

Building momentum on our path to become the premier specialty chemicals company

Annual Report
Fiscal 2017



Our Story

Ashland Global Holdings Inc. (NYSE: ASH) is a premier, global specialty chemicals company serving customers in a wide range of consumer and industrial markets, including adhesives, architectural coatings, automotive, construction, energy, food and beverage, personal care and pharmaceutical. At Ashland, **we are approximately 6,500 passionate, tenacious solvers** – from renowned scientists and research chemists to talented engineers and plant operators – who thrive on developing practical, innovative and elegant solutions to complex problems for customers in more than 100 countries. Our people are distinguished by their ability to create and apply specialized chemistry in ways that enable customers to amplify the **efficacy**, refine the **usability**, add to the **allure**, ensure the **integrity**, and improve the **profitability** of their products and applications. Visit ashland.com to learn more.

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Directors and Officers **inside back cover**

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Shareholder Information **back cover**

Financial Highlights*

(Dollars in millions except per share data)

	2017	2016	2015
Sales	\$ 3,260	\$ 3,019	\$ 3,420
Operating income (loss)	\$ 142	\$ (127)	\$ 112
EBITDA	\$ 551	\$ 416	\$ 644
Adjusted EBITDA	\$ 570	\$ 598	\$ 677
Loss from continuing operations	\$ (105)	\$ (283)	\$ (12)
Net income (loss)	\$ 28	\$ (28)	\$ 309
Net income (loss) attributable to Ashland	\$ 1	\$ (29)	\$ 309
Diluted EPS			
Loss from continuing operations	\$ (1.69)	\$ (4.51)	\$ (0.18)
Income from discontinued operations attributable to Ashland	\$ 1.70	\$ 4.04	\$ 4.72
Net income (loss) attributable to Ashland	\$ 0.01	\$ (0.47)	\$ 4.54
Cash flows provided (used) by operating activities from continuing operations	\$ 255	\$ 372	\$ (256)
Additions to PP&E	\$ 199	\$ 231	\$ 220
Number of employees	6,500	6,000	6,000
Number of common stockholders of record	11,500	12,600	13,100

This Annual Report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements are not historical facts and generally are identified by words such as "anticipates," "believes," "estimates," "expects," "is likely," "predicts," "projects," "forecasts," "may," "will," "should," and "intends" and the negative of these words or other comparable terminology. Although Ashland believes that its expectations are based on reasonable assumptions, such expectations are subject to risks and uncertainties that are difficult to predict and may be beyond Ashland's control. Please see "Item 1A. Risk Factors" and "Use of estimates, risks and uncertainties" in Note A of Notes to Consolidated Financial Statements in this Annual Report. Unless legally required, Ashland undertakes no obligation to update any forward-looking statements made in this Annual Report, whether as a result of new information, future events or otherwise.



William A. Wulfsohn
Chairman and Chief
Executive Officer

A Note from Our CEO

To Our Shareholders:

Reflecting on fiscal 2017, I believe it was a year of transition and great progress for Ashland. We completed the separation of Valvoline, a defining moment in Ashland's transformation. We acquired Pharmachem, which was immediately accretive to our earnings and expands Ashland into the important areas of fixatives and nutraceuticals. In addition, we completed the acquisition of a composites manufacturing facility plant in France, which was also immediately accretive and is exceeding our original expectations.

The Ashland team has the vision, products, people, infrastructure, markets and commitment to expand its position as a premier specialty chemicals company. Momentum is building. Fiscal 2018 is a crucial year for Ashland and we are committed to deliver results.

The Specialty Ingredients base business offset \$25 million of raw material inflation through pricing and asset utilization actions. The team also drove organic sales and volume growth of more than 2 percent, excluding the effects of currency. Within Composites, our team overcame \$50 million of raw material inflation by delivering price and volume, resulting in full-year earnings growth. And within Intermediates and Solvents (I&S), we returned to year-over-year profit growth in the second half of the fiscal year.

For the full year, Ashland's adjusted earnings was \$2.44 per diluted share, compared to \$2.25 per diluted share in fiscal 2016. These results include roughly \$85 million in higher raw material costs and unfavorable currency impact. Sales rose 8 percent, to \$3.3 billion, with growth coming from all three reportable segments and all regions.

It seems like a long time ago, but we started the fiscal year working to complete the full Valvoline separation. By January, much of this work was behind us. That was a crucial turning point for Ashland as we shifted the fundamental focus of the entire organization to put in place the changes needed to fulfill our vision of becoming the premier specialty chemicals company.

In early May, we hosted our Investor Day in New York. At that time, we presented aggressive new financial targets for fiscal 2018-2021. Those targets are to:

- Grow adjusted earnings per share (EPS) by at least 15 percent in each year of the period;
- Improve ASI's adjusted EBITDA margins to above 25 percent; and
- Generate more than \$1 billion of free cash flow.

This growth will be driven by specific actions to sustain and grow Ashland's premium mix, such as through new market strategies and successful product introductions. It also includes specific initiatives to improve our competitiveness, such as through better asset utilization, price-to-value focus and cost management. All of this will be against a backdrop of disciplined capital investment. As a result of this work, we anticipate delivering significantly greater EPS growth in fiscal 2018 than the 15 percent conveyed during our investor day.

Building momentum

So what has changed and why are we so confident that we can deliver?

Let's begin with organic growth, specifically in Specialty Ingredients, where we are targeting 2.5-3.5 percent annual sales growth. To accelerate profitable growth from 2 percent in fiscal 2017, we have first focused on improving our ability to deliver meaningful innovation to our customers. To do this, we conducted a comprehensive review of our past product launches to determine what worked and what didn't. As a result, we made three important changes to our new product development efforts:

- First, we concentrated more of our resources on technical service request (TSR) projects, which are customer driven and have short timelines resulting in quick wins.
- Second, we moved project prioritization to the commercial leaders. They now own the pipeline of projects and are accountable for the impact.

- Third, we established what we call stage 6 new product reviews. These sessions more closely track the commercialization progress post-product launch to ensure delivery of their full potential.

Innovation is what drives us – it's front and center of everything we do. Ashland today boasts a highly differentiated set of technology platforms, the best scientists in our industry, and world-class laboratory, analytical and manufacturing assets. For example, earlier this year Ashland introduced a handful of innovative personal-care products that include:

- A unique hair-care technology that repairs hair from root to tip – and won a prestigious gold award for “best new functional ingredient” at the in-cosmetics show in Paris;
- Sunscreen formulations that deliver SPF 50+ UV protection without greasiness; and
- A new biofunctional that helps users care for aging skin.

We are bringing this innovation to life under Ashland's new brand promise – [always solving™](#) – which was introduced at the start of fiscal 2017. (See page 8 of this report for a few examples of how we are delivering value to our customers.)

In addition, to accelerate sales growth, we improved our sales force effectiveness. We have established clearer targets, greater individual accountability and stronger incentive for individuals to drive incremental commercial contribution. To accelerate our sales and mix improvement efforts, we have focused our capital to ensure capacity needed to grow in our highest-contributing markets.

Pharma is a great example of what we're doing to drive growth. For example, in China we established local manufacturing capabilities in Nanjing to provide a broader range of Ashland excipients to the local customer base. In addition, we recently completed the Klucel™ expansion in Hopewell, Virginia, and dedicated more resources to successfully debottleneck capacity. As a result, our pharma business grew by 2 percent in the fourth quarter of fiscal 2017 versus a year ago.

More importantly, moving forward we will be unconstrained in all our pharma product lines and expect to return to historical growth rates going forward.

Beyond accelerating sales growth, we are driving key initiatives to improve our operating margins. Our first priority in this area continues to be raising price, especially in these inflationary times. Accordingly, we have strengthened our pricing visibility and governance, and leveraged our global organization and SAP system to quickly identify where we need to increase prices. In addition, we have established tracking mechanisms to drive stronger accountability.

Better asset utilization is another key initiative to improve profit margins. There are two main paths we are pursuing to drive asset utilization gains. The first is to reduce plant spend. To that end, we have expanded our use of Lean Six Sigma tools and developed plans to reduce the number, length and cost of plant maintenance turnarounds – while maintaining our steadfast commitment to safety, quality and reliability.

We also closed or consolidated some of our manufacturing footprint, which will benefit fiscal 2018 by approximately \$4 million. We continue to assess our manufacturing footprint to identify projects that we could begin implementing this year and could have a meaningful impact in fiscal 2019 and beyond. This is important as our goal is to ensure we have 15+ percent earnings per share growth in fiscal 2019 and beyond.

Second, in addition to reducing plant spend, our production cost can also be improved through better utilization rates. We will achieve critical gains in this area by delivering on the growth targeted in our fiscal 2018 sales budget and continuing to work aggressively to de-toll currently outsourced products.

To ensure our gross profit gains fall to the bottom line, we are committed to keeping our SG&A expenses flat. We are expanding our use of global business service centers. We are also closing or consolidating nine offices.

Combined, these actions make us believe we can deliver adjusted earnings of \$3.20-\$3.40 per

diluted share in fiscal 2018, which would represent a 30-40 percent increase over last year.

Next, we are committed to generating over \$1 billion in cumulative free cash flow by fiscal 2021. Earnings growth will be the biggest contributor. In addition, we will spend <6.5% of sales on capital expenditures and change in working capital. We have opportunities to lower working capital and reduce capital investment – especially as we shift our focus from capital expansions to better utilizing our existing capacity.

