that is part of the Construction Products operating segment and \$4.5 million related to an unconsolidated investment of the Construction Products operating segment.

Restructuring Expenses and Asset Impairments (In millions)	Year Ended December 31,		
	2015	2014	2013
Restructuring expenses	\$22.8	\$8.1	\$12.5
Asset impairments	0.1	14.3	—
Total restructuring expenses and asset impairments	\$22.9	\$22.4	\$12.5
Restructuring Liability (In millions)			Total
Balance, December 31, 2012			\$3.0
Accruals for severance and other costs			7.6
Payments			(6.4 )
Currency translation adjustments and other			0.2
Balance, December 31, 2013			\$4.4
Accruals for severance and other costs			7.7
Payments			(7.9 )
Currency translation adjustments and other			0.3
Balance, December 31, 2014			\$4.5
Accruals for severance and other costs			22.8
Payments			(16.4 )
Currency translation adjustments and other			(0.2 )
Balance, December 31, 2015			\$10.7

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## Notes to Consolidated Financial Statements (Continued)

## 11. Restructuring Expenses, Asset Impairments and Repositioning Expenses (Continued)

## Repositioning Expenses

In 2015, Grace incurred pretax repositioning expenses of \$64.3 million related to its planned separation into two independent companies.

(In millions)	Year Ended December 31, 2015
Professional fees	\$49.8
Employee-related costs	10.4
Asset impairments	4.1
Total	\$64.3

Substantially all of these costs, excluding the asset impairments, have been or are expected to be settled in cash.

## 12. Other Expense, net

Components of other expense, net are as follows:

(In millions)	Year Ended December 31,		
	2015	2014	2013
Restructuring expenses and asset impairments	\$22.9	\$22.4	\$12.5
Net (gain) loss on sales of investments and disposals of assets	(11.8	) (2.2	) 0.5
Provision for environmental remediation	6.6	13.8	8.2
Interest income	(0.5	) (1.4	) (1.0
Currency transaction effects	(0.1	) (1.1	) 4.0
Other miscellaneous expense (income)	0.7	(4.0	) (9.2
Total other expense, net	\$17.8	\$27.5	\$15.0

## 13. Other Comprehensive Loss

The following tables present the pre-tax, tax, and after-tax components of Grace's other comprehensive loss for the years ended December 31, 2015, 2014, and 2013:

Year Ended December 31, 2015 (In millions)	Pre-Tax Amount	Tax Benefit/ (Expense)	After-Tax Amount
Defined benefit pension and other postretirement plans:			
Amortization of net prior service credit included in net periodic benefit cost	\$(3.1	) \$1.0	\$(2.1
Amortization of net deferred actuarial loss included in net periodic benefit cost	0.7	(0.2	) 0.5
Net prior service credit arising during period	5.7	(1.9	) 3.8
Net deferred actuarial loss arising during period	(0.4	) 0.1	(0.3
Loss on curtailment of postretirement plans	(4.5	) 1.6	(2.9
Benefit plans, net	(1.6	) 0.6	(1.0
Currency translation adjustments	(43.3	) —	(43.3
Gain from hedging activities	2.1	(0.8	) 1.3
Other comprehensive loss attributable to W. R. Grace & Co. shareholders	\$(42.8	) \$(0.2	) \$(43.0

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## Notes to Consolidated Financial Statements (Continued)

## 13. Other Comprehensive Loss (Continued)

Year Ended December 31, 2014 (In millions)	Pre-Tax Amount	Tax Benefit/ (Expense)	After-Tax Amount
Defined benefit pension and other postretirement plans:			
Amortization of net prior service credit included in net periodic benefit cost	\$(1.7	) \$0.6	\$(1.1 )
Net prior service credit arising during period	13.6	(4.8	) 8.8
Net deferred actuarial gain arising during period	1.0	(0.4	) 0.6
Loss on termination of postretirement plans	(12.2	) 1.3	(10.9 )
Benefit plans, net	0.7	(3.3	) (2.6 )
Currency translation adjustments	(28.0	) —	(28.0 )
Loss from hedging activities	(7.1	) 2.6	(4.5 )
Other than temporary impairment of investment	0.8	—	0.8
Loss on securities available for sale	(0.1	) —	(0.1 )
Other comprehensive loss attributable to W. R. Grace & Co. shareholders	\$(33.7	) \$(0.7	) \$(34.4 )
Year Ended December 31, 2013 (In millions)	Pre-Tax Amount	Tax Benefit/ (Expense)	After-Tax Amount
Defined benefit pension and other postretirement plans:			
Amortization of net prior service cost included in net periodic benefit cost	\$0.7	\$(0.2	) \$0.5
Amortization of net deferred actuarial loss included in net periodic benefit cost	0.4	(0.1	) 0.3
Net prior service credit arising during period	1.7	(0.6	) 1.1
Net deferred actuarial gain arising during period	4.3	(1.6	) 2.7
Benefit plans, net	7.1	(2.5	) 4.6
Currency translation adjustments	(23.6	) —	(23.6 )
Loss from hedging activities	(0.3	) 0.1	(0.2 )
Gain on securities available for sale	0.1	—	0.1
Other comprehensive loss attributable to W. R. Grace & Co. shareholders	\$(16.7	) \$(2.4	) \$(19.1 )

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## Notes to Consolidated Financial Statements (Continued)

## 13. Other Comprehensive Loss (Continued)

The following table presents the changes in accumulated other comprehensive income (loss), net of tax, for the years ended December 31, 2015, 2014, and 2013:

	Defined Benefit Pension and Other Postretirement Plans	Currency Translation Adjustments	Gain (Loss) from Hedging Activities	Unrealized Loss on Investment	Gain (Loss) on Securities Available for Sale	Total
Balance, December 31, 2012	\$2.0	\$28.8	\$(0.3)	\$(0.8)	\$—	\$29.7
Other comprehensive income (loss) before reclassifications	3.8	(23.6)	1.2	—	0.1	(18.5)
Amounts reclassified from accumulated other comprehensive income	0.8	—	(1.4)	—	—	(0.6)
Net current-period other comprehensive income (loss)	4.6	(23.6)	(0.2)	—	0.1	(19.1)
Balance, December 31, 2013	\$6.6	\$5.2	\$(0.5)	\$(0.8)	\$0.1	\$10.6
Other comprehensive income (loss) before reclassifications	9.4	(28.0)	(3.2)	—	(0.7)	(22.5)
Amounts reclassified from accumulated other comprehensive income	(12.0)	—	(1.3)	0.8	0.6	(11.9)
Net current-period other comprehensive (loss) income	(2.6)	(28.0)	(4.5)	0.8	(0.1)	(34.4)
Balance, December 31, 2014	\$4.0	\$(22.8)	\$(5.0)	\$—	\$—	\$(23.8)
Other comprehensive income (loss) before reclassifications	3.5	(43.3)	0.6	—	—	(39.2)
Amounts reclassified from accumulated other comprehensive income	(4.5)	—	0.7	—	—	(3.8)
Net current-period other comprehensive (loss) income	(1.0)	(43.3)	1.3	—	—	(43.0)
Balance, December 31, 2015	\$3.0	\$(66.1)	\$(3.7)	\$—	\$—	\$(66.8)

Grace is a global enterprise operating in over 40 countries with local currency generally deemed to be the functional currency for accounting purposes. The currency translation amount represents the adjustments necessary to translate the balance sheets valued in local currencies to the U.S. dollar as of the end of each period presented, and to translate revenues and expenses at average exchange rates for each period presented.

See Note 6 for a discussion of hedging activities. See Note 8 for a discussion of pension plans and other postretirement benefit plans.

## 14. Shareholders' Equity

Under its Amended and Restated Certificate of Incorporation, the Company is authorized to issue 300,000,000 shares of common stock, \$0.01 par value. As of December 31, 2015, the W. R. Grace & Co. 2014 Stock Incentive Plan had 4,265,421 shares of unissued stock reserved for issuance in the event of the exercise of stock options or settlement of

stock based awards under the Plan. Historically all stock options exercised were covered by reissuing treasury stock. During 2014, stock options exercises exceeded the shares available in treasury stock and therefore the Company issued new shares, which were reserved for issuance under the Plans. For the years ended December 31, 2015, 2014, and 2013, 728,408, 793,359, and 1,464,294 stock options were

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## Notes to Consolidated Financial Statements (Continued)

## 14. Shareholders' Equity (Continued)

exercised for aggregate proceeds of \$26.9 million, \$23.4 million, and \$34.4 million, respectively. Additionally in 2015, 9,378 common shares were issued to members of the Board of Directors.

The following table sets forth information relating to common stock activity for 2015 and 2014:

Balance of outstanding shares, December 31, 2013	77,046,143
Stock options exercised	793,359
Shares issued	19,560
Shares repurchased	(4,936,497 )
Balance of outstanding shares, December 31, 2014	72,922,565
Stock options exercised	728,408
Shares issued	9,378
Shares forfeited	(3,120 )
Shares repurchased	(3,123,716 )
Balance of outstanding shares, December 31, 2015	70,533,515

## 15. Stock Incentive Plans

The Company has granted nonstatutory stock options to certain key employees under the Plans. The Plans are administered by the Compensation Committee of the Board of Directors. Stock options are generally non-qualified and are at exercise prices not less than 100% of the average per share fair market value on the date of grant.

Stock-based compensation awards granted under the Company's stock incentive plans are generally subject to a vesting period from the date of the grant ranging from 1 - 3 years. Currently outstanding options expire on various dates through November 2020.

The following table sets forth information relating to such options during 2015, 2014, and 2013:

Stock Option Activity	Number Of Shares	Average Exercise Price	Weighted- Average Grant Date Fair Value
Balance, January 1, 2013	4,024,484	\$32.33	
Options exercised	(1,464,294 )	23.46	
Options forfeited	(95,139 )	52.17	
Options terminated	(1,381 )	42.26	
Options granted	421,385	76.70	\$19.26
Balance, December 31, 2013	2,885,055	42.60	
Options exercised	(793,359 )	29.53	
Options forfeited	(42,424 )	68.07	
Options granted	474,518	93.39	20.12
Balance, December 31, 2014	2,523,790	55.77	
Options exercised	(728,408 )	36.85	
Options forfeited	(25,000 )	92.57	
Options terminated	(500 )	100.29	
Options granted	550,805	96.01	19.28
Balance, December 31, 2015	2,320,687		



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## Notes to Consolidated Financial Statements (Continued)

## 15. Stock Incentive Plans (Continued)

The following is a summary of nonvested option activity for the year ended December 31, 2015:

Stock Option Activity	Number Of Shares	Weighted- Average Grant Date Fair Value
Nonvested options outstanding at beginning of year	959,842	\$20.12
Granted	550,805	19.28
Vested	(511,146)	) 18.83
Forfeited	(25,500)	) 15.37
Nonvested options outstanding at end of year	974,001	

As of December 31, 2015, the intrinsic value (the difference between the exercise price and the market price) for options outstanding was \$66.7 million and for options exercisable was \$59.9 million. The total intrinsic value of all options exercised during the years ended December 31, 2015, 2014 and 2013 was \$46.1 million, \$53.6 million and \$83.2 million, respectively. A summary of our stock options outstanding and exercisable at December 31, 2015, follows:

Exercise Price Range	Number Outstanding	Number Exercisable	Outstanding Weighted- Average Remaining Contractual Life (Years)	Exercisable Weighted- Average Exercise Price
\$40 - \$50	985,206	985,206	0.92	\$45.30
\$60 - \$70	16,499	16,499	1.94	66.70
\$70 - \$80	332,279	209,074	2.32	76.66
\$80 - \$90	1,631	890	2.49	84.74
\$90 - \$100	957,572	131,072	3.97	92.94
\$100 - \$110	27,500	6,875	3.16	100.29
	2,320,687	1,349,616		

At December 31, 2015, the weighted-average remaining contractual term of all options outstanding and exercisable was 2.41 years.

**Options Granted** The Company granted approximately 0.6 million, 0.5 million, and 0.4 million nonstatutory stock options in 2015, 2014, and 2013, respectively, under the Plans.

For the years ended December 31, 2015, 2014 and 2013, Grace recognized non-cash stock-based compensation expense of \$9.9 million, \$12.0 million and \$12.7 million, respectively, which is included in selling, general and administrative expense.

Grace values options using the Black-Scholes option-pricing model, which was developed for use in estimating the fair value of traded options. The risk-free rate is based on the U.S. Treasury yield curve published as of the grant date, with maturities approximating the expected term of the options. The expected term of the options is estimated using the simplified method as allowed by ASC 718-20, whereby the average between the vesting period and contractual term is used. The expected volatility was estimated using both actual stock volatility and the volatility of an industry peer group. Grace believes its actual stock volatility in the last several years may not be representative of expected future volatility because of its previous status in Chapter 11. The following summarizes the assumptions used for estimating the fair value of stock options granted during 2015, 2014 and 2013, respectively.



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## Notes to Consolidated Financial Statements (Continued)

## 15. Stock Incentive Plans (Continued)

	2015	2014	2013
Expected volatility	23.0% - 27.2%	28.2% - 28.7%	32.3% - 34.3%
Weighted average expected volatility	24.5%	28.6%	33.3%
Expected term	3.00 - 4.00 years	3.00 - 4.00 years	3.00 - 4.00 years
Risk-free rate	1.30%	1.25%	0.61%
Dividend yield	—%	—%	—%

Total unrecognized stock-based compensation expense at December 31, 2015, was \$5.8 million and the weighted-average period over which this expense will be recognized is 0.8 years.

**Restricted Stock and Performance Based Units** During 2015 the Company granted 123,846 Restricted Stock Units (RSUs) and 1,864 Performance Based Units (PBUs) under the Company's Long-term Incentive Plan (LTIP). During 2014 the Company granted 110,993 PBUs under the LTIP. During 2013 the Company granted 111,770 PBUs under the LTIP. During 2015, 2014, and 2013, 10,641, 8,570, and 5,513 awards were forfeited, respectively. The awards cliff vest on December 31, 2017, 2016, and 2015, subject to continued employment through the payment date, and have a weighted average grant date fair value of \$96.12, \$92.92, and \$76.66, respectively. The Company anticipates that approximately 53% of the awards granted in 2015 will be settled in common stock, and approximately 47% will be settled in cash, assuming full vesting. The Company anticipates that approximately 53% of the PBUs granted in 2014 will be settled in common stock and approximately 47% will be settled in cash, assuming full vesting. The Company anticipates that approximately 54% of the PBUs granted in 2013 will be settled in common stock and approximately 46% will be settled in cash, assuming full vesting.

PBUs and RSUs are recorded at fair value at the date of grant. The common stock settled portion is considered an equity award with the payout being valued based on the Company's stock price on the grant date. The cash settled portion of the award is considered a liability award with payout being remeasured each reporting period based on the Company's current stock price. PBU equity and cash awards are remeasured each reporting period based on the expected payout of the award, which may range from 0% to 200% of the targets for such awards; therefore, these portions of the awards are subject to volatility until the payout is finally determined at the end of the performance period. During 2015, 2014, and 2013, the Company recognized \$5.8 million, \$3.5 million, and \$1.7 million in compensation expense for these awards. As of December 31, 2015, \$11.1 million of total unrecognized compensation expense related to the awards is expected to be recognized over the remaining weighted-average service period of 1.7 years.

## 16. Earnings Per Share

The following table shows a reconciliation of the numerators and denominators used in calculating basic and diluted earnings per share.