Capital allocation – or how we spend the money that our businesses generate – is an important element of how we drive earnings and margin growth. Our capital allocation strategy has not changed. The first priority is to pay down debt from the Pharmachem acquisition. In addition, we'll continue to invest in the business and good organic projects, just like we have been doing. Also, the board of directors has given us the authority to purchase up to \$500 million of Ashland's stock. We also remain open to bolt-on acquisitions that offer good financial returns and strategic fit. Finally, we continue to assess our portfolio, seeking to reduce our asset intensity and earnings volatility while strategically investing in our most differentiated markets.

In summary, the Ashland team has the vision, products, people, infrastructure, markets and commitment to expand its position as a premier specialty chemicals company. We outlined our plans to get there at our May investor day. Since then, we have put the systems, people and accountabilities in place to make it happen.

Momentum is building. Fiscal 2018 is a crucial year for Ashland and we are committed to deliver results. Thank you for your continued support and investment.



William A. Wulfsohn

Chairman and Chief Executive Officer
November 20, 2017

Ashland at a Glance*

Specialty Ingredients

A global leader of cellulose ethers, vinyl pyrrolidones and biofunctionals

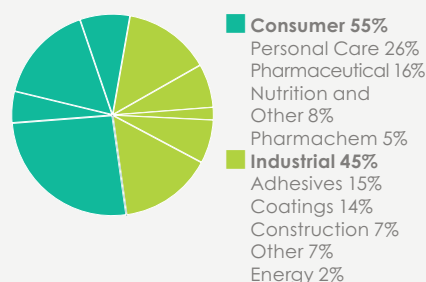
Sales: **\$2.2 Billion**

Adjusted EBITDA: **\$493 Million**

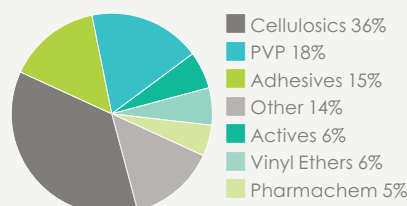
Adjusted EBITDA Margin: **22.2%**

Specialty Ingredients is a global leader in cellulose ethers, vinyl pyrrolidones and biofunctionals. It offers industry-leading products, technologies and resources for solving formulation and product-performance challenges. Specialty Ingredients uses natural, synthetic and semisynthetic polymers derived from cellulose ethers, vinyl pyrrolidones, acrylic polymers, polyester and polyurethane-based adhesives, and plant and seed extract. Specialty Ingredients' end markets offer comprehensive and innovative solutions for today's demanding consumer and industrial applications. Key customers include: pharmaceutical companies; makers of personal care products, food and beverages; makers of nutraceuticals and supplements; manufacturers of paint, coatings and construction materials; packaging and converting; and oilfield service companies.

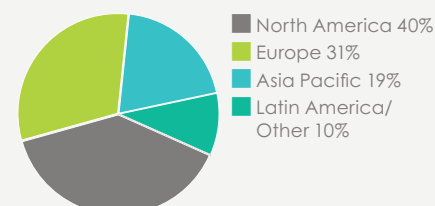
Sales by Market



Sales by Product



Sales by Geography



Composites

A global leader in unsaturated polyester resins, vinyl ester resins and gelcoats

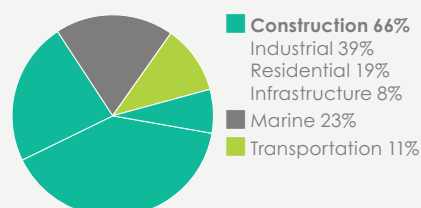
Sales: **\$779 Million**

Adjusted EBITDA: **\$89 Million**

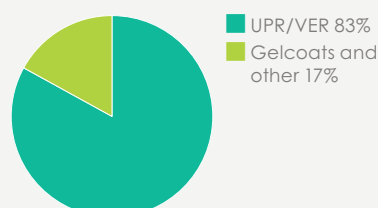
Adjusted EBITDA Margin: **11.4%**

Composites is a global leader in unsaturated polyester resins, vinyl ester resins and gelcoats. The Composites business manufactures and sells a broad range of general-purpose and high-performance grades of unsaturated polyester and vinyl ester resins, gelcoats and low-profile additives for the reinforced plastics industry. The products in the Composites business provide an array of functional properties including corrosion resistance, fire retardance, ultraviolet resistance, water and chemical resistance, high mechanical strength, impact and scratch resistance and high strength-to-weight ratios. Key end markets include transportation, construction, marine and infrastructure. In addition, the business manufactures and sells molten maleic anhydride for the manufacture of a variety of products such as unsaturated polyester resins, copolymers, lubricating oil additives, alkenyl succinic anhydrides, malic acid, fumaric acid and numerous derivative chemicals. Key markets include composites, personal care, dispersants and paper sizing.

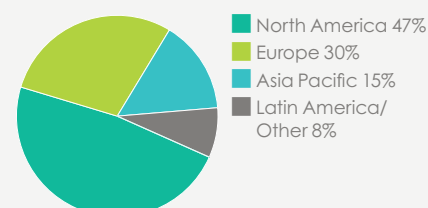
Sales by Market



Sales by Product



Sales by Geography



Intermediates and Solvents

A global leader in butanediol and related derivatives

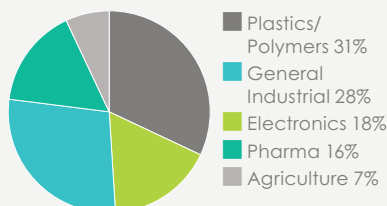
Sales: **\$265 Million**

Adjusted EBITDA: **\$26 Million**

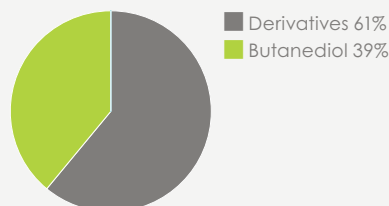
Adjusted EBITDA Margin: **9.8%**

Intermediates and Solvents (I&S) is a leading producer of 1,4 butanediol (BDO) and related derivatives, including tetrahydrofuran and n-methylpyrrolidone. These products are used as chemical intermediates in the production of engineering polymers and polyurethanes, and as specialty process solvents in a wide array of applications including electronics, pharmaceuticals, water filtration membranes and more.

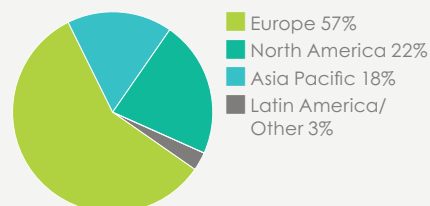
Sales by Application



Sales by Product



Sales by Geography



we see chemistry everywhere

the Ashland 5 Effects™ at work

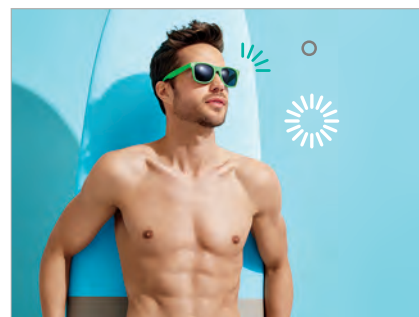
Upon defining the New Ashland, we developed a **proprietary framework** to capture how we solve. This framework organizes the diverse dimensions of value that we add to customer products and applications into simple but powerful categories.

We call this
The 5 Ashland Effects™.



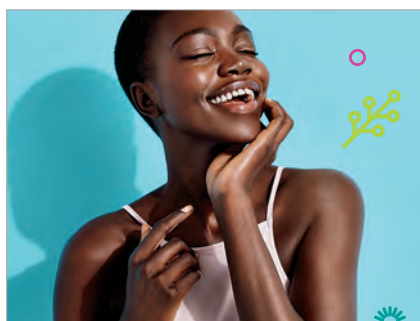
efficacy

Klucel™ helps ensure stable active ingredient delivery for blockbuster high cholesterol treatment



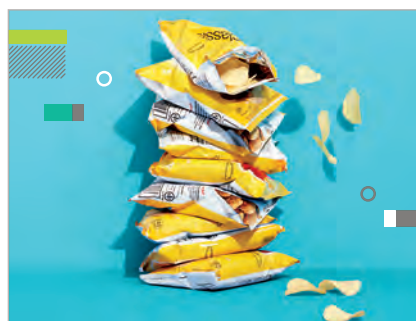
usability

ProLipid™ lamellorgel is designed to exert a 'second skin' effect and **Ganex™** waterproofing polymers make sunscreens usable in water and humid environments



allure

Tuberlux™ black diamond truffle extract energizes skin cells in a well-known global cosmetics firm's product



integrity

Arosel™ PSAs provide a lightweight, air tight, and cost effective seal, enabling innovative packaging and longer shelf life



profitability

Derakane™ improved our customer's production, cutting "failure rates" by ~80%, saving over \$10,000 per month



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

FORM 10-K

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

For the fiscal year ended September 30, 2017

OR

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

For the transition period from _____ to _____

Commission file number 333-211719

ASHLAND GLOBAL HOLDINGS INC.

Delaware
(State or other jurisdiction of incorporation or organization)

81-2587835
(I.R.S. Employer Identification No.)

50 E. RiverCenter Boulevard
Covington, Kentucky 41011
Telephone Number (859) 815-3333

Securities Registered Pursuant to Section 12(b) of the Act:

Title of each class
Common Stock, par value \$.01 per share

Name of each exchange on which registered
New York Stock Exchange

Securities Registered Pursuant to Section 12(g) of the Act: None

Indicate by check mark if the Registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

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

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

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 during the preceding 12 months (or for such shorter period that the Registrant was required to submit and post such files). Yes ☒ No ☐

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

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large Accelerated Filer ☒
Non-Accelerated Filer ☐
Emerging Growth Company ☐

Accelerated Filer ☐
Smaller Reporting Company ☐

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

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

At March 31, 2017, the aggregate market value of voting stock held by non-affiliates of the Registrant was approximately \$7,663,261,000. In determining this amount, the Registrant has assumed that its directors and executive officers are affiliates. Such assumption shall not be deemed conclusive for any other purpose.