(In millions, except per share amounts)	2015	2014	2013
<b>Numerators</b>			
Net income attributable to W. R. Grace & Co. shareholders	\$144.2	\$276.3	\$256.1
<b>Denominators</b>			
Weighted average common shares—basic calculation	72.0	75.3	76.4
Dilutive effect of employee stock options	0.6	0.9	1.3
Weighted average common shares—diluted calculation	72.6	76.2	77.7
Basic earnings per share	\$2.00	\$3.67	\$3.35
Diluted earnings per share	\$1.99	\$3.63	\$3.30

There were approximately 0.4 million, 0.3 million and 0.3 million anti-dilutive options outstanding for the years ended December 31, 2015, 2014 and 2013, respectively.



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## Notes to Consolidated Financial Statements (Continued)

## 16. Earnings Per Share (Continued)

On February 4, 2014, Grace announced that the Company's Board of Directors authorized a share repurchase program of up to \$500 million expected to be completed over the following 12 to 24 months at the discretion of management. The Company completed this initial share repurchase program on January 15, 2015. On February 5, 2015, the Company announced that its Board of Directors authorized an additional share repurchase program of up to \$500 million. The timing of the repurchases and the actual amount repurchased will depend on a variety of factors, including the market price of the Company's shares, the strategic deployment of capital, and general market and economic conditions. During 2015, the Company repurchased 3,123,716 shares of Company common stock for \$301.5 million pursuant to the terms of the share repurchase program.

## 17. Operating Segment Information

Grace is a global producer of specialty chemicals and specialty materials. Grace manages its business through three operating segments: Grace Catalysts Technologies, Grace Materials Technologies, and Grace Construction Products. Grace Catalysts Technologies includes catalysts and related products and technologies used in refining, petrochemical and other chemical manufacturing applications. Grace's Advanced Refining Technologies (ART) joint venture is managed in this segment. ART is an unconsolidated affiliate, and Grace accounts for ART using the equity method as discussed in Note 18. Grace Materials Technologies includes packaging products and engineered materials, coatings and sealants used in consumer, industrial, and pharmaceutical applications. Grace Construction Products includes specialty construction chemicals and specialty building materials used in commercial, infrastructure and residential construction. Intersegment sales are eliminated in consolidation. The table below presents information related to Grace's operating segments. Only those corporate expenses directly related to the operating segments are allocated for reporting purposes. All remaining corporate items are reported separately and labeled as such.

Grace excludes defined benefit pension expense from the calculation of segment operating income. Grace believes that the exclusion of defined benefit pension expense provides a better indicator of its operating segment performance as defined benefit pension expense is not managed at an operating segment level.

Grace defines Adjusted EBIT (a non-GAAP financial measure) to be net income adjusted for interest income and expense; income taxes; costs related to Chapter 11 and asbestos; restructuring and repositioning expenses and asset impairments; pension costs other than service and interest costs, expected returns on plan assets, and amortization of prior service costs/credits; income and expense items related to divested businesses, product lines, and certain other investments; gains and losses on sales of businesses, product lines, and certain other investments; and certain other unusual or infrequent items that are not representative of underlying trends.

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## Notes to Consolidated Financial Statements (Continued)

## 17. Operating Segment Information (Continued)

## Operating Segment Data

(In millions)	2015	2014	2013	
Net Sales				
Catalysts Technologies	\$1,162.1	\$1,246.8	\$1,124.0	
Materials Technologies	797.0	890.6	878.5	
Construction Products	1,092.4	1,105.6	1,058.2	
Total	\$3,051.5	\$3,243.0	\$3,060.7	
Adjusted EBIT				
Catalysts Technologies segment operating income	\$347.3	\$378.3	\$327.5	
Materials Technologies segment operating income	177.5	185.2	181.8	
Construction Products segment operating income	196.6	161.7	151.7	
Corporate costs	(79.3)	) (90.6	) (82.8	)
Gain on termination and curtailment of postretirement plans related to current businesses	1.9	23.6	—	
Certain pension costs	(25.5)	) (32.0	) (27.4	)
Total	\$618.5	\$626.2	\$550.8	
Depreciation and Amortization				
Catalysts Technologies	\$68.1	\$66.3	\$54.2	
Materials Technologies	28.4	32.1	31.4	
Construction Products	28.6	31.7	31.8	
Corporate	6.4	7.0	5.7	
Total	\$131.5	\$137.1	\$123.1	
Capital Expenditures				
Catalysts Technologies	\$66.3	\$81.6	\$58.7	
Materials Technologies	25.8	35.6	33.0	
Construction Products	31.0	28.3	32.8	
Corporate	31.7	24.3	31.7	
Total	\$154.8	\$169.8	\$156.2	
Total Assets				
Catalysts Technologies	\$1,390.8	\$1,395.4	\$1,361.8	
Materials Technologies	464.1	501.2	508.9	
Construction Products	536.0	580.0	609.1	
Corporate	1,285.1	1,617.0	2,910.3	
Total	\$3,676.0	\$4,093.6	\$5,390.1	

Corporate costs include corporate support function costs and other corporate costs such as professional fees and insurance premiums.

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## Notes to Consolidated Financial Statements (Continued)

## 17. Operating Segment Information (Continued)

## Reconciliation of Operating Segment Data to Financial Statements

Grace Adjusted EBIT for the years ended December 31, 2015, 2014 and 2013 is reconciled below to income before income taxes presented in the accompanying Consolidated Statements of Operations.

(In millions)	Year Ended December 31,		
	2015	2014	2013
Grace Adjusted EBIT	\$618.5	\$626.2	\$550.8
Interest expense, net	(100.4	) (125.8	) (42.8
Currency and other losses in Venezuela	(73.2	) (1.0	) (6.9
Repositioning expenses	(64.3	) —	—
Restructuring expenses and asset impairments	(22.9	) (22.4	) (12.5
Pension MTM adjustment and other related costs, net	(46.8	) (128.3	) 50.6
Costs related to Chapter 11 and asbestos, net	(5.6	) (26.3	) (46.1
Gain on termination and curtailment of postretirement plans related to divested businesses	2.6	15.9	—
Income and expense items related to divested businesses	1.0	(5.2	) (4.1
Gain (loss) on sale of product line	—	0.2	(1.0
Default interest settlement	—	—	(129.0
Net income attributable to noncontrolling interests	0.7	1.0	1.6
Income before income taxes	\$309.6	\$334.3	\$360.6

The table below presents sales of similar products within each operating segment.

(In millions)	Year Ended December 31,		
	2015	2014	2013
Catalysts Technologies:			
Refining Catalysts	\$764.5	\$845.5	\$832.4
Polyolefin and Chemical Catalysts	397.6	401.3	291.6
Total	\$1,162.1	\$1,246.8	\$1,124.0
Materials Technologies:			
Engineered Materials	\$470.8	\$515.8	\$494.4
Packaging Products	326.2	374.8	384.1
Total	\$797.0	\$890.6	\$878.5
Construction Products:			
Specialty Construction Chemicals	\$665.4	\$688.7	\$650.4
Specialty Building Materials	427.0	416.9	407.8
Total	\$1,092.4	\$1,105.6	\$1,058.2

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## Notes to Consolidated Financial Statements (Continued)

## 17. Operating Segment Information (Continued)

## Geographic Area Data

The table below presents information related to the geographic areas in which Grace operates. Sales are attributed to geographic areas based on customer location.

(In millions)	2015	2014	2013
Net Sales			
United States	\$955.0	\$937.7	\$886.0
Canada and Puerto Rico	76.0	78.7	73.7
Total North America	1,031.0	1,016.4	959.7
Europe Middle East Africa	963.2	1,103.3	1,087.9
Asia Pacific	721.2	747.6	654.1
Latin America	336.1	375.7	359.0
Total	\$3,051.5	\$3,243.0	\$3,060.7
Properties and Equipment, net			
United States	\$564.5	\$526.2	\$497.8
Canada and Puerto Rico	15.5	17.5	19.1
Total North America	580.0	543.7	516.9
Europe Middle East Africa	174.1	189.3	212.4
Asia Pacific	67.9	70.7	70.9
Latin America	20.4	29.8	29.7
Total	\$842.4	\$833.5	\$829.9
Goodwill, Intangibles and Other Assets			
United States	\$622.2	\$615.8	\$589.7
Canada and Puerto Rico	7.7	7.6	8.6
Total North America	629.9	623.4	598.3
Europe Middle East Africa	71.7	90.9	106.4
Asia Pacific	46.0	49.8	52.4
Latin America	25.9	37.5	55.9
Total	\$773.5	\$801.6	\$813.0

## 18. Unconsolidated Affiliate

Grace accounts for its 50% ownership interest in ART using the equity method of accounting. Grace's investment in ART amounted to \$103.2 million and \$113.1 million as of December 31, 2015 and 2014, respectively, and the amount included in "equity in earnings of unconsolidated affiliate" in the accompanying Consolidated Statements of Operations totaled \$20.4 million, \$19.7 million and \$22.9 million for the years ended December 31, 2015, 2014 and 2013, respectively. ART is a private company and accordingly does not have a quoted market price available. The following summary lists ART's assets, liabilities and results of operations.

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## Notes to Consolidated Financial Statements (Continued)

## 18. Unconsolidated Affiliate (Continued)

(In millions)	December 31,	
	2015	2014
Summary of Balance Sheet information:		
Current assets	\$244.2	\$216.9
Noncurrent assets	69.7	59.3
Total assets	\$313.9	\$276.2
Current liabilities	\$111.3	\$54.7
Total liabilities	\$111.3	\$54.7

(In millions)	Year Ended December 31,		
	2015	2014	2013
Summary of Statement of Operations information:			
Net sales	\$415.7	\$409.9	\$370.4
Costs and expenses applicable to net sales	367.2	358.1	311.2
Income before income taxes	42.6	41.2	46.6
Net income	40.9	39.7	45.6

Grace and ART transact business on a regular basis and maintain several agreements in order to operate the joint venture. These agreements are treated as related party activities with an unconsolidated affiliate. The table below presents summary financial data related to transactions between Grace and ART.

(In millions)	Year Ended December 31,		
	2015	2014	2013
Grace sales of catalysts to ART	\$258.9	\$266.4	\$232.0
Charges for fixed costs, research and development and selling, general and administrative services to ART	23.4	26.9	28.8

Grace and Chevron provide lines of credit in the amount of \$15.0 million each at a commitment fee of 0.1% of the credit amount. These agreements expire on February 26, 2016, and are expected to be renewed. No amounts were outstanding at December 31, 2015 and 2014.

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## Notes to Consolidated Financial Statements (Continued)

## 19. Chapter 11 and Joint Plan of Reorganization

Grace emerged from an asbestos-related Chapter 11 bankruptcy on February 3, 2014 (the "Effective Date"). Under Grace's plan of reorganization (the "Joint Plan"), two asbestos trusts were established and funded. The court order that confirmed the Joint Plan channels all pending and future asbestos-related personal injury claims and demands ("PI Claims") for resolution to an asbestos personal injury trust (the "PI Trust") and all pending and future asbestos-related property damage claims and demands ("PD Claims"), including PD Claims related to Grace's former attic insulation product ("ZAI PD Claims"), to a separate asbestos property damage trust (the "PD Trust"). The trusts are the sole recourse for holders of asbestos-related claims; the channeling injunctions prohibit holders of asbestos-related claims from asserting such claims directly against Grace.

Under the terms of the Joint Plan, claims under the Grace Chapter 11 cases were satisfied as follows:

**Asbestos-Related Personal Injury Claims** On the Effective Date, the PI Trust was funded with:

\$557.7 million in cash from Grace (includes \$464.1 million of cash from Grace and \$93.6 million of cash from insurance proceeds that were held in escrow);

A warrant to acquire 10 million shares of Company common stock at an exercise price of \$17.00 per share and expiring one year after the Effective Date (the "PI Warrant") (The Company repurchased the PI Warrant for a payment of \$490 million in cash on February 3, 2015);

Rights to all proceeds under all of Grace's insurance policies that are available for payment of asbestos-related personal injury claims and demands;

\$42.1 million in cash from a subsidiary of Fresenius AG, pursuant to the terms of a settlement agreement resolving asbestos-related, successor liability and fraudulent transfer claims against Fresenius; and

\$856.8 million in cash and 18 million shares of Sealed Air Corporation common stock paid by Cryovac, Inc., a wholly owned subsidiary of Sealed Air, pursuant to the terms of a settlement agreement resolving asbestos-related, successor liability and fraudulent transfer claims against Cryovac and Sealed Air.

Under the Joint Plan, Grace was also obligated to make deferred payments to the PI Trust of \$110 million per year for 5 years beginning in 2019 and \$100 million per year for 10 years beginning in 2024, which obligation was secured by the Company's obligation to issue 77,372,257 shares of Company common stock to the asbestos trusts in the event of default, subject to customary anti-dilution provisions. In September 2014, Grace paid the PI Trust \$632 million in settlement of Grace's deferred payment obligations. Grace has no further financial obligations to the PI Trust.

**Asbestos-Related Property Damage Claims** The PD Trust contains two accounts that cannot be commingled, the PD Account and the ZAI PD Account. U.S. ZAI PD Claims are to be paid from the ZAI PD Account and non-ZAI PD Claims are to be paid from the PD Account. On the Effective Date, the PD Account was funded with \$39.9 million in cash from Grace and \$111.4 million in cash from Cryovac and Fresenius to pay allowed non-ZAI PD Claims settled as of the Effective Date, a separate Canadian ZAI PD Claims fund was funded with CDN\$8.6 million in cash from Grace, and the ZAI PD Account was funded with \$34.4 million in cash from Cryovac and Fresenius.

**Other Claims** As provided for in the Joint Plan, Grace paid substantially all other allowed pre-petition claims in full on or within 10 days after the Effective Date. All allowed administrative claims and all allowed priority claims were paid in cash with interest as provided in the Joint Plan. Secured claims were paid in cash with interest or by reinstatement. Allowed general unsecured claims, including \$129.0 million accrued in December 2013 relating to an agreement to settle the final pending appeal with the holders of Grace's pre-petition bank debt, were paid in cash. The Joint Plan further provided that Grace, subject to certain non-bankruptcy limitations, satisfy all pension, retirement medical, and similar employee-related obligations and pay workers' compensation claims.

See Note 10 for more information on Grace's remaining asbestos-related liabilities.



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## Notes to Consolidated Financial Statements (Continued)

## 19. Chapter 11 and Joint Plan of Reorganization (Continued)

Condensed Financial Information of the Debtors  
W. R. Grace & Co.—Chapter 11 Filing Entities  
Debtor-in-Possession Statements of Operations

(In millions) (Unaudited)	Year Ended December 31, 2013
Net sales, including intercompany	\$1,425.4
Cost of goods sold, including intercompany, exclusive of depreciation and amortization shown separately below	882.2
Selling, general and administrative expenses	178.1
Depreciation and amortization	69.1
Chapter 11 expenses, net	15.3
Default interest settlement	129.0
Asbestos and bankruptcy-related charges, net	21.9
Research and development expenses	37.8
Interest expense and related financing costs	37.7
Other income, net	(75.7 )
	1,295.4
Income before income taxes and equity in net income of non-filing entities	130.0
Provision for income taxes	(53.2 )
Income before equity in net income of non-filing entities	76.8
Equity in net income of non-filing entities	179.3
Net income attributable to W. R. Grace & Co. shareholders	\$256.1

In the above table "Asbestos and bankruptcy-related charges, net," primarily includes adjustments made to reflect the emergence-date value of the deferred payment obligations and adjustments to record the final allowed claims listing, partially offset by adjustments for interest per the terms of the Joint Plan.

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## Notes to Consolidated Financial Statements (Continued)

## 19. Chapter 11 and Joint Plan of Reorganization (Continued)

W. R. Grace & Co.—Chapter 11 Filing Entities  
Debtor-in-Possession Statements of Cash Flows

(In millions) (Unaudited)	Year Ended December 31, 2013	
<b>OPERATING ACTIVITIES</b>		
Net income attributable to W. R. Grace & Co. shareholders	\$256.1	
Reconciliation to net cash provided by operating activities:		
Depreciation and amortization	69.1	
Asbestos and bankruptcy-related charges, net	21.9	
Default interest settlement	129.0	
Equity in net income of non-filing entities	(179.3	)
Provision for income taxes	53.2	
Cash paid for income taxes, net of refunds	13.5	
Excess tax benefits from stock-based compensation	35.4	
Defined benefit pension income	(51.8	)
Cash paid under defined benefit pension arrangements	(55.6	)
Repatriation of cash from foreign entities	29.7	
Changes in assets and liabilities, excluding the effect of foreign currency translation and business acquired:		
Trade accounts receivable	(6.2	)
Inventories	(23.0	)
Accounts payable	21.9	
All other items, net	31.1	
Net cash provided by operating activities	345.0	
<b>INVESTING ACTIVITIES</b>		
Capital expenditures	(94.1	)
Business acquired, net of cash acquired	(510.4	)
Transfer to restricted cash and cash equivalents	(222.2	)
Net cash used for investing activities	(826.7	)
<b>FINANCING ACTIVITIES</b>		
Borrowings under credit arrangements	0.3	
Repayments under credit arrangements	(0.8	)
Proceeds from exercise of stock options	34.4	
Excess tax benefits from stock-based compensation	(35.4	)
Other financing activities	4.1	
Net cash provided by financing activities	2.6	
Decrease in cash and cash equivalents	(479.1	)
Cash and cash equivalents, beginning of period	1,064.2	
Cash and cash equivalents, end of period	\$585.1	

In addition to Grace's financial reporting obligations as prescribed by the SEC, during the Chapter 11 proceeding, Grace was required, under the rules and regulations of the Bankruptcy Code, to periodically file certain statements and schedules with the Bankruptcy Court. This information is available to the public through the Bankruptcy Court and

was prepared in a format that may not be comparable to information in Grace's quarterly and annual financial statements as filed with the SEC. These statements and schedules are not audited and do not purport to represent the financial position or results of operations of Grace on a consolidated basis.

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## Notes to Consolidated Financial Statements (Continued)

## 20. Quarterly Summary and Statistical Information (Unaudited)

(In millions, except per share amounts)	March 31	June 30	September 30	December 31
2015				
Net sales	\$720.6	\$782.1	\$790.1	\$758.7
Gross profit	258.3	310.6	311.9	286.7
Net income	52.7	57.4	13.8	20.3
Net income per share:(1)				
Basic earnings per share:				
Net income	\$0.72	\$0.79	\$0.19	\$0.29
Diluted earnings per share:				
Net income	0.72	0.78	0.19	0.29
Market price of common stock:(2)				
High	\$104.90	\$103.72	\$104.94	\$101.99
Low	84.25	95.03	90.84	92.66
Close	98.87	100.30	93.05	99.59

(1) Per share results for the four quarters may differ from full-year per share results, as a separate computation of the weighted average number of shares outstanding is made for each quarter presented.

(2) Principal market: New York Stock Exchange.

(In millions, except per share amounts)	March 31	June 30	September 30	December 31
2014				
Net sales	\$744.5	\$838.0	\$856.4	\$804.1
Gross profit	269.2	320.9	327.8	274.5
Net income	50.1	136.2	74.5	15.5
Net income per share:(1)				
Basic earnings per share:				
Net income	\$0.65	\$1.79	\$1.00	\$0.21
Diluted earnings per share:				
Net income	0.64	1.77	0.99	0.21
Market price of common stock:(2)				
High	\$105.05	\$102.65	\$100.07	\$99.55
Low	90.58	90.40	90.56	79.06
Close	99.17	94.53	90.94	95.39

(1) Per share results for the four quarters may differ from full-year per share results, as a separate computation of the weighted average number of shares outstanding is made for each quarter presented.

(2) Principal market: New York Stock Exchange.

## 21. Subsequent Event

On February 3, 2016, (the "Distribution Date"), Grace completed the separation of GCP. As a result, beginning in the 2016 first quarter, GCP's historical financial results through the Distribution Date will be reflected in Grace's Consolidated Financial Statements as a discontinued operation. To effect the Separation, Grace distributed to its stockholders one share of GCP common stock, par value \$0.01 per share, for each share of Company common stock, par value \$0.01 per share outstanding as of 5:00 p.m. on January 27, 2016, the record date for the Distribution. In lieu of fractional shares of GCP, Grace stockholders received cash, which generally will be subject to income tax.



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Notes to Consolidated Financial Statements (Continued)

21. Subsequent Event (Continued)

In connection with the Separation, GCP distributed \$750 million to Grace. Grace used \$500 million of those funds to repay \$426.9 million of its U.S. dollar term loan and €67.3 million of its euro term loan. In connection with the financing GCP entered into related to the Separation, mortgages or deeds of trust will be executed with respect to GCP properties in Chicago, Illinois, and Mount Pleasant, Tennessee. Grace will have no obligations with respect to such mortgages or deeds of trust.

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## SELECTED FINANCIAL DATA(1)

(In millions, except per share amounts)	2015	2014	2013	2012	2011
<b>Statement of Operations</b>					
Net sales	\$ 3,051.5	\$ 3,243.0	\$ 3,060.7	\$ 3,155.5	\$ 3,211.9
Income before income taxes(2)	309.6	334.3	360.6	(20.6	) 307.0
Net income	144.9	277.3	257.7	41.0	219.1
Net loss (income) attributable to noncontrolling interests	(0.7	) (1.0	) (1.6	) (1.0	) 0.6
Net income attributable to W. R. Grace & Co. shareholders	144.2	276.3	256.1	40.0	219.7
<b>Financial Position</b>					
Cash and cash equivalents	\$ 329.9	\$ 557.5	\$ 964.8	\$ 1,336.9	\$ 1,048.3
Property and equipment, net	842.4	833.5	829.9	770.5	723.5
Total assets	3,676.0	4,093.6	5,390.1	5,082.5	4,492.9
Debt payable after one year(3)	2,144.3	1,919.0	29.6	35.8	21.6
Liabilities subject to compromise (a subset of total liabilities)	—	—	3,776.1	3,619.9	3,191.5
Shareholders' equity	212.5	369.0	571.2	319.8	184.2
<b>Cash Flow</b>					
Operating activities	\$ 13.4	\$ (1,472.1	) \$ 515.9	\$ 453.6	\$ 219.4
Investing activities	(144.5	) 235.3	(880.7	) (280.3	) (220.9
Financing activities	(38.2	) 849.9	(8.4	) 110.3	39.7
Net cash flow	(227.6	) (407.3	) (372.1	) 288.6	32.6
<b>Data Per Common Share (Diluted)</b>					
Net income	\$ 1.99	\$ 3.63	\$ 3.30	\$ 0.52	\$ 2.91
Average common diluted shares outstanding	72.6	76.2	77.7	76.3	75.5
<b>Other Statistics</b>					
Capital expenditures	\$ 154.8	\$ 169.8	\$ 156.2	\$ 138.5	\$ 144.0
Common stock price range	\$84.25-\$104.94	\$79.06-\$105.05	\$68.23-\$101.72	\$45.39-\$68.86	\$30.25-\$52.50
Common shareholders of record	5,142	5,839	7,077	7,591	8,063
Number of employees (approximate)	6,700	6,500	6,700	6,500	6,300

(1) Certain prior-year amounts have been reclassified to conform to the 2015 presentation.

Adjustments related to our asbestos-related liability, Chapter 11, and pension mark-to-market accounting are (2) included in and affect the period-to-period comparability of "Income before income taxes." See Note 17 to the Consolidated Financial Statements for a detail of these items.

(3) Amounts for the years 2011, 2012, and 2013 exclude amounts classified within "Liabilities subject to compromise."

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### Management's Discussion and Analysis of Financial Condition and Results of Operations

See "Analysis of Operations" for a discussion of our non-GAAP performance measures. Our references to "advanced economies" and "emerging regions" refer to classifications established by the International Monetary Fund.

### Results of Operations

#### 2015 Performance Summary

Following is a summary of our financial performance for the year ended December 31, 2015, compared with the prior year.

Net sales decreased 5.9% to \$3,051.5 million.

Adjusted Gross Margin increased 110 basis points to 39.6%.

Adjusted EBIT decreased 1.2% to \$618.5 million.

Grace net income decreased to \$144.2 million or \$1.99 per diluted share.

On February 5, 2015, we announced our plan to separate into two independent, publicly traded companies, intended to improve Grace's strategic focus, simplify its operating structure, and allow for more efficient capital allocation. On January 27, 2016, we entered into a separation agreement with GCP Applied Technologies Inc., or GCP, then a wholly-owned subsidiary of Grace, pursuant to which we agreed to transfer our Grace Construction Products operating segment and the packaging technologies business, operated under the "Darex" name, of our Grace Materials Technologies operating segment to GCP, referred to herein as the Separation. The Separation occurred on February 3, 2016, by means of a pro rata distribution to Grace stockholders of all of the outstanding shares of GCP common stock, referred to herein as the Distribution. Under the Distribution, one share of GCP common stock was distributed for each share of Grace common stock held as of the close of business on January 27, 2016. No fractional shares were distributed. As a result of the Distribution, GCP is now an independent public company and its common stock is listed under the symbol "GCP" on the New York Stock Exchange.

### Summary Description of Business

We are engaged in specialty chemicals and specialty materials businesses on a worldwide basis through our three operating segments, Grace Catalysts Technologies, Grace Materials Technologies, and Grace Construction Products. See Item 1 (Business—Business Overview) of this Report for a summary description of our core business.

### Analysis of Operations

We have set forth in the table below our key operating statistics with percentage changes for the years ended December 31, 2015, 2014, and 2013. Please refer to this Analysis of Operations when reviewing this Management's Discussion and Analysis of Financial Condition and Results of Operations.

We define Adjusted EBIT (a non-GAAP financial measure) to be net income adjusted for interest income and expense; income taxes; costs related to Chapter 11 and asbestos; restructuring and repositioning expenses and asset impairments; pension costs other than service and interest costs, expected returns on plan assets, and amortization of prior service costs/credits; income and expense items related to divested businesses, product lines, and certain other investments; gains and losses on sales of businesses, product lines, and certain other investments; and certain other unusual or infrequent items that are not representative of underlying trends.

We define Adjusted EBITDA (a non-GAAP financial measure) to be Adjusted EBIT adjusted for depreciation and amortization.

We define Adjusted Earnings Per Share (EPS) (a non-GAAP financial measure) to be diluted EPS adjusted for costs related to Chapter 11 and asbestos; restructuring and repositioning expenses and asset impairments; pension costs other than service and interest costs, expected returns on plan assets, and amortization of prior service costs/credits; income and expense items related to divested businesses, product lines, and certain other investments; gains and losses on sales of businesses, product lines, and certain other investments; certain other unusual or infrequent items that are not representative of underlying trends; and certain discrete tax items.

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We define Adjusted EBIT Return On Invested Capital (a non-GAAP financial measure) to be Adjusted EBIT (on a trailing four quarters basis) divided by the sum of net working capital, properties and equipment and certain other assets and liabilities.

We define Adjusted Gross Margin (a non-GAAP financial measure) to be gross margin adjusted for pension-related costs and loss in Venezuela included in cost of goods sold.

We use Adjusted EBIT as a performance measure in significant business decisions and in determining certain incentive compensation. We use Adjusted EBIT as a performance measure because it provides improved period-to-period comparability for decision making and compensation purposes, and because it better measures the ongoing earnings results of our strategic and operating decisions by excluding the earnings effects of our Chapter 11 proceedings, asbestos liabilities, restructuring and repositioning activities, and divested businesses.

Adjusted EBIT, Adjusted EBITDA, Adjusted EPS, Adjusted EBIT Return On Invested Capital and Adjusted Gross Margin do not purport to represent income measures as defined under U.S. GAAP, and should not be used as alternatives to such measures as an indicator of our performance. These measures are provided to investors and others to improve the period-to-period comparability and peer-to-peer comparability of our financial results, and to ensure that investors understand the information we use to evaluate the performance of our businesses.

Adjusted EBIT has material limitations as an operating performance measure because it excludes costs related to Chapter 11 and asbestos and may exclude income and expenses from restructuring and repositioning activities and divested businesses, which historically have been material components of our net income. Adjusted EBITDA also has material limitations as an operating performance measure because it excludes the impact of depreciation and amortization expense. Our business is substantially dependent on the successful deployment of capital, and depreciation and amortization expense is a necessary element of our costs. We compensate for the limitations of these measurements by using these indicators together with net income as measured under U.S. GAAP to present a complete analysis of our results of operations. Adjusted EBIT and Adjusted EBITDA should be evaluated together with net income measured under U.S. GAAP for a complete understanding of our results of operations.

We have provided in the following tables a reconciliation of these non-GAAP measures to the most directly comparable financial measure calculated and presented in accordance with U.S. GAAP.

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Analysis of Operations (In millions, except per share amounts)	2015	2014	% Change	2013	% Change
Net sales:					
Catalysts Technologies	\$1,162.1	\$1,246.8	(6.8 )%	\$1,124.0	10.9 %
Materials Technologies	797.0	890.6	(10.5 )%	878.5	1.4 %
Construction Products	1,092.4	1,105.6	(1.2 )%	1,058.2	4.5 %
Total Grace net sales	\$3,051.5	\$3,243.0	(5.9 )%	\$3,060.7	6.0 %
Net sales by region:					
North America	\$1,031.0	\$1,016.4	1.4 %	\$959.7	5.9 %
Europe Middle East Africa	963.2	1,103.3	(12.7 )%	1,087.9	1.4 %
Asia Pacific	721.2	747.6	(3.5 )%	654.1	14.3 %
Latin America	336.1	375.7	(10.5 )%	359.0	4.7 %
Total net sales by region	\$3,051.5	\$3,243.0	(5.9 )%	\$3,060.7	6.0 %
Profitability performance measures:					
Adjusted EBIT(A):					
Catalysts Technologies segment operating income	\$347.3	\$378.3	(8.2 )%	\$327.5	15.5 %
Materials Technologies segment operating income	177.5	185.2	(4.2 )%	181.8	1.9 %
Construction Products segment operating income	196.6	161.7	21.6 %	151.7	6.6 %
Corporate costs	(79.3 )	(90.6 )	12.5 %	(82.8 )	(9.4 )%
Gain on termination and curtailment of postretirement plans related to current businesses	1.9	23.6	NM	—	NM
Certain pension costs(B)	(25.5 )	(32.0 )	20.3 %	(27.4 )	(16.8 )%
Adjusted EBIT	618.5	626.2	(1.2 )%	550.8	13.7 %
Currency and other financial losses in Venezuela	(73.2 )	(1.0 )		(6.9 )	
Repositioning expenses	(64.3 )	—		—	
Restructuring expenses and asset impairments	(22.9 )	(22.4 )		(12.5 )	
Pension MTM adjustment and other related costs, net	(46.8 )	(128.3 )		50.6	
Costs related to Chapter 11 and asbestos, net	(5.6 )	(26.3 )		(46.1 )	
Gain on termination and curtailment of postretirement plans related to divested businesses	2.6	15.9		—	
Income and expense items related to divested businesses	1.0	(5.2 )		(4.1 )	
Gain (loss) on sale of product line	—	0.2		(1.0 )	
Default interest settlement	—	—		(129.0 )	
Interest expense, net	(100.4 )	(125.8 )	20.2 %	(42.8 )	(193.9 )%
Provision for income taxes	(164.7 )	(57.0 )	(188.9 )%	(102.9 )	44.6 %
Net income attributable to W. R. Grace & Co. shareholders	\$144.2	\$276.3	(47.8 )%	\$256.1	7.9 %
Diluted EPS (GAAP)	\$1.99	\$3.63	(45.2 )%	\$3.30	10.0 %
Adjusted EPS (non-GAAP)	\$4.78	\$4.43	7.9 %	\$4.39	0.9 %