At October 31, 2017, there were 62,142,622 shares of Registrant's common stock outstanding.

Documents Incorporated by Reference

Portions of Registrant's Proxy Statement (Proxy Statement) for its Annual Meeting of Stockholders are incorporated by reference into Part III of this annual report on Form 10-K to the extent described herein.

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PART I

ITEM 1. BUSINESS

GENERAL

Ashland Global Holdings Inc. is a Delaware corporation, with its principal executive offices located at 50 E. RiverCenter Boulevard, Covington, Kentucky 41011 (Telephone: (859) 815-3333). Ashland Global Holdings Inc. was incorporated in 2016 as the successor to a Kentucky corporation named Ashland Inc. organized in 2004 (now known as Ashland LLC), which was itself organized as the successor to a Kentucky corporation of the same name organized in 1936. The new holding company structure was put in place to allow Ashland Inc. to reincorporate in Delaware and to help facilitate the separation of the Valvoline business from the specialty chemicals businesses, creating two independent, publicly held companies (the Reorganization). As a result of the Reorganization, Ashland Global Holdings Inc. replaced Ashland Inc. as the publicly held corporation, and Ashland Inc. was converted to a Kentucky limited liability company and is now an indirect, wholly owned subsidiary of Ashland Global Holdings Inc. The terms “Ashland” and the “Company” as used herein include Ashland Global Holdings Inc., its predecessors and its consolidated subsidiaries, except where the context indicates otherwise. As a result of the Reorganization, Ashland is the successor issuer to Ashland Inc. pursuant to Rule 12g-3(a) under the Securities Exchange Act of 1934, as amended (the Exchange Act) and will file periodic and other reports required by the Exchange Act.

Ashland is a global leader in providing specialty chemical solutions to customers in a wide range of consumer and industrial markets, including adhesives, architectural coatings, construction, energy, food and beverage, personal care and pharmaceutical. With approximately 6,500 employees worldwide, Ashland serves customers in more than 100 countries.

Subsequent to completing the distribution of Valvoline Inc. during the current year, Ashland's operations are now managed within the following three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents. In previous years, Composites and Intermediates and Solvents were reporting units included within the Ashland Performance Materials reportable segment. Financial information about Ashland's three reportable segments for each of the fiscal years in the three-year period ended September 30, 2017 is set forth in Note Q of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K, including sales, equity income, other income, operating income and assets. International data, such as sales to external customers, net assets and property, plant and equipment, are set forth in Note Q as well.

Specialty Ingredients is a global leader in cellulose ethers, vinyl pyrrolidones and biofunctionals. It offers industry-leading products, technologies and resources for solving formulation and product-performance challenges. Specialty Ingredients uses natural, synthetic and semisynthetic polymers derived from cellulose ethers, vinyl pyrrolidones, acrylic polymers, polyester and polyurethane-based adhesives, and plant and seed extract. Specialty Ingredient' end markets offer comprehensive and innovative solutions for today's demanding consumer and industrial applications. Key customers include: pharmaceutical companies; makers of personal care products, food and beverages; makers of nutraceuticals and supplements; manufacturers of paint, coatings and construction materials; packaging and converting; and oilfield service companies. On May 17, 2017, Ashland completed its acquisition of the stock of Pharmachem Laboratories, Inc. (Pharmachem), a leading provider of quality ingredients to the global health and wellness industries and high-value differentiated products to fragrance and flavor houses. With 14 manufacturing facilities in the United States and Mexico, New Jersey-based Pharmachem develops, manufactures and supplies custom and branded nutritional and fragrance products. See Note C of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K for more information.

Composites is a global leader in unsaturated polyester resins, vinyl ester resins and gelcoats. The Composites business manufactures and sells a broad range of general-purpose and high-performance grades of unsaturated polyester and vinyl ester resins, gelcoats and low-profile additives for the reinforced plastics industry. The products in the Composites business provide an array of functional properties including corrosion resistance, fire retardance, ultraviolet resistance, water and chemical resistance, high mechanical strength, impact and scratch resistance and high strength-to-weight ratios. Key end markets include transportation, construction, marine and infrastructure. In addition, the business manufactures and sells molten maleic anhydride for the manufacture of a variety of products such as unsaturated polyester resins, copolymers, lubricating oil additives, alkenyl succinic anhydrides, malic acid, fumaric acid and numerous derivative chemicals. Key markets include composites, personal care, dispersants and paper sizing.

Intermediates and Solvents is a leading producer of 1,4 butanediol (BDO) and related derivatives, including tetrahydrofuran and n-methylpyrrolidone. These products are used as chemical intermediates in the production of engineering polymers and polyurethanes, and as specialty process solvents in a wide array of applications including electronics, pharmaceuticals, water filtration membranes and more. Butanediol is also supplied to Ashland's Specialty Ingredients business for use as a raw material.

Unallocated and Other generally includes items such as components of pension and other postretirement benefit plan expenses (excluding service costs, which are allocated to the reportable segments), certain significant company-wide restructuring activities,

including internal separation costs, and legacy costs or adjustments that relate to divested businesses that are no longer operated by Ashland.

Available Information - Ashland's Internet address is <http://www.ashland.com>. On this website, Ashland makes available, free of charge, its annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports, as well as any beneficial ownership reports of officers and directors filed on Forms 3, 4 and 5. All such reports are available as soon as reasonably practicable after they are electronically filed with, or electronically furnished to, the Securities and Exchange Commission (SEC). Ashland also makes available, free of charge on its website, its Corporate Governance Guidelines, Board Committee Charters, Director Independence Standards and code of business conduct that applies to Ashland's directors, officers and employees. These documents are also available in print to any stockholder who requests them. Information contained on Ashland's website is not part of this annual report on Form 10-K and is not incorporated by reference in this document. The public may read and copy any materials Ashland files with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an Internet site (<http://www.sec.gov>) that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC.

CORPORATE DEVELOPMENTS

Ashland Separation of Valvoline

On September 22, 2015, Ashland announced that the Board of Directors approved proceeding with a plan to separate Ashland into two independent, publicly traded companies comprising of the Valvoline business and the specialty chemicals businesses.

In connection with the separation, in May 2016, Ashland filed a proxy statement/prospectus for a proposal to reorganize under a new public holding company to facilitate its reincorporation in the State of Delaware and to help facilitate the separation process. Upon completing the Reorganization in September 2016, Ashland Global Holdings Inc. replaced Ashland Inc. as the publicly held corporation and, through its subsidiaries, conducts all of the operations previously conducted by Ashland Inc. Each outstanding share of Ashland Inc. common stock was converted into one share of Ashland Global Holdings Inc. common stock. Ashland Inc. was converted to a limited liability company and is now an indirect, wholly owned subsidiary of Ashland Global Holdings Inc.

Following the closing of the Reorganization, Ashland took steps to transfer the Valvoline business to Valvoline Inc. On September 22, 2016, Ashland and Valvoline Inc. announced the pricing of the initial public offering (IPO) of 30 million shares of Valvoline Inc.'s common stock at a price to the public of \$22.00 per share and closed the IPO on September 28, 2016. The underwriters exercised an option to purchase an additional 4.5 million shares of Valvoline Inc.'s common stock to cover overallotments. After completing the IPO, Ashland owned 170 million shares of Valvoline Inc.'s common stock, representing approximately 83% of the total outstanding shares of Valvoline Inc.'s common stock. The total net proceeds, after underwriters discount and other offering expenses, received from the IPO were \$712 million.

Ashland completed the distribution of its remaining 170 million shares of common stock of Valvoline Inc. as a pro rata dividend on shares of Ashland common stock outstanding at the close of business on the record date of May 5, 2017. Based on the shares of Ashland common stock outstanding as of May 5, 2017, the record date for the distribution, each share of Ashland common stock received 2.745338 shares of Valvoline common stock in the distribution. The distribution was recorded at the carrying amount of Valvoline Inc.'s net assets which was a deficit of \$187 million as of May 12, 2017.

Pharmachem Acquisition

On May 17, 2017, Ashland completed its acquisition of the stock of Pharmachem, a leading provider of quality ingredients to the global health and wellness industries and high-value differentiated products to fragrance and flavor houses. With annual revenues of approximately \$300 million and 14 manufacturing facilities in the United States and Mexico, New Jersey-based Pharmachem develops, manufactures and supplies custom and branded nutritional and fragrance products. Ashland has included Pharmachem within the Specialty Ingredients reporting segment.

The acquisition was recorded by Ashland using the purchase method of accounting in accordance with applicable U.S. GAAP whereby the total purchase price was allocated to tangible and intangible assets and liabilities acquired based on respective fair values. The all-cash purchase price of Pharmachem was \$680 million which included working capital adjustments of approximately \$20 million. See Note C of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K for more information.

SPECIALTY INGREDIENTS

Specialty Ingredients (Specialty Ingredients) offers industry-leading products, technologies and resources for solving formulation and product-performance challenges. Using natural, synthetic and semisynthetic polymers derived from cellulose ethers, vinyl pyrrolidones, acrylic polymers, polyester and polyurethane-based adhesives, and plant and seed extract, Specialty Ingredients offers comprehensive and innovative solutions for consumer and industrial applications.

Key customers include pharmaceutical companies; makers of personal care products, food and beverages; makers of nutraceuticals and supplements; manufacturers of paint, coatings and construction materials; packaging and converting; and oilfield service companies. Certain customer relationships are significant, and the loss of any one of those customers could have a material adverse effect on the Specialty Ingredients reportable segment.

Specialty Ingredients' areas of expertise include: organic and synthetic chemistry, polymer chemistry, surface and colloid science, rheology, structural analysis and microbiology.

Specialty Ingredients' solutions provide an array of properties, including: thickening and rheology control, water retention, adhesive strength, binding power, film formation, conditioning and deposition, colloid stabilization and suspension.

Specialty Ingredients is composed of various end use markets. Many of the products of the end markets are produced in shared manufacturing facilities, to better manage capacity and achieve desired returns.

Oral Care - Specialty Ingredients' portfolio of oral care products delivers active ingredients in toothpaste and mouthwashes; provides bioadhesive functionality for dentures; delivers flavor, texture and other functional properties; and provides product binding to ensure form and function throughout product lifecycle.

Hair Care - Specialty Ingredients' portfolio of hair care products includes advanced styling polymers, fixatives, conditioning polymers, emulsifiers, preservatives and rheology modifiers.

Skin Care - Specialty Ingredients' portfolio of skin care products helps to firm, nourish, revitalize and smooth skin. The Skin Care line also provides sun care products, including UV filters, water-resistant agents and thickeners. Emulsifiers, emollients, preservatives and rheology modifiers complete the Skin Care product line.

Home Care - Specialty Ingredients' portfolio of products and technologies is used in many types of cleaning and fragrance applications, including fabric care, home care and dishwashing. Specialty Ingredients' products are used in a variety of applications for viscosity enhancement, particle suspension, rheology modification, stabilization and fragrance enhancement.

Pharmaceutical - Specialty Ingredients is a leading supplier of excipients and tablet coating systems to the pharmaceutical and nutraceutical industries. Excipients include a comprehensive range of polymers for use as tablet binders, superdisintegrants, sustained-release agents and drug solubilizers, as well as a variety of coating formulations for immediate, delayed, and sustained release applications. The portfolio also includes expertise in nutraceutical formulation and blending.

Nutrition - Specialty Ingredients' nutrition portfolio provides functional benefits in areas such as thickening, texture control, thermal gelation, structure enhancement, water binding, clarification and stabilization. Its core products include cellulose gums and vinyl pyrrolidone polymers which are used in a wide range of offerings for bakery, beverage, dairy, desserts, meat products, pet food, prepared foods, sauces and savory products.

Adhesives - Adhesives manufactures and sells adhesive solutions to the packaging and converting, building and construction, and transportation markets and manufactures and markets specialty coatings and adhesive solutions for use across multiple industries. Key technologies and markets include: acrylic polymers for pressure-sensitive adhesives; urethane adhesive for flexible packaging applications; aqueous and radiation-curable adhesives and specialty coatings for printing and converting applications; emulsion polymer isocyanate adhesives for structural wood bonding; elastomeric polymer adhesives for commercial roofing applications; acrylic, polyurethane and epoxy structural adhesives for bonding fiberglass reinforced plastics, composites, thermoplastics and metals in automotive, marine, recreational and industrial applications; specialty phenolic resins for paper impregnation and friction material bonding. Adhesive's products provide an array of functional properties including high-strength bonding, ease and speed of product assembly, heat and moisture resistance and design flexibility.

Coatings - Coatings Specialties is a recognized leader in rheology solutions for waterborne architectural paint and coatings. Products include hydroxyethylcellulose (HEC), which provides thickening and application properties for interior and exterior paints, and nonionic synthetic associative thickeners (NSATs), which are APEO-free liquid synthetics for high-performance paint and industrial coatings. The Coatings Specialties market complements its rheology offering with a broad portfolio of performance foam-control agents, surfactants and wetting agents, dispersants and pH neutralizers.

Construction - Construction Specialties is a major producer and supplier of cellulose ethers and companion products for the construction industry. These products control properties such as water retention, open time, workability, adhesion, stabilization, pumping, sag resistance, rheology, strength, appearance and performance in dry-mortar formulations.

Energy - Energy Specialties is a leading global manufacturer of synthetic- and cellulosic-based products for drilling fluids, oil-well cement slurries, completion and workover fluids, fracturing fluids and production chemicals. Energy Specialties offers the oil and gas industry solutions for drilling, stimulation, completion, cementing and production applications.

Performance - Performance Specialties provides products and services to over 30 industries. Ashland offers a broad spectrum of organo- and water-soluble polymers that are derived from both natural and synthetic resources. Product lines include derivatized cellulose polymers, synthetics, and vinyl pyrrolidone polymers that impart effective functionalities to serve a variety of industrial markets and specialized applications. Many of the products within Performance Specialties function as performance additives that deliver high levels of end-user value in formulated products. In other areas, such as plastics and textiles, Performance Specialties' products function as a processing aid, improving the quality of end products and reducing manufacturing costs.

For fiscal 2017, the following Specialty Ingredients products were 10% or greater of Ashland's total consolidated sales:

Product	% of Specialty Ingredients sales	% of Ashland total consolidated sales
Cellulosics	36%	24%
PVP	18%	12%
Adhesives	15%	10%

Specialty Ingredients operates throughout the Americas, Europe and Asia Pacific. It has 41 manufacturing facilities in nine countries which serve its various end markets and participates in one joint venture. Specialty Ingredients has manufacturing facilities in Huntsville, Alabama; Anaheim, California; Wilmington, Delaware; Dalton, Georgia; Calumet City, Illinois; Calvert City, Kentucky; Freetown, Massachusetts; Chatham, Kearny, Parlin, Paterson, S. Hackensack and Totowa, New Jersey; Ossining, New York; Merry Hill, North Carolina; Columbus, Hilliard and Ashland, Ohio; White City, Oregon; Piedmont and Summerville, South Carolina; Kenedy and Texas City, Texas; Ogden, Utah; Hopewell, Virginia; and Menomonee Falls, Wisconsin within the United States and Doel-Beveren, Belgium; Cabreuva, Brazil; Jiangmen and Nanjing, China; Alizay and Sophia Antipolis, France; Memmingen, Germany; Tamaulipas, Mexico (three locations); Zwijndrecht, the Netherlands and Bradford, Kidderminster, Newton Aycliffe and Poole, United Kingdom.

Specialty Ingredients markets and distributes its products and services directly and through third-party distributors in the Americas, Europe, the Middle East, Africa and Asia Pacific.

COMPOSITES

Composites is a global leader in unsaturated polyester resins, vinyl ester resins and gelcoats. The Composites business manufactures and sells a broad range of general-purpose and high-performance grades of unsaturated polyester and vinyl ester resins, gelcoats and low-profile additives for the reinforced plastics industry. The products in the Composites business provide an array of functional properties including corrosion resistance, fire retardance, ultraviolet resistance, water and chemical resistance, high mechanical strength, impact and scratch resistance and high strength-to-weight ratios. Key end markets include transportation, construction, marine and infrastructure. In addition, the business manufactures and sells molten maleic anhydride for the manufacture of a variety of products such as unsaturated polyester resins, copolymers, lubricating oil additives, alkenyl succinic anhydrides, malic acid, fumaric acid and numerous derivative chemicals. Key markets include composites, personal care, dispersants and paper sizing.

Key customers include manufacturers of residential and commercial building products, industrial product specifiers and manufacturers, wind blade manufacturers, pipe manufacturers, automotive and truck Original Equipment Manufacturers (OEM) suppliers, boatbuilders, chemical producers and electronics makers.

The Composites product lines can be broken into two categories: Core and Specialties. Many of the products of the two categories are produced in shared manufacturing facilities, to better manage capacity and achieve desired returns.

Core - The Core products include mostly unsaturated polyester resins (UPR) products, which are used for applications requiring durability and stain resistance, efficient processing and manufacturability and high-gloss appearance. Ashland sells core products under the Aropol™, Arazyn™, Polaris™ and Envirez™ brands. Examples can be found in a wide range of end use products from recreational boats to tub and shower surrounds and spa tubs, to counter tops, window lineals, and doors among thousands of other applications. Customers may be a component manufacturer, general job shop or OEM, such as a branded boatbuilder.

Specialties - The Specialties products include epoxy vinyl ester resins and gelcoats. Ashland's epoxy vinyl ester resins (VER) have higher strength and better corrosion resistance and durability compared to unsaturated polyester resins and compared to many traditional materials such as steel, wood and concrete. Ashland's gelcoats products have superior gloss and depth of color, UV resistance, weather-ability and consistency. Epoxy vinyl esters are sold under the Derakane™, Hetron, Arotran and AME brands.

Examples can be found in high performance recreational boats, and very corrosive environments in large chemical processing plants, water treatment facilities, refineries and mines. Gelcoats are also a key component of recreational boat manufacturing as well as in the RV market, construction panels and bath products.

Composites' UPR/VER products were approximately 83% and 20% of Composites' sales and Ashland's total consolidated sales, respectively, for fiscal 2017.

Composites operates throughout the Americas, Europe and Asia Pacific. It has 14 manufacturing facilities in seven countries. Composites has manufacturing plants in Fort Smith and Jacksonville, Arkansas; Commerce, California; Bartow, Florida; Neville Island and Philadelphia, Pennsylvania; and Neal, West Virginia within the United States and Aracariguama, Brazil; Changzhou, China (two facilities); Porvoo, Finland; Etain, France; Miszewo, Poland; and Benicarló, Spain.

Composites markets and distributes its products directly and through third-party distributors in the Americas, Europe, the Middle East, Africa and Asia Pacific. Additionally, Composites has a joint venture agreement through which it manufactures products in two manufacturing plants in Saudi Arabia.