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Analysis of Operations (In millions)	2015	2014	% Change	2013	% Change
Adjusted profitability performance measures:					
Adjusted Gross Margin:					
Catalysts Technologies	42.2	% 42.8	% (0.6) pts	40.1	% 2.7 pts
Materials Technologies	37.0	% 35.4	% 1.6 pts	34.6	% 0.8 pts
Construction Products	38.7	% 36.3	% 2.4 pts	36.0	% 0.3 pts
Adjusted Gross Margin	39.6	% 38.5	% 1.1 pts	37.1	% 1.4 pts
Loss in Venezuela in cost of goods sold	(0.4)	)% —	% NM	—	% NM
Pension costs in cost of goods sold	(0.9)	)% (1.8)	)% 0.9 pts	0.2	% (2.0) pts
Total Grace	38.3	% 36.8	% 1.5 pts	37.3	% (0.5) pts
Adjusted EBIT:					
Catalysts Technologies	\$347.3	\$378.3	(8.2) %	\$327.5	15.5 %
Materials Technologies	177.5	185.2	(4.2) %	181.8	1.9 %
Construction Products	196.6	161.7	21.6 %	151.7	6.6 %
Corporate	(102.9)	) (99.0)	) (3.9) %	(110.2)	) 10.2 %
Total Grace	618.5	626.2	(1.2) %	550.8	13.7 %
Depreciation and amortization:					
Catalysts Technologies	\$68.1	\$66.3	2.7 %	\$54.2	22.3 %
Materials Technologies	28.4	32.1	(11.5) %	31.4	2.2 %
Construction Products	28.6	31.7	(9.8) %	31.8	(0.3) %
Corporate	6.4	7.0	(8.6) %	5.7	22.8 %
Total Grace	131.5	137.1	(4.1) %	123.1	11.4 %
Adjusted EBITDA:					
Catalysts Technologies	\$415.4	\$444.6	(6.6) %	\$381.7	16.5 %
Materials Technologies	205.9	217.3	(5.2) %	213.2	1.9 %
Construction Products	225.2	193.4	16.4 %	183.5	5.4 %
Corporate	(96.5)	) (92.0)	) (4.9) %	(104.5)	) 12.0 %
Total Grace	750.0	763.3	(1.7) %	673.9	13.3 %
Operating margin:					
Catalysts Technologies	29.9	% 30.3	% (0.4) pts	29.1	% 1.2 pts
Materials Technologies	22.3	% 20.8	% 1.5 pts	20.7	% 0.1 pts
Construction Products	18.0	% 14.6	% 3.4 pts	14.3	% 0.3 pts
Total Grace	20.3	% 19.3	% 1.0 pts	18.0	% 1.3 pts
Adjusted EBITDA margin:					
Catalysts Technologies	35.7	% 35.7	% 0.0 pts	34.0	% 1.7 pts
Materials Technologies	25.8	% 24.4	% 1.4 pts	24.3	% 0.1 pts
Construction Products	20.6	% 17.5	% 3.1 pts	17.3	% 0.2 pts
Total Grace	24.6	% 23.5	% 1.1 pts	22.0	% 1.5 pts

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Analysis of Operations (In millions)	2015	2014	2013
Calculation of Adjusted EBIT Return On Invested Capital (trailing four quarters):			
Adjusted EBIT	\$618.5	\$626.2	\$550.8
Invested Capital:			
Trade accounts receivable	458.1	481.1	481.8
Inventories	304.1	332.8	295.3
Accounts payable	(266.7 )	(255.3 )	(262.5 )
	495.5	558.6	514.6
Other current assets (excluding income taxes)	77.7	76.9	81.2
Properties and equipment, net	842.4	833.5	829.9
Goodwill	439.0	452.9	457.5
Technology and other intangible assets, net	260.8	288.0	315.5
Investment in unconsolidated affiliate	103.2	113.1	96.2
Other assets (excluding capitalized financing fees)	39.5	23.0	40.0
Other current liabilities (excluding income taxes, environmental remediation related to asbestos and divested businesses, Chapter 11, restructuring, repositioning and accrued interest)	(254.8 )	(256.7 )	(248.0 )
Other liabilities (excluding environmental remediation related to asbestos and divested businesses)	(90.0 )	(81.8 )	(72.7 )
Total invested capital	\$1,913.3	\$2,007.5	\$2,014.2
Adjusted EBIT Return On Invested Capital	32.3 %	31.2 %	27.3 %

Amounts may not add due to rounding.

(A) Grace's segment operating income includes only Grace's share of income of consolidated and unconsolidated joint ventures.

Certain pension costs include only ongoing costs recognized quarterly, which include service and interest costs, expected returns on plan assets, and amortization of prior service costs/credits. Catalysts Technologies, Materials Technologies, and Construction Products segment operating income and corporate costs do not include any amounts for pension expense. Other pension related costs including annual mark-to-market adjustments and actuarial gains and losses are excluded from Adjusted EBIT. These amounts are not used by management to evaluate the performance of Grace's businesses and significantly affect the peer-to-peer and period-to-period comparability of our financial results. Mark-to-market adjustments and actuarial gains and losses relate primarily to changes in financial market values and actuarial assumptions and are not directly related to the operation of Grace's businesses.

NM—Not Meaningful

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## Grace Overview

Following is an overview of our financial performance for the years ended December 31, 2015, 2014, and 2013.

## Net Sales and Adjusted Gross Margin

The following tables identify the year-over-year increase or decrease in sales attributable to changes in sales volume and/or mix, product price, and the impact of currency translation.

Net Sales Variance Analysis	2015 as a Percentage Increase (Decrease) from 2014							
	Volume		Price		Currency Translation		Total	
Catalysts Technologies	(1.6	)%	(0.4	)%	(4.8	)%	(6.8	)%
Materials Technologies	(1.5	)%	2.1	%	(11.1	)%	(10.5	)%
Construction Products	5.2	%	3.0	%	(9.4	)%	(1.2	)%
Net sales	0.8	%	1.4	%	(8.1	)%	(5.9	)%
By Region:								
North America	1.6	%	0.2	%	(0.4	)%	1.4	%
Europe Middle East Africa	1.4	%	(0.1	)%	(14.0	)%	(12.7	)%
Asia Pacific	0.6	%	(0.3	)%	(3.8	)%	(3.5	)%
Latin America	(2.7	)%	12.6	%	(20.4	)%	(10.5	)%

Sales for 2015 decreased 5.9% overall compared with the prior year. The sales decrease was due to unfavorable currency translation (-8.1%), partially offset by higher sales volumes (+0.8%), and improved pricing (+1.4%).

Unfavorable currency translation against the dollar, primarily in Europe, impacted all operating segments. Higher sales volumes in both product groups in Construction Products were mostly offset by lower sales volumes in refining catalysts and packaging products. Pricing improved primarily in Venezuela in response to the weakening of the bolivar against the U.S. dollar and the euro. We expect that continued strength of the U.S. dollar against the other currencies in which we do business will have an unfavorable impact on sales in the 2016 first quarter.

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Net Sales Variance Analysis	2014 as a Percentage Increase (Decrease) from 2013				Total	
	Volume	Price	Currency Translation			
Catalysts Technologies	12.8	% (2.0)	)% 0.1	% 10.9	%	
Materials Technologies	1.4	% 1.0	% (1.0)	)% 1.4	%	
Construction Products	4.3	% 2.5	% (2.3)	)% 4.5	%	
Net sales	6.7	% 0.4	% (1.1)	)% 6.0	%	
By Region:						
North America	10.3	% (0.1)	)% (0.2)	)% 10.0	%	
Europe Middle East Africa	1.2	% (0.6)	)% 0.2	% 0.8	%	
Asia Pacific	11.5	% (0.3)	)% (1.7)	)% 9.5	%	
Latin America	4.2	% 6.2	% (6.1)	)% 4.3	%	

Sales for 2014 increased 6.0% overall compared with the prior year. The sales increase was due to higher sales volumes (+6.7%) and improved pricing (+0.4%), partially offset by unfavorable currency translation (-1.1%). The sales volume increase was primarily driven by Catalysts Technologies, due to catalyst and licensing revenue from the December 2013 polypropylene catalysts and licensing acquisition and new product sales in FCC catalysts. Construction Products also experienced volume growth due to specialty construction chemicals sales in North America and Asia Pacific, and global specialty building materials sales in commercial waterproofing. Materials Technologies had smaller sales volume gains from growth in engineered materials. Unfavorable currency translation negatively affected Materials Technologies and Construction Products.

**Adjusted EBIT**

Adjusted EBIT was \$618.5 million for 2015, a decrease of 1.2% compared with the prior year primarily due to unfavorable foreign currency translation; on a constant currency basis, Adjusted EBIT increased approximately 8%. Lower gross profit in Catalysts Technologies and Materials Technologies more than offset improved gross profit in Construction Products. Adjusted Gross Margin was 39.6% for 2015 compared with 38.5% for the prior year.

Adjusted EBIT was \$626.2 million for 2014, an increase of 13.7% compared with the prior year. The increase was primarily due to improved segment operating income due to sales volume growth and margin expansion in all three business segments, including through acquisitions, and a gain related to the termination of certain retiree benefit plans. Adjusted Gross Margin was 38.5% for 2014 compared with 37.1% for the prior year, with gross margins increasing in all three business segments. Catalysts Technologies Adjusted Gross Margin improvement was primarily due to the polypropylene acquisition and lower manufacturing costs, partially offset by lower pricing. Adjusted Gross Margin improvement in Materials Technologies was primarily due to improved pricing and lower manufacturing costs. Construction Products Adjusted Gross Margin improvement was due to higher sales volumes and improved pricing.

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## Grace Net Income

Grace net income was \$144.2 million for 2015, a decrease of 47.8% compared with \$276.3 million for the prior year. The decrease was primarily due to the pre-tax charge of \$73.2 million related to operations in Venezuela and repositioning expenses of \$64.3 million.

Grace net income was \$276.3 million for 2014 compared with \$256.1 million for the prior year. The increase was primarily due to a 2013 charge of \$129.0 million related to the settlement of a dispute regarding the amount of interest payable on pre-petition debt and, in 2014, improved segment operating income, including from acquisitions, a lower provision for income taxes, and a gain related to the termination of certain retiree benefit plans. These effects were partially offset by an unfavorable mark-to-market pension adjustment in 2014 compared with a favorable adjustment in the prior year and higher interest expense and financing costs related to emergence financing and the \$1.0 billion debt offering in September 2014.

## Adjusted EPS

The following table reconciles our Diluted EPS (GAAP) to our Adjusted EPS (non-GAAP):

(In millions, except per share amounts)	2015			
	Pre-Tax	Tax Effect	After-Tax	Per Share
Diluted Earnings Per Share (GAAP)				\$1.99
Currency and other losses in Venezuela(1)	\$73.2	\$—	\$73.2	1.01
Repositioning expenses(2)	64.3	(5.4 )	69.7	0.96
Pension MTM adjustment and other related costs, net	46.8	16.0	30.8	0.42
Restructuring expenses and asset impairments	22.9	7.7	15.2	0.21
Costs related to Chapter 11 and asbestos, net	5.6	2.1	3.5	0.05
Gain on curtailment of postretirement plans related to divested businesses	(2.6 )	(1.0 )	(1.6 )	(0.02 )
Income and expense items related to divested businesses	(1.0 )	(0.4 )	(0.6 )	(0.01 )
Discrete tax items:				
Discrete tax items, including adjustments to uncertain tax positions		(12.1 )	12.1	0.17
Adjusted EPS (non-GAAP)				\$4.78

(1) Includes the tax effect of the nondeductible Venezuela charge on the effective tax rate.

(2) Includes incremental tax charges directly related to the Separation.

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	2014			
(In millions, except per share amounts)	Pre-Tax	Tax Effect	After-Tax	Per Share
Diluted Earnings Per Share (GAAP)				\$3.63
Pension MTM adjustment and other related costs, net	\$128.3	\$46.9	\$81.4	1.07
Costs related to Chapter 11 and asbestos, net	26.3	7.6	18.7	0.25
Restructuring expenses and asset impairments	22.4	7.6	14.8	0.19
Gain on termination of postretirement plans related to divested businesses	(15.9 )	(5.9 )	(10.0 )	(0.13 )
Income and expense items related to divested businesses	5.2	1.9	3.3	0.04
Currency and other losses in Venezuela	1.0	0.3	0.7	0.01
Gain on sale of product line	(0.2 )	(0.1 )	(0.1 )	—
Discrete tax items:				
Discrete tax items, including adjustments to uncertain tax positions		48.2	(48.2 )	(0.63 )
Adjusted EPS (non-GAAP)				\$4.43
	2013			
(In millions, except per share amounts)	Pre-Tax	Tax Effect	After-Tax	Per Share
Diluted Earnings Per Share (GAAP)				\$3.30
Default interest settlement	\$129.0	\$48.3	\$80.7	1.04
Pension MTM adjustment and other related costs, net	(50.6 )	(20.0 )	(30.6 )	(0.39 )
Costs related to Chapter 11 and asbestos, net	46.1	17.2	28.9	0.37
Restructuring expenses and asset impairments	12.5	3.5	9.0	0.12
Currency and other losses in Venezuela	6.9	—	6.9	0.09
Income and expense items related to divested businesses	4.1	1.4	2.7	0.04
Loss on sale of product line	1.0	0.4	0.6	0.01
Discrete tax items:				
Release of valuation allowances		24.4	(24.4 )	(0.31 )
Discrete tax items, including adjustments to uncertain tax positions		(9.4 )	9.4	0.12
Adjusted EPS (non-GAAP)				\$4.39

## Adjusted EBIT Return On Invested Capital

Adjusted EBIT Return On Invested Capital for 2015 was 32.3% on a trailing four quarters basis, an increase from 31.2% and 27.3% on the same basis for 2014 and 2013, respectively. The increase in 2015 was primarily due to improved working capital management. The increase in 2014 was primarily due to improved segment operating income, including the benefit of a full year of earnings from the polypropylene acquisition. We manage our operations with the objective of maximizing sales, earnings and cash flow over time. Doing so requires that we successfully balance our growth, profitability and working capital and other investments to support sustainable, long-term financial performance. We use Adjusted EBIT Return On Invested Capital as a performance measure in evaluating operating results, in making operating and investment decisions and in balancing the growth and profitability of our operations. Generally, we favor those businesses and investments that provide the highest return on invested capital.

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Operating Segment Overview—Grace Catalysts Technologies

Following is an overview of the financial performance of Catalysts Technologies for the years ended December 31, 2015, 2014, and 2013.