INTERMEDIATES AND SOLVENTS

Intermediates and Solvents is a leading producer of 1,4 butanediol and related derivatives, including tetrahydrofuran and n-methylpyrrolidone. These products are used as chemical intermediates in the production of engineering polymers and polyurethanes, and as specialty process solvents in a wide array of applications including electronics, pharmaceuticals, water filtration membranes and more. Butanediol is also supplied to Ashland's Specialty Ingredients business for use as a raw material.

Key customers include general industrial manufacturers, plastics and polymers producers, pharmaceutical companies, agricultural firms and producers of electronic components and systems.

Intermediates and Solvents has manufacturing facilities in Lima, Ohio and Marl, Germany, while some smaller volume derivatives are produced at Specialties Ingredients facilities in Texas City, Texas and Calvert City, Kentucky. Intermediates and Solvents' markets and distributes its products directly and through third-party distributors in the Americas, Europe, the Middle East and Asia Pacific.

MISCELLANEOUS

Environmental Matters

Ashland maintains a companywide environmental policy overseen by the Environmental, Health, Safety and Quality Committee of Ashland's Board of Directors. Ashland's Environmental, Health, Safety, Quality and Regulatory Affairs (EHSQ&RA) department has the responsibility to ensure that Ashland's businesses worldwide maintain environmental compliance in accordance with applicable laws and regulations. This responsibility is carried out via training; widespread communication of EHSQ&RA policies; information and regulatory updates; formulation of relevant policies, procedures and work practices; design and implementation of EHSQ&RA management systems; internal auditing by a separate auditing group; monitoring of legislative and regulatory developments that may affect Ashland's operations; assistance to the businesses in identifying compliance issues and opportunities for voluntary actions that go beyond compliance; and incident response planning and implementation.

Federal, state and local laws and regulations relating to the protection of the environment have a significant impact on how Ashland conducts its businesses. In addition, Ashland's operations outside the United States are subject to the environmental laws of the countries in which they are located. These laws include regulation of air emissions and water discharges, waste handling, remediation and product inventory, registration and regulation. New laws and regulations may be enacted or adopted by various regulatory agencies globally. The costs of compliance with any new laws or regulations cannot be estimated until the manner in which they will be implemented has been more precisely defined.

At September 30, 2017, Ashland's reserves for environmental remediation and related environmental litigation amounted to \$163 million, reflecting Ashland's best estimates of the most likely costs that will be incurred over an extended period to remediate identified conditions for which the costs are reasonably estimable, without regard to any third-party recoveries. Engineering studies, historical experience and other factors are used to identify and evaluate remediation alternatives and their related costs in determining the estimated reserves for environmental remediation. Environmental remediation reserves are subject to numerous inherent uncertainties that affect Ashland's ability to estimate its share of the costs. Such uncertainties involve the nature and extent of contamination at each site, the extent of required cleanup efforts under existing environmental regulations, widely varying costs of alternate cleanup methods, changes in environmental regulations, the potential effect of continuing improvements in remediation technology and the number and financial strength of other potentially responsible parties at multiparty sites. Although it is not possible to predict with certainty the ultimate costs of environmental remediation, Ashland currently estimates that the

upper end of the reasonably possible range of future costs for identified sites could be as high as approximately \$416 million. No individual remediation location is significant, as the largest reserve for any site is approximately 15% of the remediation reserve. Ashland regularly adjusts its reserves as environmental remediation continues. Environmental remediation expense, net of insurance receivables, amounted to \$24 million in 2017, compared to \$40 million in 2016 and \$40 million in 2015.

Product Control, Registration and Inventory - Many of Ashland's products and operations are subject to chemical control laws of the countries in which they are located. These laws include regulation of chemical substances and inventories under the Toxic Substances Control Act (TSCA) in the United States and the Registration, Evaluation and Authorization of Chemicals (REACH) regulation in Europe. Under REACH, additional testing requirements, documentation, risk assessments and registrations are occurring and will continue to occur and may adversely affect Ashland's costs of products produced in or imported into the European Union. Examples of other product control regulations include right to know laws under the Global Harmonized System (GHS) for hazard communication, regulation of chemicals used in the manufacture of pharmaceuticals and personal care products and that contact food under the Food, Drug and Cosmetics Act in the United States, the Framework Regulation in Europe and other product control requirements for chemical weapons, drug precursors and import/export. New laws and regulations may be enacted or adopted by various regulatory agencies globally. The costs of compliance with any new laws or regulations cannot be estimated until the manner in which they will be implemented has been more precisely defined.

Remediation - Ashland currently operates, and in the past has operated, various facilities at which, during the normal course of business, releases of hazardous substances have occurred. Additionally, Ashland has known or alleged potential environmental liabilities at a number of third-party sites. Federal and state laws, including but not limited to the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and various other remediation laws, require that contamination caused by hazardous substance releases be assessed and, if necessary, remediated to meet applicable standards. Some of these laws also provide for liability for related damage to natural resources, and claims for alleged property and personal injury damage can also arise related to contaminated sites. Laws in other jurisdictions in which Ashland operates require that contamination caused by such releases at these sites be assessed and, if necessary, remediated to meet applicable standards.

Air - In the United States, the Clean Air Act (CAA) imposes stringent limits on facility air emissions, establishes a federally mandated operating permit program, allows for civil and criminal enforcement actions and sets limits on the volatile or toxic content of many types of industrial materials and consumer products. The CAA establishes national ambient air quality standards (NAAQS) with attainment deadlines and control requirements based on the severity of air pollution in a given geographical area. Various state clean air acts implement, complement and, in many instances, add to the requirements of the federal CAA. The requirements of the CAA and its state counterparts have a significant impact on the daily operation of Ashland's businesses and, in many cases, on product formulation and other long-term business decisions. Other countries where Ashland operates also have laws and regulations relating to air quality. Ashland's businesses maintain numerous permits and emission control devices pursuant to these clean air laws.

The United States Environmental Protection Agency (USEPA) has increased its frequency in reviewing the NAAQS. The USEPA has stringent standards for particulate matter, ozone and sulfur dioxide. Throughout 2017, state and local agencies continued to implement options for meeting the newest standards. Particulate matter strategies include dust control measures for construction sites and reductions in emission rates allowed for industrial operations. Options for ozone include emission controls for certain types of sources, reduced limits on the volatile organic compound content of industrial materials and consumer products, and requirements on the transportation sector. Most options for sulfur dioxide focus on coal and diesel fuel combustion sources. It is not possible at this time to estimate the potential financial impact that these newest standards may have on Ashland's operations or products. Ashland will continue to monitor and evaluate these standards to meet these and all air quality requirements.

Solid Waste - Ashland's businesses are subject to various laws relating to and establishing standards for the management of hazardous and solid waste. In the United States, Ashland's facilities are subject to RCRA and its regulations governing generators of hazardous waste. Ashland has implemented systems to oversee compliance with the RCRA regulations. In addition to regulating current waste disposal practices, RCRA also addresses the environmental effects of certain past waste disposal operations, the recycling of wastes and the storage of regulated substances in underground tanks. Ashland has the remediation liability for certain facilities subject to these regulations. Other countries where Ashland operates also have laws and regulations relating to hazardous and solid waste, and Ashland has systems in place to oversee compliance.

Water - Ashland's businesses maintain numerous discharge permits. In the United States, such permits may be required by the National Pollutant Discharge Elimination System of the Clean Water Act and similar state programs. Other countries have similar laws and regulations requiring permits and controls relating to water discharge.

Climate Change and Related Regulatory Developments - Ashland has been collecting energy use data and calculating greenhouse gas (GHG) emissions for many years. Ashland evaluates the potential impacts from both climate change and the anticipated GHG regulations to facilities, products and other business interests, as well as the strategies commonly considered by

the industrial sector to reduce the potential impact of these risks. These risks are generally grouped as impacts from legislative, regulatory and international developments, impacts from business and investment trends and impacts to company assets from the physical effects of climate change. Current North American, European and other regional regulatory developments are not expected to have a material effect on Ashland's operations, although some facilities are subject to promulgated rules. Business and investment trends are expected to drive an increase in the demand for products that improve energy efficiency, reduce energy use and increase the use of renewable resources. At this time, Ashland cannot estimate the impact of this expected demand increase to its businesses. Physical effects from climate change have the potential to affect Ashland's assets in areas prone to sea level rise or extreme weather events much as they do the general public and other businesses. Due to the uncertainty of these matters, Ashland cannot estimate the impact at this time of GHG-related developments on its operations or financial condition.

Competition

Ashland competes in the highly fragmented specialty chemicals industry. The participants in the industry offer a varied and broad array of product lines designed to meet specific customer requirements. Participants compete with service and product offerings on a global, regional and/or local level subject to the nature of the businesses and products, as well as the end-markets and customers served. Competition is based on several key criteria, including product performance and quality, product price, product availability and security of supply, responsiveness of product development in cooperation with customers, customer service, industry knowledge and technical capability. Certain key competitors are significantly larger than Ashland and have greater financial resources, leading to greater operating and financial flexibility. The industry has become increasingly global as participants have focused on establishing and maintaining leadership positions outside of their home markets. Many of these segments' product lines face domestic and international competition, because of industry consolidation, pricing pressures and competing technologies. In order to improve its competitive position, as Ashland narrows its focus on specialty chemicals, the company is building and more strongly leveraging the Ashland corporate brand as to better communicate the capabilities and scale of the company, making it easier to introduce new product lines and applications.

Intellectual Property

Ashland has a broad intellectual property portfolio which is an important component of all of Ashland's reportable segments. Ashland's Specialty Ingredients, Composites and Intermediates and Solvents reportable segments rely on patents, trade secrets, formulae and know-how to protect and differentiate their products and technologies. In addition, these reportable segments own valuable trademarks which identify and differentiate Ashland's products from its competitors. Ashland also licenses intellectual property rights from third-parties.

Raw Materials

Ashland purchases its raw materials from multiple sources of supply in the United States and other countries, and believes that raw material supplies will be available in quantities sufficient to meet demand in fiscal 2018. All of Ashland's reportable segments were impacted to varying degrees in fiscal 2017 by the volatility of raw materials costs, and these conditions may continue in fiscal 2018.

Research and Development

Ashland's program of research and development is focused on defining the needs of the marketplace and framing those needs into technology platforms. Ashland has the capability to deliver and develop the intellectual property required to grow and protect those platforms. Ashland is focused on developing new chemistries, market-changing technologies and customer driven solutions at numerous technology centers located in the Americas, Europe and the Asia Pacific region. Research and development costs are expensed as they are incurred and totaled \$83 million in 2017, \$87 million in 2016 and \$99 million in 2015. During 2015, this amount included impairment charges of \$11 million related to certain in-process research and development assets associated with the 2011 acquisition of International Specialty Products Inc. (ISP). For additional information regarding these impairment charges, see Note H of Notes to Consolidated Financial Statements in this annual report on Form 10-K.

Seasonality

Ashland's business may vary due to seasonality. Ashland's business units typically experience stronger demand during warmer weather months, which generally occur during Ashland's third and fourth quarters.

Forward-Looking Statements

This annual report on Form 10-K contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”). These forward-looking statements are not historical facts and generally are identified by words such as “anticipates,” “believes,” “estimates,” “expects,” “is likely,” “predicts,” “projects,” “forecasts,” “may,” “will,” “should,” and “intends” and the negative of these words or other comparable terminology. Although Ashland believes that its expectations are based on reasonable assumptions, such expectations are subject to risks and uncertainties that are difficult to predict and may be beyond Ashland’s control. As a result, Ashland cannot assure that the expectations contained in such statements will be achieved. Important factors that could cause actual results to differ materially from those contained in such statements are discussed under “Use of estimates, risks and uncertainties” in Note A of Notes to Consolidated Financial Statements in this annual report on Form 10-K. For a discussion of other factors and risks that could affect Ashland’s expectations and operations, see “Item 1A. Risk Factors” in this annual report on Form 10-K.

ITEM 1A. RISK FACTORS

The following discussion of “risk factors” identifies the most significant factors that may adversely affect Ashland’s business, operations, financial position or future financial performance. This information should be read in conjunction with Management’s Discussion and Analysis and the consolidated financial statements and related notes incorporated by reference into this annual report on Form 10-K. The following discussion of risks is designed to highlight what Ashland believes are important factors to consider when evaluating its expectations. These factors could cause future results to differ from those in forward-looking statements and from historical trends.

Ashland has set aggressive growth goals for its businesses, including increasing sales, cash flow and margins, in order to achieve its long term strategic objectives. Ashland’s successful execution of its growth strategies and business plans to facilitate that growth involves a number of risks.

Ashland has set aggressive growth goals for its businesses in order to meet long term strategic objectives and improve shareholder value. Ashland’s failure to meet one or more of these goals or objectives would negatively impact Ashland’s potential value and the businesses. One of the most important risks is that Ashland might fail to adequately execute its business and growth plans, by optimizing the efficient use of its physical and intangible assets. Aspects of that risk include changes to global economic environment, changes to the competitive landscape, attraction and retention of skilled employees, the potential failure of product innovation plans, failure to comply with existing or new regulatory schemes, failure to maintain a competitive cost structure and other risks outlined in greater detail in this Item 1A.

Ashland faces competition from other companies, which places downward pressure on prices and margins and may adversely affect Ashland’s businesses and results of operations.

Ashland operates in highly competitive markets, competing against a number of domestic and foreign companies. Competition is based on several key criteria, including product performance and quality, product price, product availability and security of supply, responsiveness of product development in cooperation with customers and customer service, as well as the ability to bring innovative products or services to the marketplace. Certain key competitors are significantly larger than Ashland and have greater financial resources, leading to greater operating and financial flexibility. As a result, these competitors may be better able to withstand changes in conditions within the relevant industry, changes in the prices of raw materials and energy and changes in general economic conditions. In addition, competitors’ pricing decisions could compel Ashland to decrease its prices, which could negatively affect its margins and profitability. Additional competition in markets served by Ashland could adversely affect margins and profitability and could lead to a reduction in market share. Also, Ashland competes in certain markets that are declining and has targeted other markets for growth opportunities. Competitive and pricing pressures could also impact Ashland’s production volumes, which can in turn reduce cost efficiency. If Ashland’s strategies for dealing with declining markets and leveraging opportunity markets are not successful, its businesses and results of operations could be negatively affected.

The competitive nature of Ashland’s markets may delay or prevent the Company from passing increases in raw materials or energy costs on to its customers. In addition, certain of Ashland’s suppliers may be unable to deliver products or raw materials or fulfill contractual requirements. The occurrence of either event could adversely affect Ashland’s results of operations.

Rising and volatile raw material prices, especially those of hydrocarbon derivatives, cotton linters or wood pulp, may negatively impact Ashland’s costs, results of operations and the valuation of its inventory. Similarly, energy costs are a significant component of certain of Ashland’s product costs. Ashland is not always able to raise prices in response to such increased costs, and its ability to pass on the costs of such price increases is dependent upon market conditions. Likewise, reductions in the valuation of Ashland’s inventory due to market volatility may not be recovered and could result in losses.

Ashland purchases certain products and raw materials from suppliers, often pursuant to written supply contracts. If those suppliers are unable to meet Ashland's orders in a timely manner or choose to terminate or not fulfill contractual arrangements, Ashland may not be able to make alternative supply arrangements. Also, domestic and global government regulations related to the manufacture or transport of certain raw materials may impede Ashland's ability to obtain those raw materials on commercially reasonable terms. Certain Ashland businesses rely on agricultural output of clary sage, aloe, guar, and cotton linters, and the availability of these materials can be severely impacted by crop yields, weather events, and other factors. If Ashland is unable to obtain and retain qualified suppliers under commercially acceptable terms, its ability to manufacture and deliver products in a timely, competitive and profitable manner or grow its business successfully could be adversely affected.

Ashland's success depends upon its ability to attract and retain key employees and the identification and development of talent to succeed senior management.

Ashland's success depends on its ability to attract and retain key personnel, and Ashland relies heavily on its management team. The inability to recruit and retain key personnel or the unexpected loss of key personnel may adversely affect Ashland's operations. The acquisition of Pharmachem expands Ashland's talent needs to include certain niche markets in nutraceuticals and fragrances. In order to achieve the value of the acquired business, Ashland needs to retain the technical and business expertise specific to Pharmachem. Also, a substantial portion of Ashland's U.S.-based employees will be retirement-eligible within the next five years. That, combined with the relatively small number of middle tier managers with substantial experience in place to replace this group of retirement eligible employees, increases the potential negative impact of the risk that key employees could leave the Company. This risk of unwanted employee turnover also is substantial in positions that require certain technical expertise and geographically in developing markets which Ashland has targeted for growth, especially in Asia, India, South America and Eastern Europe. In addition, because of its reliance on its management team, Ashland's future success depends, in part, on its ability to identify and develop talent to succeed its senior management and other key positions throughout the organization. If Ashland fails to identify and develop successors, the company is at risk of being harmed by the departures of these key employees.

Failure to develop and market new products and production technologies could impact Ashland's competitive position and have an adverse effect on its businesses and results of operations.

The specialty chemical industry is subject to periodic technological change and ongoing product improvements. In order to maintain margins and remain competitive, Ashland must successfully develop and introduce new products or improvements that appeal to its customers and ultimately to global consumers. Ashland plans to grow earnings, in part, by focusing on developing markets and solutions to meet increasing demand in those markets, including demand for personal care and pharmaceutical products which are subject to lengthy regulatory approval processes. Ashland's efforts to respond to changes in consumer demand in a timely and cost-efficient manner to drive growth could be adversely affected by difficulties or delays in product development, including the inability to identify viable new products, successfully complete research and development, obtain regulatory approvals, obtain intellectual property protection or gain market acceptance of new products. Due to the lengthy development process, technological challenges and intense competition, there can be no assurance that any of the products Ashland is currently developing, or could develop in the future, will achieve substantial commercial success.

Ashland's business exposes it to potential product liability claims and recalls, which could adversely affect its financial condition and performance.

The development, manufacture and sale of specialty chemical and other products by Ashland, including products produced for the food, beverage, personal care, pharmaceutical and nutritional supplement industries, involve an inherent risk of exposure to product liability claims, product recalls, product seizures and related adverse publicity. Ashland also produces products that are subject to rigorous specifications and quality standards, with an expectation from its customers around these strict requirements. A product liability claim, recall or judgment against Ashland, or a customer complaint on product specifications, could also result in substantial and unexpected expenditures, affect consumer or customer confidence in its products, and divert management's attention from other responsibilities. Although Ashland maintains product liability insurance, there can be no assurance that this type or level of coverage is adequate or that Ashland will be able to continue to maintain its existing insurance or obtain comparable insurance at a reasonable cost, if at all. A product recall or a partially or completely uninsured product liability judgment against Ashland could have a material adverse effect on its reputation, results of operations and financial condition.

Imposition of new taxes, disagreements with tax authorities or additional tax liabilities could adversely affect Ashland's business, financial condition, reputation or results of operations.