Net Sales—Grace Catalysts Technologies

Sales were \$1,162.1 million for 2015, a decrease of 6.8% compared with the prior year. The decrease was due to unfavorable currency translation (-4.8%), lower sales volumes (-1.6%) and lower pricing (-0.4%). FCC catalyst sales volumes decreased primarily due to the transition in commercial positions undertaken earlier in the year to strengthen our business in North America, the Middle East, and Asia, and the delayed timing of some new and existing customers increasing order volumes. Specialty Catalysts sales volumes increased due to increased order volumes at new customers and new product penetration. Unfavorable currency translation was due to the strength of the U.S. dollar against the other currencies in which we do business, primarily the euro. As our customers increase the throughput of their refineries due to increased demand for their products, our customers generally use more of our FCC catalysts. To the extent that changes in fuel prices and economic activity affect demand for petroleum products and our customers' refinery throughput, we would expect an effect on demand for our FCC catalysts.

Sales were \$1,246.8 million for 2014, an increase of 10.9% compared with the prior year. The increase was due to higher sales volumes (+12.8%) and favorable currency translation (+0.1%), partially offset by lower pricing (-2.0%). Sales volume growth was due to the December 2013 polypropylene acquisition and organic growth. The acquisition contributed 9.6% to sales growth. Organic sales volume growth was primarily due to new product introductions in FCC catalysts designed for customers running heavy feeds or shale feeds. Sales growth occurred in all regions except EMEA, due to weakness in Western Europe. Lower pricing was primarily due to lower rare earth surcharges, partially offset by higher pricing in Specialty Catalysts.

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Segment Operating Income (SOI) and Margin—Grace Catalysts Technologies

Gross profit was \$490.2 million for 2015, a decrease of 8.2% compared with the prior year. Adjusted Gross Margin was 42.2% compared with 42.8% for the prior year. Gross profit decreased due to unfavorable currency translation, lower FCC catalyst sales volumes and lower polypropylene licensing sales, partially offset by lower manufacturing costs, including lower natural gas and raw materials costs. Adjusted Gross Margin decreased primarily due to unfavorable product mix, including lower sales from the licensing business, which carries higher gross margins than catalysts, partially offset by lower manufacturing costs including approximately 80 basis points from lower natural gas and raw materials costs.

Segment operating income was \$347.3 million for 2015, a decrease of 8.2% compared with the prior year. Segment operating margin for 2015 decreased to 29.9%, a decline of 40 basis points compared with the prior year. Segment operating income decreased due to lower gross profit partially offset by lower operating expenses and higher earnings from the ART joint venture. The ART joint venture contributed \$20.4 million to operating income, an increase of \$0.7 million from the prior-year period.

Gross profit was \$533.7 million for 2014, an increase of 18.5% compared with the prior year. Adjusted Gross Margin was 42.8% compared with 40.1% for the prior year. The increases were primarily due to the polypropylene acquisition, base sales volume growth and lower manufacturing costs.

Segment operating income was \$378.3 million for 2014, an increase of 15.5% compared with the prior year. Segment operating margin for 2014 increased to 30.3%, an improvement of 120 basis points compared with the prior year, primarily due to higher gross margin due to higher sales volumes and lower manufacturing costs, partially offset by lower income from the ART joint venture and higher operating expenses, primarily related to the polypropylene acquisition.

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Operating Segment Overview—Grace Materials Technologies

Following is an overview of the financial performance of Materials Technologies for the years ended December 31, 2015, 2014, and 2013.

Net Sales—Grace Materials Technologies

Sales were \$797.0 million for 2015, a decrease of 10.5% compared with the prior year. The decrease was due to unfavorable currency translation (-11.1%) and lower sales volumes (-1.5%) partially offset by improved pricing (+2.1%). Unfavorable currency translation, primarily in Europe and the emerging regions, affected both engineered materials and packaging products as the dollar strengthened against the euro and other currencies. Unfavorable currency translation in Latin America was partially offset by price increases in that region. Sales volumes decreased in all regions except EMEA in both product groups. We expect that continued strength of the U.S. dollar against the other currencies in which we do business will have an unfavorable impact on sales in the 2016 first quarter.

Sales were \$890.6 million for 2014, an increase of 1.4% compared with the prior year. The increase was due to higher sales volumes (+1.4%) and improved pricing (+1.0%), partially offset by unfavorable currency translation (-1.0%).

Sales volume growth was primarily in engineered materials, driven by silica sales in North America and Asia Pacific.

Sales volumes declined in packaging products due to weaker sales in Asia Pacific and Latin America. Unfavorable currency translation primarily affected packaging products as the U.S. dollar strengthened against multiple currencies.

Segment Operating Income (SOI) and Margin—Grace Materials Technologies

Gross profit was \$294.9 million for 2015, a decrease of 6.4% compared with the prior year. Adjusted Gross Margin was 37.0% compared with 35.4% for the prior year. The increase in gross margin was primarily due to

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lower manufacturing costs including approximately 100 basis points from lower raw materials costs, favorable product mix, and improved pricing.

Segment operating income was \$177.5 million for 2015, a decrease of 4.2% compared with the prior year. The benefit of improved gross margin was more than offset by lower sales volumes and unfavorable currency translation. Segment operating margin for 2015 increased to 22.3%, an improvement of 150 basis points compared with the prior year.

Gross profit was \$314.9 million for 2014, an increase of 3.5% compared with the prior year. Adjusted Gross Margin was 35.4% compared with 34.6% for the prior year. The increase in gross margin was primarily due to improved pricing and the implementation of productivity initiatives, primarily benefiting engineered materials.

Segment operating income was \$185.2 million for 2014, an increase of 1.9% compared with the prior year. Segment operating margin for 2014 increased to 20.8%, an improvement of 10 basis points compared with the prior year, primarily due to higher gross margin, partially offset by higher operating expenses. The increase in segment operating income resulted from higher sales volumes and margin expansion in engineered materials, partially offset by lower sales and unfavorable currency translation in packaging products.

See "Financial Condition, Liquidity, and Capital Resources—Venezuela" for more information related to Venezuela.

As part of the Separation, packaging products became part of GCP Applied Technologies Inc. For 2015, sales for packaging products were \$326.2 million and gross margin was 34.8%.

Operating Segment Overview—Grace Construction Products

Following is an overview of the financial performance of Construction Products for the years ended December 31, 2015, 2014, and 2013.

Net Sales—Grace Construction Products

Sales were \$1,092.4 million for 2015, a decrease of 1.2% compared with the prior year. The decrease was due to unfavorable currency translation (-9.4%), partially offset by higher sales volumes (+5.2%) and improved pricing (+3.0%). Unfavorable currency translation affected sales of both product groups with the largest effects in Europe and Latin America as the dollar strengthened against the euro and other currencies. Sales volumes increased in both product groups in North America and Asia Pacific due to increased demand. SCC sales volumes decreased in Europe due to weaker demand. Pricing improved primarily in SCC in Venezuela where it partially offset unfavorable currency translation in that region.

Sales in the emerging regions, which represented 35.5% of sales for 2015, decreased 2.5% due to lower sales in Eastern Europe, Latin America, and China, primarily due to unfavorable currency translation. Sales increased double digits in the Middle East and emerging Asia, excluding China.

Sales were \$1,105.6 million for 2014, an increase of 4.5% compared with the prior year. The increase was due to higher sales volumes (+4.3%) and improved pricing (+2.5%), partially offset by unfavorable currency

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translation (-2.3%). SCC sales benefited from increasing demand in North America and Asia Pacific throughout 2014. Improved pricing in both SCC and SBM was offset by unfavorable currency translation.

Sales in the emerging regions, which represented 35.9% of sales for 2014, increased 6.0% due to sales in Latin America, emerging Asia, and Eastern Europe. Sales in North America increased 3.0%, driven by growth in commercial sales, offset by lower sales in the residential business. Sales in Western Europe and Latin America lagged due to market conditions and the impact of currency translation, respectively.

Segment Operating Income (SOI) and Margin—Grace Construction Products

Gross profit was \$422.6 million for 2015, an increase of 5.4% compared with the prior year. Adjusted Gross Margin was 38.7% compared with 36.3% for the prior year, primarily due to improved product mix, improved pricing, and approximately 110 basis points from lower raw materials costs.

Segment operating income was \$196.6 million for 2015, an increase of 21.6% compared with the prior year. Segment operating margin for 2015 increased to 18.0%, an improvement of 340 basis points compared with the prior year.

These increases were primarily due to increased gross profit, partially offset by higher operating expenses.

Gross profit was \$401.0 million for 2014, an increase of 5.3% compared with the prior year. Adjusted Gross Margin was 36.3% compared with 36.0% for the prior year, primarily due to a reclassification of certain expenses from cost of goods sold to operating expenses. Gross margins were otherwise flat as improved pricing and productivity gains were offset by unfavorable currency translation and inflation.

Segment operating income was \$161.7 million for 2014, an increase of 6.6% compared with the prior year. Segment operating margin for 2014 increased to 14.6%, an improvement of 30 basis points compared with the prior year. These increases were primarily due to incremental operating leverage.

See "Financial Condition, Liquidity, and Capital Resources—Venezuela" for more information related to Venezuela.

As part of the Separation, Construction Products became part of GCP Applied Technologies Inc.

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Corporate Overview

Corporate costs include corporate functional costs and other corporate costs such as professional fees and insurance premiums. Corporate costs for 2015 decreased 12.5% compared with the prior year primarily due to the sale of an operating asset partially offset by higher incentive compensation. Corporate costs for 2014 increased 9.4% compared with the prior year primarily due to higher functional costs and performance-based incentive compensation.

Defined Benefit Pension Expense

Defined benefit pension expense includes costs under U.S. and non-U.S. defined benefit pension plans that provide benefits to business segment and corporate employees, as well as retirees and former employees of divested businesses where we retained these obligations.

Under mark-to-market accounting, our pension costs consist of two elements: 1) "certain pension costs"—ongoing costs recognized quarterly, which include service and interest costs, expected returns on plan assets, and amortization of prior service costs/credits; and 2) "pension mark-to-market adjustment and other related costs, net"—mark-to-market gains and losses recognized annually in the fourth quarter, or at an interim period should a significant event occur, resulting from changes in actuarial assumptions, such as discount rates and the difference between actual and expected returns on plan assets.

Certain pension costs were \$25.5 million, \$32.0 million and \$27.4 million for 2015, 2014 and 2013, respectively.

The pension mark-to-market adjustment and other related income (expense), net was \$(46.8) million, \$(128.3) million and \$50.6 million for 2015, 2014 and 2013, respectively. These costs are reported in "cost of goods sold" and in "selling, general and administrative expenses" in our Consolidated Financial Statements based upon the functions of the employees to which the pension costs relate. The 2015 mark-to-market pension expense of \$46.8 million was primarily due to lower than expected return on assets in the U.S., partially offset by the increase in discount rates used to value the projected benefit obligations of our plans from year-end 2014 to year-end 2015. The 2014 mark-to-market pension expense of \$128.3 million was primarily due to the decrease in discount rates from year-end 2013 to year-end 2014 and the impact of adopting new mortality assumptions, partially offset by higher than expected return on assets in the U.S. and U.K. The 2013 mark-to-market pension income of \$50.6 million was primarily due to the increase in discount rates from year-end 2012 to year-end 2013, partially offset by the impact of adopting new mortality assumptions in the U.S. and lower than expected return on assets in the U.S.

As of December 31, 2015, we changed the approach used to determine the service and interest cost components of defined benefit pension expense. Previously, we estimated service and interest costs using a single weighted average discount rate derived from the same yield curve used to measure the projected benefit obligation. For 2016, we elected to measure service and interest costs by applying the specific spot rates along that yield curve to the plans' liability cash flows. We believe the new approach provides a more precise

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measurement of service and interest costs by aligning the timing of the plans' liability cash flows to the corresponding spot rates on the yield curve. This change does not affect the measurement of the projected benefit obligation at year-end. We consider this a change in accounting estimate, which will be accounted for prospectively beginning in 2016. For 2016, the change in estimate is expected to reduce service and interest costs by \$14 million to \$16 million (for Grace and GCP combined) when compared to the prior methodology.

**Repositioning Expenses**

Pretax repositioning expenses of \$64.3 million for the year ended December 31, 2015, primarily related to our planned separation into two independent companies as follows:

(In millions)	Year Ended December 31, 2015
Professional fees	\$49.8
Employee-related costs	10.4
Asset impairments	4.1
Total	\$64.3

During 2015, we spent a significant amount of time and money related to the Separation, and we expect to continue to incur costs subsequent to the completion of the Separation. We exclude from Adjusted EBIT specific third party costs of advisors, attorneys and accountants that are assisting us with the Separation. We have also excluded certain internal costs that we would not have spent in 2015 absent the Separation. These internal costs primarily include compensation, benefits, severance costs, and specific costs related to the Separation.

**Interest and Financing Expenses**

Net interest and financing expenses were \$100.4 million for 2015, a decrease of 20.2% compared with 2014, primarily due to reduced interest accretion on deferred payment obligations due to the settlement of the PI deferred payment obligation during the 2014 third quarter, partially offset by higher interest expense in 2015 for new debt incurred in 2014 in connection with our emergence from Chapter 11. Interest expense was \$125.8 million for 2014, an increase of 193.9% compared with 2013, primarily due to new debt incurred during 2014 and interest accretion on the deferred payment obligations.

**Income Taxes**

Income tax expense for 2015, 2014 and 2013 was \$164.7 million, \$57.0 million and \$102.9 million, respectively, on income from consolidated operations before income taxes of \$309.6 million, \$334.3 million and \$360.6 million in 2015, 2014 and 2013, respectively.

Our 2015 effective tax rate of approximately 53% was higher than the 35% U.S. statutory rate primarily due to \$39.1 million related to the Separation, \$24.7 million related to the Venezuela nondeductible charge, and \$6.4 million related to state and local income taxes, partially offset by \$14.4 million due to lower taxes in non-U.S. jurisdictions. Our 2014 effective tax rate of approximately 17% was lower than the 35% U.S. statutory rate primarily due to benefits recognized during the year including \$59.6 million of benefits associated with the release of reserves for unrecognized tax benefits, \$17.8 million due to lower taxes in non-U.S. jurisdictions, and \$5.2 million related to repatriated foreign earnings, partially offset by \$8.1 million in charges for discrete state income taxes and \$6.0 million related to non-deductible expenses.

Our 2013 effective tax rate of approximately 29% was lower than the 35% U.S. statutory rate primarily due to benefits recognized during the year including \$24.4 million related to the partial release of the valuation allowance on state deferred tax assets, \$16.6 million due to lower taxes in non-U.S. jurisdictions, and \$3.7 million related to repatriated foreign earnings, partially offset by \$6.8 million related to uncertain tax positions and other discrete items and \$9.7 million related to non-deductible expenses.

See Note 7 to the Consolidated Financial Statements for additional information regarding income taxes.

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## Financial Condition, Liquidity, and Capital Resources

Following is an analysis of our financial condition, liquidity and capital resources at December 31, 2015.

Our principal uses of cash are generally capital investments and acquisitions, working capital investments, contributions to our defined benefit pension plans, and the repayment of debt. We also repurchase shares of our common stock. In January 2015, we completed the initial \$500 million share repurchase program authorized by our Board of Directors following emergence from bankruptcy. The Board of Directors authorized an additional share repurchase program of up to \$500 million. Under these programs, during 2015 we repurchased 3,123,716 shares of Company common stock for \$301.5 million.

We believe that the cash we expect to generate during 2016 and thereafter, together with other available liquidity and capital resources, are sufficient to finance our operations, growth strategy, share repurchase program and expected dividend payments, and meet our debt and pension obligations.

During the fourth quarter, we entered into an amendment to the Credit Agreement to permit the Separation. The amendment, which became effective upon completion of the Separation, also reduced the revolving credit facility to \$300 million and extended its term to November 1, 2020. In connection with the Separation, GCP distributed \$750 million to Grace. Using a portion of those proceeds, we repaid \$500 million of our euro and U.S. dollar term loans. The Separation had no impact on payment or other terms of the Notes, and they remain our obligations.