Ashland's products are made, manufactured, distributed or sold in more than 100 countries and territories. As such, Ashland is subject to taxes in the United States and numerous foreign countries. Ashland's future effective tax rates could be affected by changes in the mix of earnings in countries with differing tax rates, changes in the valuation of deferred tax assets and liabilities, changes in liabilities for uncertain tax positions, cost of repatriations or changes in tax laws or their interpretation. Moreover, because Ashland is subject to the regular examination of its income tax returns by various tax authorities, the economic and political pressure to increase tax revenues in these jurisdictions may make resolving tax disputes even more difficult, and the final resolution

of tax audits and any related litigation may differ from our historical provisions and accruals resulting in an adverse impact on our business, financial condition, reputation or results of operations.

Ashland's operations outside the United States generate a significant portion of its net revenues. Ashland has not accrued income taxes or foreign withholding taxes on undistributed earnings for most non-US subsidiaries because those earnings are intended to be indefinitely reinvested in the operations of those subsidiaries. If these earnings are needed for Ashland's operations in the United States, the repatriation of such earnings could adversely affect its business, results of operations or financial condition. Certain tax reform proposals in the United States with respect to such earnings could also adversely affect Ashland's business, results of operations or financial condition. In addition to tax reform strategies being considered in the United States, many other countries, including countries in which Ashland has significant operations, are actively considering changes to existing tax laws. The increasingly complex global tax environment, including changes in how United States multinational corporations are taxed, could adversely affect Ashland's business, financial condition or results of operations.

The IPO of Valvoline and final distribution of its shares could result in significant tax liability to Ashland and its stockholders.

Ashland believes that the Valvoline IPO and certain related internal transactions should be nontaxable transactions for U.S. federal income tax purposes and has obtained written opinions of counsel to that effect. Ashland also obtained a written opinion of counsel to the effect that the final distribution should qualify for non-recognition of gain and loss under Section 355 of the Internal Revenue Code of 1986, as amended (the "Code"). The opinions are based on certain assumptions and representations as to factual matters from Ashland and Valvoline, as well as certain covenants by those parties. The opinions cannot be relied upon if any of the assumptions, representations or covenants is incorrect, incomplete or inaccurate or is violated in any material respect, or if there are changes in law with retroactive effect. The opinions are not binding on the IRS or the courts, and it is possible that the IRS or a state or local taxing authority could take the position that the internal transactions, the final distribution or the receipt of proceeds from the Valvoline IPO resulted in the recognition of significant taxable gain by Ashland, in which case Ashland may be subject to material tax liabilities.

If the final distribution were determined not to qualify for non-recognition of gain and loss, Ashland stockholders that received Valvoline common stock in the final distribution could be subject to tax. If the final distribution were determined not to qualify for non-recognition of gain and loss, then Ashland would recognize gain as if it had sold Valvoline common stock in a taxable transaction in an amount up to the fair market value of the Valvoline common stock it distributed in the final distribution. The tax liability resulting from such gain could have a material impact on Ashland's operations.

Section 355(e) of the Code generally creates a presumption that the final distribution would be taxable to Ashland, but not to its stockholders, if Ashland or Valvoline or their respective stockholders were to engage in transactions that result in a 50% or greater change (by vote or value) in the ownership of the respective common stock of Ashland or Valvoline during the four-year period beginning on the date that begins two years before the date of the final distribution, unless it were established that such transactions and the final distribution were not part of a plan or series of related transactions. An acquisition that occurs during the four-year period beginning on the date that begins two years before the date of the final distribution is presumed to occur pursuant to a plan or series of related transactions, unless it is established that the acquisition is not pursuant to a plan or series of transactions that includes the final distribution.

The final distribution would not qualify for non-recognition of gain and loss to Ashland and its stockholders if it were determined to be a "device" for the distribution of earnings and profits. An acquisition of Ashland's or Valvoline's common stock might be considered to be evidence that the final distribution was a "device". The tax liability to Ashland that would result from a determination that the final distribution is a "device" could have a material impact on Ashland's operations.

The potential tax liability to Ashland described above may limit Ashland's ability to pursue strategic transactions of a certain magnitude that involve the issuance or acquisition of Ashland common stock. This restriction may also limit Ashland's ability to raise significant amounts of cash through the issuance of common stock, especially if Ashland's stock price were to suffer substantial declines.

Ashland's substantial global operations subject it to risks of doing business in foreign countries, which could adversely affect its business, financial condition and results of operations.

Greater than 50% of Ashland's net sales for fiscal 2018 are expected to be to customers outside of North America. Ashland expects sales from international markets to continue to represent an even larger portion of the Company's sales in the future. Also, a significant portion of Ashland's manufacturing capacity is located outside of the United States. Accordingly, Ashland's business is subject to risks related to the differing legal, political, cultural, social and regulatory requirements and economic conditions of many jurisdictions.

The global nature of Ashland's business presents difficulties in hiring and maintaining a workforce in certain countries. Fluctuations in exchange rates may affect product demand and may adversely affect the profitability in U.S. dollars of products and services provided in foreign countries. In addition, foreign countries may impose additional withholding taxes or otherwise

tax Ashland's foreign income, or adopt other restrictions on foreign trade or investment, including currency exchange controls. The imposition of tariffs is also a risk that could impair Ashland's financial performance.

Certain legal and political risks are also inherent in the operation of a company with Ashland's global scope. For example, if the United States withdraws from or engages in renegotiation of trade agreements such as the North American Free Trade Agreement or more aggressively prosecutes trade disputes with countries like China, Ashland's ability to do business and execute its growth strategies could be adversely affected. In addition, it may be more difficult for Ashland to enforce its agreements or collect receivables through foreign legal systems. There is a risk that foreign governments may nationalize private enterprises in certain countries where Ashland operates. In certain countries or regions, terrorist activities and the response to such activities may threaten Ashland's operations more than in those in the United States. In Europe, the effect of economic sanctions imposed on Russia and/or Russia's reaction to the sanctions could adversely impact Ashland's performance and results of operations. The risks associated with localized or regional armed conflict in many parts of the world remain high, and could disrupt and/or adversely impact Ashland's businesses. Social and cultural norms in certain countries may not support compliance with Ashland's corporate policies including those that require compliance with substantive laws and regulations. Also, changes in general economic and political conditions in countries where Ashland operates, particularly in Europe, the Middle East and emerging markets, are a risk to Ashland's financial performance.

As Ashland continues to operate its business globally, its success will depend, in part, on its ability to anticipate and effectively manage these and other related risks. There can be no assurance that the consequences of these and other factors relating to its multinational operations will not have an adverse effect on Ashland's business, financial condition or results of operations.

The integration of Pharmachem could adversely impact the value of the acquired company.

Ashland's ability to realize the anticipated benefits of the Pharmachem acquisition will depend, in part, on its ability to integrate Pharmachem successfully and efficiently into Ashland's structure, supply chain, systems and business management. The combination of two independent companies is a complex, costly and time-consuming process. As a result, Ashland will be required to devote significant management attention and resources to integrating Pharmachem's operations and employees with those of Ashland. In integrating Pharmachem, Ashland needs to achieve certain synergies around cost savings, enhanced growth in certain markets, and greater efficiencies derived from scale and functional expertise, while retaining the cultural attributes that has made Pharmachem successful in competitive end markets. Additionally, as a public company with global operations, Ashland is subject to certain legal, compliance, operational, and reputational considerations that may be new to Pharmachem, given its history as a private company.

The failure to meet the challenges involved in integration or otherwise to realize any of the anticipated benefits of the acquisition could cause an interruption of, or a loss of momentum in, the activities of the acquired company and could adversely affect Ashland's business or results of operations. In addition, the overall integration may result in unanticipated problems, expenses, liabilities, competitive responses, loss of customer and other relationships, and diversion of management's attention, any of which could negatively impact Ashland's results of operations.

Business disruptions from natural, operational and other catastrophic risks could seriously harm Ashland's operations and financial performance. In addition, a catastrophic event at one of Ashland's facilities or involving its products or employees could lead to liabilities that could further impair its operations and financial performance.

Business disruptions, including those related to operating hazards inherent with the production of chemicals, natural disasters, severe weather conditions, supply or logistics disruptions, increasing costs for energy, temporary plant and/or power outages, information technology systems and network disruptions, cyber-security breach, terrorist attacks, armed conflict, war, pandemic diseases, fires, floods or other catastrophic events, could seriously harm Ashland's operations, as well as the operations of its customers and suppliers, and may adversely impact Ashland's financial performance. Although it is impossible to predict the occurrence or consequences of any such events, they could result in reduced demand for Ashland's products, make it difficult or impossible for Ashland to manufacture its products or deliver products and services to its customers or to receive raw materials from suppliers, or create delays and inefficiencies in the supply chain. In addition to leading to a serious disruption of Ashland's businesses, a catastrophic event at one of our facilities or involving our products or employees could lead to substantial legal liability to or claims by parties allegedly harmed by the event.

While Ashland maintains business continuity plans that are intended to allow it to continue operations or mitigate the effects of events that could disrupt its business, Ashland cannot provide assurances that its plans would fully protect it from all such events. In addition, insurance maintained by Ashland to protect against property damage, loss of business and other related consequences resulting from catastrophic events is subject to coverage limitations, depending on the nature of the risk insured. This insurance may not be sufficient to cover all of Ashland's damages or damages to others in the event of a catastrophe. In addition, insurance related to these types of risks may not be available now or, if available, may not be available in the future at commercially reasonable rates.

Ashland uses information technology (IT) systems to conduct business and these IT systems are at risk of potential disruption and cyber security threats.