## Cash Resources and Available Credit Facilities

At December 31, 2015, we had available liquidity of \$743.3 million, consisting of \$329.9 million in cash and cash equivalents (\$159.9 million in the U.S.), \$343.2 million available under the revolving credit facility, and \$70.2 million of available liquidity under various non-U.S. credit facilities. The \$400 million revolving credit facility includes a \$150 million sublimit for letters of credit. As part of the amendment to the Credit Agreement obtained in the fourth quarter, effective subsequent to the Separation, the revolving credit facility is reduced to \$300 million.

Our non-U.S. credit facilities are extended to various subsidiaries that use them primarily to issue bank guarantees supporting trade activity and to provide working capital during occasional cash shortfalls. The credit facility in Germany is secured by third-party accounts receivable, with availability determined on the basis of eligible outstanding receivables. We generally renew these credit facilities as they expire.

The following table summarizes our non-U.S. credit facilities as of December 31, 2015:

(In millions)	Maximum Borrowing Amount	Available Liquidity	Expiration Date
Germany	\$54.9	\$5.4	12/31/2016
Other countries	113.7	64.8	various through 2017
Total	\$168.6	\$70.2	

## Analysis of Cash Flows

The following table summarizes our cash flows for the years ended December 31, 2015, 2014, and 2013:

(In millions)	Year Ended December 31,		
	2015	2014	2013
Net cash provided by (used for) operating activities	\$13.4	\$(1,472.1)	\$515.9
Net cash (used for) provided by investing activities	(144.5)	) 235.3	(880.7)
Net cash (used for) provided by financing activities	(38.2)	) 849.9	(8.4)
Effect of currency exchange rate changes on cash and cash equivalents	(58.3)	) (20.4)	) 1.1
Decrease in cash and cash equivalents	(227.6)	) (407.3)	) (372.1)
Cash and cash equivalents, beginning of period	557.5	964.8	1,336.9
Cash and cash equivalents, end of period	\$329.9	\$557.5	\$964.8

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Net cash provided by operating activities in 2015 was \$13.4 million, compared with net cash used for operating activities of \$1,472.1 million in the prior year. The year-over-year change in cash flow was primarily due to the 2015 payment of \$490.0 million to cash settle the PI Warrant and the 2014 payments of \$1,316.5 million to resolve liabilities subject to Chapter 11 and \$632.0 million to settle the deferred payment obligation to the PI Trust.

Net cash used for operating activities in 2014 was \$1,472.1 million compared with net cash provided by operating activities of \$515.9 million in the prior year. The year-over-year change in cash flow was primarily due to the payment of \$1,316.5 million to resolve liabilities subject to Chapter 11 and \$632.0 million to settle the deferred payment obligation to the PI Trust.

Net cash used for investing activities in 2015 was \$144.5 million compared with net cash provided by investing activities of \$235.3 million in the prior year. Net cash used for investing activities primarily includes the net cash paid for capital expenditures, businesses acquired, and transfers in/out of restricted cash. Our capital expenditures include investments in new capacity, improved productivity, information technology, and maintenance of our manufacturing and office facilities. We expect to fund our capital expenditures from net cash provided by operating activities. Net cash provided by investing activities in 2014 was \$235.3 million compared with a use of cash of \$880.7 million in the prior year. We acquired the UNIPOL<sup>®</sup> polypropylene process licensing and related catalyst business for \$510.4 million (including post-closing adjustments) in the 2013 fourth quarter.

Net cash used for financing activities in 2015 was \$38.2 million compared with net cash provided by financing activities of \$849.9 million in the prior year. The change in cash provided by financing activities is primarily due to new debt issued in 2014, partially offset by lower 2015 payments to repurchase common stock under our share repurchase program.

Net cash provided by financing activities in 2014 was \$849.9 million compared with net cash used for financing activities of \$8.4 million in the prior year. The change in cash provided by financing activities is primarily due to new debt issued in 2014 partially offset by payments made to repurchase common stock under our share repurchase program.

Included in net cash used for operating activities are Chapter 11 and asbestos expenses paid of \$495.0 million, \$1,380.3 million and \$15.0 million; cash paid for legacy items of \$12.6 million, \$6.8 million, and \$5.0 million; and restructuring expenses paid of \$16.4 million, \$7.9 million, and \$6.4 million for 2015, 2014 and 2013, respectively; repositioning expenses paid of \$38.6 million and cash paid for taxes related to repositioning of \$6.3 million for 2015; accelerated defined benefit pension plan contributions of \$75.0 million and \$50.0 million for 2014 and 2013, respectively; and payment of the deferred obligation to the PI Trust of \$632.0 million for 2014. Included in capital expenditures are \$9.9 million related to repositioning for 2015. These cash flows totaled \$578.8 million, \$2,102.0 million and \$76.4 million for 2015, 2014 and 2013, respectively. We do not include these cash flows when evaluating the performance of our businesses.

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## Debt and Other Contractual Obligations

Total debt outstanding at December 31, 2015, was \$2,228.9 million. Set forth below are our contractual obligations as of December 31, 2015:

(In millions)	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	4-5 Years	More Than 5 Years
Debt(1)	\$2,228.9	\$84.6	\$64.8	\$32.7	\$2,046.8
Expected interest payments on debt(1)(2)	567.0	94.7	181.1	176.0	115.2
Operating lease obligations	85.7	23.9	26.8	13.8	21.2
Operating commitments(3)	60.4	45.2	13.8	1.4	—
Capital lease obligations	6.2	1.3	4.9	—	—
Pension funding requirements per ERISA(4)	2.9	—	—	2.9	—
Pension funding requirements for non-U.S. pension plans(5)	63.5	11.9	25.0	26.6	—
Total Contractual Obligations	\$3,014.6	\$261.6	\$316.4	\$253.4	\$2,183.2

Grace used \$500 million of funds received from GCP in connection with the Separation to repay \$426.9 million and €67.3 million of its U.S. dollar and euro term loans. The expected decrease for 1% mandatory principal (1) repayments will be approximately \$11 million per year through 2020. Total expected interest payments related to the term loans will decrease approximately \$64 million (\$8 million in 2016, \$40 million in 2017-2019, and \$16 million in 2020-2021).

(2) Amounts are based on current interest rates as of December 31, 2015, for principal debt outstanding as of December 31, 2015.

(3) Amounts do not include open purchase commitments, which are routine in nature and normally settle within 90 days, or obligations to employees under annual or long-term incentive programs.

Based on the U.S. qualified pension plans' status as of December 31, 2015, minimum funding requirements under (4) ERISA have been estimated for the next five years. Amounts in subsequent years or additional payments have not yet been determined.

(5) Based on the non-U.S. pension plans' status as of December 31, 2015, funding requirements have been estimated for the next five years. Amounts in subsequent years have not yet been determined.

See Note 10 to the Consolidated Financial Statements for a discussion of Financial Assurances.

## Employee Benefit Plans

See Note 8 to the Consolidated Financial Statements for further discussion of Pension Plans and Other Postretirement Benefit Plans.

## Defined Contribution Retirement Plan

We sponsor a defined contribution retirement plan for our employees in the United States. This plan is qualified under section 401(k) of the U.S. tax code. Currently, we contribute an amount equal to 100% of employee contributions, up to 6% of an individual employee's salary or wages. Our costs related to this benefit plan were \$15.2 million, \$13.8 million and \$13.2 million for the years ended December 31, 2015, 2014 and 2013, respectively.

## Defined Benefit Pension Plans

We sponsor defined benefit pension plans for our employees in the U.S., Canada, the U.K., Germany and a number of other countries, and fund government-sponsored programs in other countries where we operate. Certain of our defined benefit pension plans are advance-funded and others are pay-as-you-go. The advance-funded plans are administered by trustees who direct the management of plan assets and arrange to have obligations paid when due. Our most significant advance-funded plans cover current and former salaried employees in the U.S. and U.K. and employees covered by collective bargaining agreements at certain of our U.S. facilities. Our U.S. advance-funded plans are qualified under the U.S. tax code.



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The following table presents the funded status of our fully-funded, underfunded, and unfunded pension plans:

Funded Status of Pension Plans (In millions)	Fully-Funded Pension Plans(1)		Underfunded Pension Plans(1)		Unfunded Pension Plans(2)	
	2015	2014	2015	2014	2015	2014
Projected benefit obligation	\$240.3	\$245.8	\$1,307.0	\$1,388.3	\$352.9	\$393.6
Fair value of plan assets	266.4	289.9	1,188.1	1,308.8	—	—
Funded status (PBO basis)	\$26.1	\$44.1	\$(118.9)	\$(79.5)	\$(352.9)	\$(393.6)
Benefits paid	\$(11.3)	\$(12.3)	\$(82.0)	\$(74.4)	\$(14.4)	\$(43.5)

(1) Plans intended to be advance-funded.

(2) Plans intended to be pay-as-you-go.

Fully-funded plans include several advance-funded plans where the fair value of the plan assets exceeds the projected benefit obligation, or PBO. This group of plans was overfunded by \$26.1 million as of December 31, 2015, and the overfunded status is reflected as "overfunded defined benefit pension plans" in the Consolidated Balance Sheets.

Underfunded plans include a group of advance-funded plans that are underfunded on a PBO basis by a total of \$118.9 million as of December 31, 2015. Additionally, we have several plans that are funded on a pay-as-you-go basis, and therefore, the entire PBO of \$352.9 million at December 31, 2015, is unfunded. The combined balance of the underfunded and unfunded plans was \$471.8 million as of December 31, 2015, and is presented as a liability on the Consolidated Balance Sheets as follows: \$15.3 million in "other current liabilities", and \$456.5 million included in "underfunded and unfunded defined benefit pension plans."

At the December 31, 2015, measurement date for the U.S. advance-funded plans, the PBO was approximately \$1,257 million as measured under U.S. GAAP. The PBO is measured as the present value (using a 4.31% weighted average discount rate as of December 31, 2015) of vested and non-vested benefits earned from employee service to date, based upon current services and estimated future pay increases for active employees. Of the participants in the U.S. advance-funded plans, approximately 83% are retired or former employees or employees of our former businesses, which shortens the duration of the PBO. Assets available to fund the PBO for the U.S. advance-funded plans at December 31, 2015, were approximately \$1,148 million, or approximately \$109 million less than the measured obligation.

The following table presents the components of cash contributions for the advance-funded and pay-as-you-go plans:

Cash Contributions to Defined Benefit Pension Plans (In millions)	2015	2014	2013
U.S. advance-funded plans	\$—	\$75.0	\$50.0
U.S. pay-as-you-go plans(1)	7.3	6.9	5.6
Non-U.S. advance-funded plans	3.4	9.3	4.8
Non-U.S. pay-as-you-go plans	7.1	8.8	7.9
Total Cash Contributions	\$17.8	\$100.0	\$68.3

(1) Excludes benefit payments of approximately \$28 million which were paid in 2014 from a U.S. nonqualified pension plan in connection with our emergence from bankruptcy.

Based on the U.S. advance-funded plans' status as of December 31, 2015, there are no minimum required payments under ERISA for 2016.

We intend to fund non-U.S. pension plans based upon applicable legal requirements and actuarial and trustee recommendations. We contributed \$10.5 million to these plans in 2015.

#### Postretirement Benefits Other Than Pensions

We have provided postretirement health care and life insurance benefits for retired employees of certain U.S. business units and certain divested business units. These plans are unfunded, and we pay the costs of benefits under these plans as they are incurred. Our share of the net cost of benefits under this program was \$1.1



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million in 2015, compared with \$3.7 million in 2014. We received Medicare subsidy payments of \$1.0 million and \$0.2 million in 2015 and 2014, respectively. Our recorded liability for postretirement benefits of \$0.7 million at December 31, 2015, is stated at net present value discounted at 4.40%.

In June 2014, we announced that we would discontinue our postretirement medical plan for all U.S. employees effective October 31, 2014, and eliminate certain postretirement life insurance benefits. As a result of these actions, we recognized a gain of \$41.9 million in other comprehensive income in the 2014 second quarter. We amortized \$39.5 million from accumulated other comprehensive income into the Consolidated Statement of Operations during the five-month period from June to October 2014. The gain attributable to our current businesses of \$23.6 million is included in Adjusted EBIT, and the portion attributable to divested businesses of \$15.9 million is excluded from Adjusted EBIT.

The postretirement plan was further remeasured as of September 30, 2015, due to a plan amendment to eliminate certain other postretirement life insurance benefits, which resulted in a curtailment gain of \$4.5 million. The gain attributable to our current businesses of \$1.9 million is included in Adjusted EBIT, and the portion attributable to divested businesses of \$2.6 million is excluded from Adjusted EBIT.

**Tax Matters**

We generated approximately \$1,800 million in U.S. federal tax deductions relating to our emergence from bankruptcy, including approximately \$670 million relating to payments made upon emergence, \$632 million upon payment of the PI deferred payment obligation, and \$490 million upon repurchase of the warrant held by the PI Trust. These deductions generated a U.S. federal and state NOL carryforward in 2014, which we will carry forward and expect to utilize in subsequent years. Under U.S. federal income tax law, a corporation is generally permitted to carry forward NOLs for a 20-year period for deduction against future taxable income. We also expect to generate U.S. federal tax deductions of \$30 million upon payment of the ZAI PD deferred payment obligation in 2017. (See Note 10 to the Consolidated Financial Statements for Chapter 11 information.)

We pay cash taxes in foreign jurisdictions and a limited number of states. In 2015, income taxes paid in cash, net of refunds, which includes payments related to the Separation, were \$57.6 million or approximately 19% of income before income taxes.

As of December 31, 2014, we had the intent and ability to indefinitely reinvest undistributed earnings of our foreign subsidiaries outside the United States. In the 2015 first quarter, we announced our plan to separate into two publicly traded companies and have reassessed the capital structure and financial requirements of both Grace and GCP.

Further, in connection with the Separation, we repatriated a total of \$173.1 million of foreign earnings from foreign subsidiaries transferred to GCP pursuant to the Separation. Such amount was determined based on an analysis of each non-U.S. subsidiary's requirements for working capital, debt repayment and strategic initiatives. We also considered local country legal and regulatory restrictions. In 2015, we included tax expense of \$19.0 million in our effective tax rate for repatriation attributable to both current and prior years' earnings. The tax effect of the repatriation is determined by several variables including the tax rate applicable to the entity making the distribution, the cumulative earnings and associated foreign taxes of the entity, and the extent to which those earnings may have already been taxed in the U.S. We anticipate that the tax consequences of other transactions pursuant to the Separation may require recognition of additional tax expense for deemed repatriation of undistributed earnings of our foreign subsidiaries. Such tax consequences will be recorded in the 2016 first quarter.

We believe that the Separation is a one-time, non-recurring event, and such recognition of deferred taxes on undistributed earnings would not have occurred if not for the Separation. Subsequent to separation, we expect undistributed prior-year earnings of our foreign subsidiaries to remain permanently reinvested except in certain instances where repatriation of such earnings would result in minimal or no tax. We base this assertion on:

- (1) the expectation that we will satisfy our U.S. cash obligations in the foreseeable future without requiring the repatriation of prior-year foreign earnings;
- (2) plans for significant and continued reinvestment of foreign earnings in organic and inorganic growth initiatives outside the U.S.; and
- (3) remittance restrictions imposed by local governments.



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We will continually analyze and evaluate our cash needs to determine the appropriateness of our indefinite reinvestment assertion.

See Note 7 to the Consolidated Financial Statements and "Income Taxes" above for additional discussion of our tax accounting matters including unrecognized tax benefits.

### Other Contingencies

See Note 10 to the Consolidated Financial Statements for a discussion of our other contingent matters.

### Inflation

We recognize that inflationary pressures may have an adverse effect on us through higher asset replacement costs and higher raw materials and other operating costs. We try to minimize these impacts through effective control of operating expenses and productivity improvements as well as price increases to customers.

We estimate that the cost of replacing our property and equipment today is greater than its historical cost. Accordingly, our depreciation expense would be greater if the expense were stated on a current cost basis.

### Venezuela

Effective January 1, 2010, we began to account for Venezuela as a highly inflationary economy. As a result, the functional currency of our Venezuelan subsidiary became the U.S. dollar; therefore, all translation adjustments are reflected in net income in the accompanying Consolidated Statements of Operations. The official exchange rate of 4.3 was used to remeasure our financial statements from bolivars to U.S. dollars upon Venezuela's designation as a highly inflationary economy.

Effective February 13, 2013, the official exchange rate of the bolivar to the U.S. dollar devalued from 4.3 to 6.3. As a result of this currency devaluation, we incurred a charge to net income of \$8.5 million in the 2013 first quarter.

In March 2013, the Venezuelan government launched a new foreign exchange mechanism called the "Complimentary System of Foreign Currency Acquirement" (or SICAD1). The SICAD1 operated similarly to an auction system and allowed entities in specific sectors to bid for U.S. dollars to be used for specified import transactions. In March 2014, the Venezuelan government launched another foreign exchange mechanism, known as the SICAD2, which operated similarly to the SICAD1. Neither the SICAD1 nor the SICAD2 changed or eliminated the official exchange rate of the bolivar to the U.S. dollar. There have been no changes in the official exchange rate of the bolivar to the U.S. dollar since February 13, 2013. Until September 30, 2015, we continued to use the official exchange rate of 6.3 bolivars to one U.S. dollar (CENCOEX) for remeasurement purposes.

In February 2015, the Venezuelan government unified SICAD1 and SICAD2 into a single exchange mechanism, which is now called SICAD. Additionally, a new exchange mechanism, SIMADI, was also implemented.

Materials Technologies and Construction Products have operated in Venezuela for several decades, with sales in that country representing approximately 2% and 5%, respectively, of each segment's sales in 2015. Bolivar-denominated sales represented approximately 2% of our total sales in 2015. In the 2014 first quarter, we began seeing a significant impact to our sales and earnings as a result of Venezuela's difficult economic conditions, and this trend has continued through the end of 2015. It became increasingly difficult for us and our customers to operate normally in the country. Currency and import controls impacted our ability to import necessary raw materials for production, and we were unable to fully satisfy customer demand from the 2014 first quarter through the 2015 second quarter. In the 2015 third quarter, we were able to import a significant amount of raw materials, leading to a significant increase in sales and earnings in the quarter. These raw materials were purchased by our Venezuelan subsidiary using cash it held outside of Venezuela and through other Grace subsidiaries. Our Venezuelan subsidiary has used substantially all of the cash it held outside of Venezuela. While the Venezuelan government has approved permits for us to import raw materials at the CENCOEX exchange rate, they have not approved the release of the currency needed to pay intercompany payables or other invoices since the 2014 fourth quarter. As a result of the uncertainty of our ability to settle transactions through CENCOEX, we are evaluating other ways to procure raw materials in Venezuela including the alternative exchange mechanisms. During the 2015 third quarter we continued to experience a significant increase to the rate of inflation for employee costs, import taxes, professional fees and other costs to run the business.



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Based on company-specific and macroeconomic developments in Venezuela in the third quarter, including changed expectations about our ability to import raw materials at the official exchange rate in the future, the extended period of time since we have received payment at the official exchange rate, the increase in the rate of inflation and the weaker outlook for the Venezuelan economy, we determined that it was no longer appropriate to use the official exchange rate. Effective September 30, 2015, we are accounting for our results at the SIMADI rate. At December 31, 2015, this rate was 199 bolivars to one U.S. dollar. We recorded a pre-tax charge of \$73.2 million in the third and fourth quarters to reflect the devaluation of monetary assets and the impairment of non-monetary assets, including \$40.5 million for cash, \$28.6 million for working capital and \$4.1 million for property and equipment. Of this amount, \$13.6 million related to inventory was recorded in cost of goods sold, and \$59.6 million related to other assets and liabilities was recorded as a separate line in the Consolidated Statement of Operations. The assets, liabilities, sales, earnings and cash flows of our Venezuelan subsidiary are immaterial after September 30, 2015. Since cash in Venezuela has been unavailable for use outside the country, this change has no effect on our ability to finance our global operations and growth strategy and our ability to meet our debt obligations.

The following table presents net sales, gross profit, and pre-tax income for our Venezuelan subsidiary as of December 31, 2015, and the respective prior-year periods.

(In millions)	2015	2014	2013
Net sales	\$70.5	\$48.1	\$37.2
Gross profit	35.3	21.5	15.5
Adjusted EBIT	29.3	17.3	11.0

We experienced significant sales and earnings in Venezuela in the 2015 third quarter. This activity resulted in higher cash, customer accounts receivable and other assets in the Venezuelan subsidiary at the end of the 2015 third quarter compared to the end of the 2015 second quarter. The charge of \$73.2 million in the 2015 third quarter to devalue and impair the monetary assets and non-monetary assets included \$22.2 million related to 2015 third quarter sales and earnings and was therefore higher than the exposure that we disclosed at the end of the 2015 second quarter.

Grace no longer operates a Venezuelan subsidiary subsequent to the Separation.

**Critical Accounting Estimates**

The preparation of financial statements in conformity with U.S. GAAP requires that we make estimates and assumptions affecting the assets and liabilities reported at the date of the Consolidated Financial Statements, and the revenues and expenses reported for the periods presented. We believe that our accounting estimates are appropriate and the related balances are reasonable; however, actual amounts could differ from the original estimates, requiring adjustments in future periods. Changes in estimates are recorded in the period in which the change is identified. Our accounting policies are described in Note 1 to the Consolidated Financial Statements. Critical accounting estimates are described in this section.

An accounting estimate is considered critical if the estimate requires management to make assumptions and judgments about matters that were highly uncertain at the time the estimate was made, if different estimates reasonably could have been used, or if changes in the estimate are reasonably likely to occur from period to period that could have a material impact on our financial condition or results of operations. As part of our quarterly disclosure controls and procedures, management has discussed the development, selection and disclosure of the critical accounting estimates with the Audit Committee of the Board of Directors.

**Contingent Liabilities**

We have recorded a liability for the resolution of contingencies related to asbestos property damage, environmental remediation, income taxes and litigation. We record a liability if we have determined that a loss is probable and we are able to reasonably estimate the amount of the loss or have another reasonable basis for recording a liability. We have determined that each of the contingencies discussed below involves an accounting judgment that is material to our Consolidated Financial Statements.

Table of Contents**Asbestos Property Damage Lawsuits**

We were a defendant in property damage and personal injury lawsuits relating to previously sold asbestos-containing products. As discussed in Note 10 to the Consolidated Financial Statements, we emerged from Chapter 11 on February 3, 2014.

Under the plan of reorganization, all pending and future asbestos-related claims are channeled for resolution to either the PI Trust or the PD Trust. The trusts are the sole recourse for holders of asbestos-related claims. The channeling injunctions issued by the bankruptcy court prohibit holders of asbestos-related claims from asserting such claims directly against us.

We have satisfied all of our financial obligations to the PI Trust. We have fixed and contingent obligations remaining to the PD Trust. With respect to property damage claims related to ZAI PD Claims, the PD Trust was funded with \$34.4 million on the Effective Date. We are obligated to make a payment of \$30 million to the PD Trust in respect of ZAI PD Claims on February 3, 2017, and have recorded a liability of \$29.1 million representing the present value of this amount in "debt payable after one year" in the Consolidated Financial Statements. We are also obligated to make up to 10 contingent deferred payments of \$8 million per year to the PD Trust in respect of ZAI PD Claims during the 20 year period beginning on the fifth anniversary of the Effective Date, with each such payment due only if the assets of the PD Trust in respect of ZAI PD Claims fall below \$10 million during the preceding year. We have not accrued for the 10 additional payments as we do not currently believe they are probable. We are not obligated to make additional payments to the PD Trust in respect of ZAI PD Claims beyond the payments described above. We have satisfied all of our financial obligations with respect to Canadian ZAI PD Claims.

With respect to Other PD Claims, claims unresolved as of the Effective Date are to be litigated in the bankruptcy court and any future claims are to be litigated in a federal district court, in each case pursuant to procedures to be approved by the bankruptcy court. To the extent any such Other PD Claims are determined to be allowed claims, they are to be paid in cash by the PD Trust. We are obligated to make a payment to the PD Trust every six months in the amount of any Other PD Claims allowed during the preceding six months plus interest (if applicable) and the amount of PD Trust expenses for the preceding six months. The aggregate amount to be paid under the PD Obligation is not capped and we may be obligated to make additional payments to the PD Trust in respect of the PD Obligation. We have accrued for those unresolved Other PD Claims that we believe are probable and estimable. We have not accrued for other unresolved or unasserted Other PD Claims as we do not believe that payment is probable.

All payments to the PD Trust required after the Effective Date are secured by our obligation to issue 77,372,257 shares of Company common stock to the PD Trust in the event of default, subject to customary anti-dilution provisions.

We generated approximately \$1,800 million in U.S. federal tax deductions in 2014 relating to our emergence from bankruptcy, including approximately \$670 million relating to payments made upon emergence, \$632 million upon payment of the PI deferred payment obligation, and \$490 million upon repurchase of the warrant held by the PI Trust. The deferred payment to the ZAI PD Account is expected to be deductible at the time of payment. See Note 7 to the Consolidated Financial Statements for a discussion of tax deductions generated in connection with emergence from Chapter 11.

**Environmental Remediation**

We are obligated under applicable law to remediate certain properties related to our business or former businesses. At some sites we outsource all or a portion of the remediation to third parties and at others, we perform the required remediation ourselves. Our environmental remediation obligation has a significant impact on our Consolidated Financial Statements. See disclosure in this Report in Item 1 (Business—Environment, Health and Safety Matters) and in Note 10 to the Consolidated Financial Statements for a discussion of our environmental remediation liabilities. At sites where third parties conduct remediation, we estimate our obligations from information available to us, including actual costs incurred, expected future costs and time to completion. At sites where we conduct remediation, we work with regulatory authorities to define compliance requirements and then estimate the cost required to meet those requirements. We base our estimates on our historical knowledge and engineering assessments specific to conditions at each site, and we update our estimates as necessary.



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Our estimates can fluctuate significantly due to the extended duration of some remediation projects. The accuracy of our estimates is dependent on the validity of assumptions regarding regulatory approaches and such matters as labor rates, indirect costs and capital costs, which are each difficult to forecast over extended periods. It is not practicable to estimate the impact on our Consolidated Financial Statements of using other reasonably possible assumptions. Future changes in estimates, if required, will more than likely lead to material adjustments to our Consolidated Financial Statements, and we expect the ultimate resolution of these obligations to have a material impact on our liquidity and capital resources.

We operated a vermiculite mine in Libby, Montana, until 1990. Some of the vermiculite ore that was mined at the Libby mine contained naturally occurring asbestos. We are working in cooperation with EPA to investigate the Libby vermiculite mine and the surrounding area. We do not have sufficient information to estimate the cost of any required remediation of the Libby mine or surrounding area. During 2010, EPA began reinvestigating up to 105 facilities where vermiculite concentrate from the Libby mine may have been used, stored or processed. We are cooperating with EPA on this reinvestigation, including remediation at several facilities. It is probable that EPA will request additional remediation at other facilities, but we do not have sufficient information to either identify other sites that might require additional remediation or estimate the costs. We will continue to monitor EPA's reinvestigation of the remaining sites and assess any information received from EPA. A liability will be recorded in the future should Grace determine that an obligation is probable and reasonably estimable.

Our estimates of our environmental remediation obligations do not include the cost to remediate the Libby vermiculite mine or costs related to any additional EPA claims, whether resulting from EPA's reinvestigation of vermiculite facilities or otherwise, which may be material but are not currently estimable. It is probable that our ultimate liability for environmental remediation will exceed our current estimates by material amounts.

### Litigation

We are subject to legal proceedings and claims arising out of the normal course of business.

To estimate the cost to resolve our legal obligations, we review the facts of each matter to determine the merits of the case and the corresponding probability of a loss. If we determine that a loss is probable, we determine if there is sufficient information to make a reasonable estimate of the loss amount. Our estimates regarding the outcome of our legal proceedings and claims involve substantial uncertainties that could cause our actual losses to differ materially from our estimates. In estimating the likely outcome of a legal proceeding, we consider the nature of the specific claim (or unasserted claim), our experience with similar claims, the jurisdiction in which the proceeding is filed, court rulings, the status of any settlement negotiations, the likelihood of resolution through settlement or alternative dispute resolution, the proceeding's current status and other relevant information and events. We adjust our recorded liability for litigation contingencies as necessary to reflect our current evaluation of these and other factors.

### Goodwill

We review our goodwill for impairment on an annual basis at October 31 and whenever events or a change in circumstances indicate that the carrying amount may not be fully recoverable. We test our goodwill for impairment at the reporting unit level, which is one level below an operating segment. Our Catalysts Technologies operating segment has two reporting units for goodwill impairment testing referred to as Refining Technologies and Specialty Catalysts. Our Materials Technologies operating segment has three reporting units for goodwill impairment testing referred to as Engineered Materials, Packaging Products, and Discovery Sciences. Our Construction Products operating segment has two reporting units for goodwill impairment testing referred to as Specialty Construction Chemicals and Specialty Building Materials.

We performed a quantitative analysis as of October 31, 2015, and concluded that the estimated fair value of all of our reporting units substantially exceeded their carrying values.

### Pension and Other Postretirement Benefits Expenses and Liabilities

We sponsor defined benefit pension plans for our employees in the United States and a number of other countries, including Canada, the United Kingdom and Germany, and fund government-sponsored programs in other countries where we operate. See Note 8 to the Consolidated Financial Statements for a detailed discussion of our pension plans and other postretirement benefit plans.



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In order to estimate our pension and other postretirement benefits expenses and liabilities we evaluate the range of possible assumptions to be used in the calculation of pension and other postretirement benefits expenses and liabilities. We select the assumptions that we believe to be most indicative of factors such as participant demographics, past experiences and market indices, and provide the assumptions to independent actuaries. These assumptions are updated annually and primarily include factors such as discount rates, expected return on plan assets, mortality rates, retirement rates, and rate of compensation increase. The independent actuaries review our assumptions for reasonableness, and use the assumptions to calculate our estimated liability and future pension expense. We review the actuarial reports for reasonableness and adjust our expenses, assets and liabilities to reflect the amounts calculated in the actuarial reports.

The two key assumptions used in determining our pension benefit obligations and pension expense are the discount rate and expected return on plan assets. Our most significant pension assets and pension liabilities relate to U.S. pension plans.

The assumed discount rate for pension plans reflects the market rates for high-quality corporate bonds currently available and is subject to change based on changes in overall market interest rates. For the U.S. pension plans, the assumed weighted average discount rate was selected in consultation with our independent actuaries, based on a yield curve constructed from a portfolio of high quality bonds for which the timing and amount of cash outflows approximate the estimated payouts of the plan.

We selected the expected return on plan assets for the U.S. qualified pension plans for 2015 in consultation with our independent actuaries, using an expected return model. The model determines the weighted average return for an investment portfolio based on the target asset allocation and expected future returns for each asset class, which were developed using a building block approach based on observable inflation, available interest rate information, current market characteristics, and historical results.

The following table reflects the sensitivity of 2016 pre-tax expense (excluding the effects of the annual mark-to-market adjustment) and our year-end projected benefit obligation, or PBO, to a change in the discount rate and expected rate of return on plan assets assumptions for the U.S. pension plans:

Change in Assumption (In millions)	Effect on 2016 Pre-Tax Pension Expense	Effect on December 31, 2015 PBO
25 basis point decrease in discount rate	\$(1	) \$41
25 basis point increase in discount rate	1	(38
25 basis point decrease in expected return on plan assets	3	—
25 basis point increase in expected return on plan assets	(3	) —

**Income Taxes**

We are a global enterprise with operations in more than 40 countries. This global reach results in a complexity of tax regulations, which require assessments of applicable tax law and judgments in estimating our ultimate income tax liability. See Note 7 to the Consolidated Financial Statements for additional details regarding our estimates used in accounting for income tax matters including unrecognized tax benefits.

We recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained upon examination by the taxing authorities, based on the technical merits of the position. We measure tax benefits in our financial statements from such a position as the largest benefit that has a greater than fifty percent likelihood of being realized upon ultimate settlement. Unrecognized tax benefits are tax benefits claimed in our tax returns that do not meet these recognition and measurement standards.

We record a liability for unrecognized tax benefits when it is more likely than not that a tax position we have taken will not be sustained upon audit. We evaluate such likelihood based on relevant facts and tax law. We adjust our recorded liability for income tax matters due to changes in circumstances or new uncertainties, such as amendments to existing tax law. Our ultimate tax liability depends upon many factors, including negotiations with taxing authorities in the jurisdictions in which we operate, outcomes of tax litigation, and resolution of disputes arising from federal, state, and foreign tax audits. Due to the varying tax laws in each jurisdiction, management, with the assistance of local

tax advisors as necessary, assesses individual matters in each jurisdiction on a case-

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by-case basis. We research and evaluate our income tax positions, including why we believe they are compliant with income tax regulations, and these positions are documented as appropriate.

Deferred income taxes result from the differences between the financial and tax basis of our assets and liabilities and are adjusted for changes in tax rates and tax laws when changes are enacted. If it is more likely than not that all or a portion of deferred tax assets will not be realized, a valuation allowance is provided for such deferred tax assets. As of December 31, 2015, we have recorded a valuation allowance of \$10.3 million on net deferred tax assets of \$746.7 million, of which \$3.5 million is related to U.S. state NOLs, \$2.2 million to U.S. federal credits, and \$4.6 million to foreign NOLs. The balance of net deferred tax assets, net of valuation allowance, is \$736.4 million.

The following table summarizes the balance of deferred tax assets, net of deferred tax liabilities, at December 31, 2015, of \$736.4 million:

	Deferred Tax Asset (Net of Liabilities)	Valuation Allowance	Net Deferred Tax Asset
United States—Federal(1)	\$651.6	\$(2.2)	) \$649.4
United States—States(1)	53.2	(3.5)	) 49.7
Germany	30.3	—	30.3
Other foreign	11.6	(4.6)	) 7.0
Total	\$746.7	\$(10.3)	) \$736.4

The U.S. federal deductions generated relating to emergence of \$670 million, settlement of the PI deferred (1) payment obligation of \$632 million, and the \$490 million warrant repurchase, plus the \$30 million ZAI PD deferred payment obligation, account for a majority of the U.S. federal and state deferred tax assets.

We will need to generate approximately \$1,900 million of U.S. federal taxable income by 2035 (or approximately \$95 million per year during the carryforward period) to fully realize the U.S. federal and a majority of the U.S. state net deferred tax assets.

The following table summarizes expiration dates in jurisdictions where we have, or will have, material tax loss carryforwards:

	Expiration Dates
United States—Federal	2034 - 2035
United States—States	2016 - 2035
Brazil	Unlimited Carryforward

In evaluating our ability to realize our deferred tax assets, we consider all reasonably available positive and negative evidence, including recent earnings experience, expectations of future taxable income and the tax character of that income, the extended period of time over which the temporary differences become deductible and the carryforward and/or carryback periods available to us for tax reporting purposes in the related jurisdiction. In estimating future taxable income, we develop assumptions, including the amount of future federal, state and international pretax operating income that we can reasonably expect to generate, the reversal of temporary differences and the implementation of feasible and prudent tax planning strategies. We record a valuation allowance to reduce deferred tax assets to the amount that we believe is more likely than not to be realized.

U.S. federal deferred tax assets associated with certain credit carryforwards have expiration dates through 2020 and are projected to expire before they can be utilized. We have recorded a valuation allowance of \$2.2 million on these credits. We concluded that a valuation allowance is not required with respect to the remaining U.S. federal deferred tax assets of \$649.4 million because we believe we will have sufficient U.S. taxable income to realize all future available tax deductions and remaining credits prior to their expiration.

We also considered the need for a valuation allowance on state deferred tax assets. We have considered forecasted earnings, recent past and future taxable income and allowable carryforward periods of net operating losses in each state taxing jurisdiction in which we operate. We believe that we will generate sufficient domestic income in most state and local jurisdictions to utilize future deductions.



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In the 2013 fourth quarter we determined that it is more likely than not that, with the exception of certain state NOLs that were generated in prior years, future taxable income will be sufficient to enable us to utilize our net state deferred tax assets. Accordingly, we recorded a \$24.4 million release in our valuation allowance on our state deferred tax assets. During 2013, the valuation allowance was also reduced by, to a lesser extent, the utilization and expiration of state net operating losses in the current year and the reduction of net operating losses resulting from prior year adjustments to taxable income. There are certain states where a portion of the NOLs generated in prior years will not be utilized prior to their expiration and for which, as of December 31, 2015, a valuation allowance in the aggregate of \$3.5 million remains in place.

The realization of deferred tax assets is dependent on the generation of sufficient taxable income in the appropriate tax jurisdictions. We believe it is more likely than not that the net deferred tax assets as of December 31, 2015, will be realized. If we were to determine that we would not be able to realize a portion of our net deferred tax assets in the future, for which there is currently no valuation allowance, an adjustment to the net deferred tax assets would be charged to earnings in the period such determination was made. Conversely, if we were to make a determination that it is more likely than not that deferred tax assets, for which there is currently a valuation allowance, would be realized, the related valuation allowance would be reduced and a benefit to earnings would be recorded.

Recent Accounting Pronouncements

See Note 1 to the Consolidated Financial Statements for a discussion of recent accounting pronouncements and their effect on us.

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## W. R. GRACE &amp; CO. AND SUBSIDIARIES

## FINANCIAL STATEMENT SCHEDULE II—VALUATION AND QUALIFYING ACCOUNTS AND RESERVES

(In millions)

For the Year Ended December 31, 2015

Description	Balance at beginning of period	Additions charged to costs and expenses	Deductions	Other, net(1)	Balance at end of period
Valuation and qualifying accounts deducted from assets:					
Allowances for notes and accounts receivable	\$5.7	\$4.0	\$(3.4 )	\$0.7	\$7.0
Valuation allowance for deferred tax assets(2)	12.5	0.4	(2.6 )	—	10.3
Reserves:					
Reserves for environmental remediation	61.7	6.5	(12.6 )	—	55.6
Reserves for retained obligations of divested businesses	13.5	—	—	—	13.5

For the Year Ended December 31, 2014

Description	Balance at beginning of period	Additions charged to costs and expenses	Deductions	Other, net(1)	Balance at end of period
Valuation and qualifying accounts deducted from assets:					
Allowances for notes and accounts receivable	\$7.6	\$2.5	\$(4.9 )	\$0.5	\$5.7
Valuation allowance for deferred tax assets(3)	18.3	1.2	(7.0 )	—	12.5
Reserves:					
Reserves for asbestos-related litigation	2,092.4	—	(2,092.4 )	—	—
Reserves for environmental remediation	134.5	14.7	(87.5 )	—	61.7
Reserves for retained obligations of divested businesses	35.0	—	(21.5 )	—	13.5

For the Year Ended December 31, 2013

Description	Balance at beginning of period	Additions charged to costs and expenses	Deductions	Other, net(1)	Balance at end of period
Valuation and qualifying accounts deducted from assets:					
Allowances for notes and accounts receivable	\$6.9	\$2.2	\$(1.6 )	\$0.1	\$7.6
Valuation allowance for deferred tax assets(4)	40.8	4.4	(24.4 )	(2.5 )	18.3
Reserves:					
Reserves for asbestos-related litigation	2,065.0	27.4	—	—	2,092.4
Reserves for environmental remediation	140.5	8.0	(14.0 )	—	134.5
Reserves for retained obligations of divested businesses	34.2	0.8	—	—	35.0

- (1) Various miscellaneous adjustments against reserves and effects of currency translation.
- (2) The valuation allowance decreased \$2.2 million from December 31, 2014, to December 31, 2015. The decrease was primarily due to a reduction in the valuation allowance on state NOL carryforwards.  
The valuation allowance decreased \$5.8 million from December 31, 2013, to December 31, 2014. The decrease
- (3) was primarily due to a reduction in the valuation allowance on state NOL carryforwards, partially offset by an increase in the valuation allowance on NOLs in certain foreign jurisdictions.  
In the 2013 fourth quarter, Grace determined that it is more likely than not that its deductions generated at emergence will be used before their expiration. Grace recorded a \$24.4 million release of its valuation allowance
- (4) on its state deferred tax assets. Further decreases resulted from the utilization and expiration of state NOLs and the reduction of NOLs resulting from prior-year adjustments to taxable income. These decreases were partially offset by the recording of valuation allowances on deferred tax assets associated with certain U.S. federal foreign tax credits.

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## EXHIBIT 12

## W. R. GRACE &amp; CO. AND SUBSIDIARIES

COMPUTATION OF RATIO OF EARNINGS TO FIXED CHARGES AND  
COMBINED FIXED CHARGES AND PREFERRED STOCK DIVIDENDS(1)(2)

(In millions, except ratios)

(Unaudited)

	Year Ended December 31,				
	2015	2014	2013	2012	2011
Net income attributable to W. R. Grace & Co. shareholders	\$144.2	\$276.3	\$256.1	\$40.0	\$219.7
Provision for (benefit from) income taxes	164.7	57.0	102.9	(61.6 )	87.9
Equity in earnings of unconsolidated affiliate	(20.4 )	(19.7 )	(22.9 )	(18.5 )	(15.2 )
Distributed income of earnings of unconsolidated affiliate	11.8	11.2	2.8	6.3	10.9
Interest expense and related financing costs, including amortization of capitalized interest, less interest capitalized	101.3	127.4	43.9	46.8	43.6
Estimated amount of rental expense deemed to represent the interest factor	8.8	9.4	8.8	7.5	6.9
Income as adjusted	\$410.4	\$461.6	\$391.6	\$20.5	\$353.8
Combined fixed charges and preferred stock dividends:					
Interest expense and related financing costs, including capitalized interest	\$102.0	\$128.7	\$45.0	\$46.9	\$43.6
Estimated amount of rental expense deemed to represent the interest factor	8.8	9.4	8.8	7.5	6.9
Fixed charges	110.8	138.1	53.8	54.4	50.5
Combined fixed charges and preferred stock dividends	\$110.8	\$138.1	\$53.8	\$54.4	\$50.5
Ratio of earnings to fixed charges	3.70	3.34	7.28	—	7.01
Ratio of earnings to fixed charges and preferred stock dividends	3.70	3.34	7.28	—	7.01

(1) Grace did not have preferred stock from 2011 through 2015.

(2) The 2012 ratio of earnings to fixed charges is below a one-to-one ratio. An additional \$33.9 million in earnings would be needed to attain a one-to-one ratio.

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EXHIBIT 31.(i).1

CERTIFICATION OF PERIODIC REPORT UNDER SECTION 302 OF  
THE SARBANES-OXLEY ACT OF 2002

I, A. E. Festa, certify that:

1. I have reviewed this annual report on Form 10-K of W. R. Grace & Co.;

Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a  
2. material fact necessary to make the statements made, in light of the circumstances under which such statements  
were made, not misleading with respect to the period covered by this report;

Based on my knowledge, the financial statements, and other financial information included in this report, fairly  
3. present in all material respects the financial condition, results of operations and cash flows of the registrant as of,  
and for, the periods presented in this report;

The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls  
4. and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial  
reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed  
(a) under our supervision, to ensure that material information relating to the registrant, including its consolidated  
subsidiaries, is made known to us by others within those entities, particularly during the period in which this report  
is being prepared;

designed such internal control over financial reporting, or caused such internal control over financial reporting to  
(b) be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting  
and the preparation of financial statements for external purposes in accordance with generally accepted accounting  
principles;

evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our  
(c) conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered  
by this report based on such evaluation; and

disclosed in this report any change in the registrant's internal control over financial reporting that occurred during  
(d) the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that  
has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial  
reporting; and

The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal  
5. control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of  
directors (or persons performing the equivalent functions):

all significant deficiencies and material weaknesses in the design or operation of internal control over financial  
(a) reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and  
report financial information; and

(b) any fraud, whether or not material, that involves management or other employees who have a significant role in the  
registrant's internal control over financial reporting.

Date: February 25, 2016

/s/ A. E. FESTA  
A. E. Festa  
Chief Executive Officer

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EXHIBIT 31.(i).2

CERTIFICATION OF PERIODIC REPORT UNDER SECTION 302 OF  
THE SARBANES-OXLEY ACT OF 2002

I, Hudson La Force III, certify that:

1. I have reviewed this annual report on Form 10-K of W. R. Grace & Co.;

Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a  
2. material fact necessary to make the statements made, in light of the circumstances under which such statements  
were made, not misleading with respect to the period covered by this report;

Based on my knowledge, the financial statements, and other financial information included in this report, fairly  
3. present in all material respects the financial condition, results of operations and cash flows of the registrant as of,  
and for, the periods presented in this report;

The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls  
4. and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial  
reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed  
(a) under our supervision, to ensure that material information relating to the registrant, including its consolidated  
subsidiaries, is made known to us by others within those entities, particularly during the period in which this report  
is being prepared;

designed such internal control over financial reporting, or caused such internal control over financial reporting to  
(b) be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting  
and the preparation of financial statements for external purposes in accordance with generally accepted accounting  
principles;

evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our  
(c) conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered  
by this report based on such evaluation; and

disclosed in this report any change in the registrant's internal control over financial reporting that occurred during  
(d) the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that  
has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial  
reporting; and

The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal  
5. control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of  
directors (or persons performing the equivalent functions):

all significant deficiencies and material weaknesses in the design or operation of internal control over financial  
(a) reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and  
report financial information; and

(b) any fraud, whether or not material, that involves management or other employees who have a significant role in the  
registrant's internal control over financial reporting.

Date: February 25, 2016

/s/ HUDSON LA FORCE III  
Hudson La Force III  
President, Chief Operating Officer and  
Chief Financial Officer

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EXHIBIT 32

CERTIFICATION UNDER SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (18 U.S.C. Section 1350), the undersigned certifies that (1) this Annual Report of W. R. Grace & Co. (the "Company") on Form 10-K for the period ended December 31, 2015, as filed with the Securities and Exchange Commission on the date hereof (this "Report"), fully complies with the requirements of Sections 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and (2) the information contained in this Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ A. E. FESTA

Chief Executive Officer

/s/ HUDSON LA FORCE III

President, Chief Operating Officer and  
Chief Financial Officer

Date: 2/25/2016

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.