Ashland's businesses rely on their IT systems to operate efficiently and in some cases, at all. Ashland employs third parties to manage and maintain a significant portion of its IT systems, including, but not limited to data centers, IT infrastructure, network, client support and end user services, as well as the functions of backing up and securing those systems. A partial or complete failure of Ashland's IT systems or those of our third parties managing, providing or servicing them for any amount of time more than several hours could result in significant business disruption causing harm to Ashland's reputation, results of operations or financial condition. In addition, the nature of our businesses, the markets we serve, and geographic profile of our operations make Ashland a target of cyber security threats. Despite steps Ashland takes to mitigate or eliminate them, cyber security threats in general are increasing and becoming more advanced and could occur as a result of the activity of hackers, employee error or employee misconduct. A breach of our IT systems could lead to the loss and destruction of trade secrets, confidential information, proprietary data, intellectual property, customer and supplier data, and employee personal information, and could disrupt business operations which could adversely affect Ashland's relationships with business partners and harm our brands, reputation, and financial results.

The impact of changing laws or regulations or the manner of interpretation or enforcement of existing rules could adversely impact Ashland's financial performance and restrict its ability to operate its business or execute its strategies.

New laws or regulations, or changes in existing laws or regulations or the manner of their interpretation or enforcement, could increase Ashland's cost of doing business and restrict its ability to operate its business or execute its strategies. This includes, among other things, the possible taxation under U.S. law of certain income from foreign operations, the possible taxation under foreign laws of certain income Ashland reports in other jurisdictions, regulations related to the protection of private information of Ashland's employees and customers, regulations issued by the U.S. Food and Drug Administration (and analogous non-U.S. agencies) affecting Ashland and its customers, compliance with The U.S. Foreign Corrupt Practices Act (and analogous non-U.S. laws) and the European Union's Registration, Authorisation and Restriction of Chemicals (REACH) regulation (and analogous non-EU initiatives), and potential operational impacts of General Data Protection Regulation (GDPR). Uncertainty associated with the passage of new laws, as well as changes in and enforcement of existing laws, can limit Ashland's ability to make and execute business plans effectively. In addition, compliance with laws and regulations is complicated by Ashland's substantial and growing global footprint, which will require significant and additional resources to comprehend and ensure compliance with applicable laws in the more than one hundred countries where Ashland conducts business.

Adverse developments in the global economy and potential disruptions of financial markets could negatively impact Ashland's customers and suppliers, and therefore have a negative impact on Ashland's results of operations.

A global or regional economic downturn may reduce customer demand or inhibit Ashland's ability to produce and sell products. Ashland's business and operating results are sensitive to global and regional economic downturns, credit market tightness, declining consumer and business confidence, fluctuating commodity prices, volatile exchange rates, changes in interest rates, sovereign debt defaults and other challenges, including those related to international sanctions and acts of aggression or threatened aggression that can affect the global economy. In the event of adverse developments or stagnation in the economy or financial markets, Ashland's customers may experience deterioration of their businesses, reduced demand for their products, cash flow shortages and difficulty obtaining financing. As a result, existing or potential customers might delay or cancel plans to purchase products and may not be able to fulfill their obligations to Ashland in a timely fashion. Further, suppliers may experience similar conditions, which could impact their ability to fulfill their obligations to Ashland. A weakening or reversal of the current economic recovery in the global economy or a substantial part of it could negatively impact Ashland's business, results of operations, financial condition and ability to grow.

Ashland may not be able to effectively protect or enforce its intellectual property rights.

Ashland relies on the patent, trademark, trade secret and copyright laws of the United States and other countries to protect its intellectual property rights. The laws of some countries may not protect Ashland's intellectual property rights to the same extent as the laws of the United States. Failure of foreign countries to have laws to protect Ashland's intellectual property rights or an inability to effectively enforce such rights in foreign countries could result in the loss of valuable proprietary information, which could have an adverse effect on Ashland's business and results of operations.

Even in circumstances where Ashland has a patent on certain technologies, such patents may not provide meaningful protection against competitors or against competing technologies. In addition, any patent applications submitted by Ashland may not result in an issued patent. There can be no assurance that Ashland's intellectual property rights will not be challenged, invalidated, circumvented or rendered unenforceable. Ashland could also face claims from third parties alleging that Ashland's products or processes infringe on their proprietary rights. If Ashland is found liable for infringement, it could be responsible for significant damages, prohibited from using certain products or processes or required to modify certain products and processes. Any such infringement liability could adversely affect Ashland's product and service offerings, profitability and results of operations.

Ashland also has substantial intellectual property associated with its know-how and trade secrets that are not protected by patent or copyright laws. Ashland protects these rights by entering into confidentiality and non-disclosure agreements with most of its employees and with third parties. There can be no assurance that such agreements will not be breached or that Ashland will be able to effectively enforce them. In addition, Ashland's trade secrets and know-how may be improperly obtained by other means, such as a breach of Ashland's information technologies security systems or direct theft. Any unauthorized disclosure of any of Ashland's material know-how or trade secrets could adversely affect Ashland's business and results of operations.

Ashland's substantial indebtedness may adversely affect its business, results of operations and financial condition.

Ashland maintains a substantial amount of debt. Ashland's substantial indebtedness could adversely affect its business, results of operations and financial condition by, among other things:

- requiring Ashland to dedicate a substantial portion of its cash flow from operations to pay principal and interest on its debt, which would reduce the availability of Ashland's cash flow to fund working capital, capital expenditures, acquisitions, execution of its growth strategy and other general corporate purposes;
- limiting Ashland's ability to borrow additional amounts to fund working capital, capital expenditures, acquisitions, debt service requirements, execution of its growth strategy and other purposes;
- making Ashland more vulnerable to adverse changes in general economic, industry and regulatory conditions and in its business by limiting Ashland's flexibility in planning for, and making it more difficult for Ashland to react quickly to, changing conditions;
- placing Ashland at a competitive disadvantage compared with those of its competitors that have less debt and lower debt service requirements;
- making Ashland more vulnerable to increases in interest rates since some of its indebtedness is subject to variable rates of interest; and
- making it more difficult for Ashland to satisfy its financial obligations.

In addition, Ashland may not be able to generate sufficient cash flow from its operations to repay its indebtedness when it becomes due and to meet its other cash needs. If Ashland is not able to pay its debts as they become due, it could be in default under its credit facility or other indebtedness. Ashland might also be required to pursue one or more alternative strategies to repay indebtedness, such as selling assets, refinancing or restructuring its indebtedness or selling additional debt or equity securities. Ashland may not be able to refinance its debt or sell additional debt or equity securities or its assets on favorable terms, if at all, and if Ashland must sell its assets, it may negatively affect its ability to generate revenues.

Ashland has incurred, and will continue to incur, substantial costs as a result of environmental, health and safety, and hazardous substances liabilities and related compliance requirements. These costs could adversely impact Ashland's cash flow, and, to the extent they exceed Ashland's established reserves for these liabilities, its results of operations.

Ashland is subject to extensive federal, state, local and foreign laws, regulations, rules and ordinances relating to pollution, protection of the environment and human health and safety, and the generation, storage, handling, treatment, disposal and remediation of hazardous substances and waste materials. Ashland has incurred, and will continue to incur, significant costs and capital expenditures to comply with these laws and regulations.

Environmental, health and safety regulations change frequently, and such regulations and their enforcement have tended to become more stringent over time. Accordingly, changes in environmental, health and safety laws and regulations and the enforcement of such laws and regulations could interrupt Ashland's operations, require modifications to its facilities or cause Ashland to incur significant liabilities, costs or losses that could adversely affect its profitability. Actual or alleged violations of environmental, health or safety laws and regulations could result in restrictions or prohibitions on plant operations as well as substantial damages, penalties, fines, civil or criminal sanctions and remediation costs. In addition, under some environmental laws, Ashland may be strictly liable and/or jointly and severally liable for environmental damages and penalties.

Ashland is also subject to various federal, state, local and foreign environmental laws and regulations that require environmental assessment or remediation efforts (collectively, environmental remediation) at multiple locations. Ashland uses engineering studies, historical experience and other factors to identify and evaluate remediation alternatives and their related costs in determining the estimated reserves for environmental remediation. Environmental remediation reserves are subject to numerous inherent uncertainties that affect Ashland's ability to estimate its share of the applicable costs. Such uncertainties involve the nature and extent of contamination at each site, the extent of required cleanup efforts under existing environmental regulations, widely varying costs of alternate cleanup methods, changes in environmental regulations, the potential effect of continuing improvements in remediation technology and the number and financial strength of other potentially responsible parties at multiparty sites. As a

result, Ashland's actual costs for environmental remediation could affect Ashland's cash flow and, to the extent costs exceed established reserves for those liabilities, its results of operations.

Ashland is responsible for, and has financial exposure to, liabilities from pending and threatened claims, including those alleging personal injury caused by exposure to asbestos, which could adversely impact Ashland's results of operations and cash flow.

There are various claims, lawsuits and administrative proceedings pending or threatened, including those alleging personal injury caused by exposure to asbestos, against Ashland and its current and former subsidiaries. Such actions are with respect to commercial matters, product liability, toxic tort liability and other matters that seek remedies or damages, some of which are for substantial amounts. While these actions are being contested, their outcome is not predictable. Ashland's results could be adversely affected by financial exposure to these liabilities. Insurance maintained by Ashland to protect against claims for damages alleged by third parties is subject to coverage limitations, depending on the nature of the risk insured. This insurance may not be sufficient to cover all of Ashland's liabilities to others. In addition, insurance related to these types of risks may not be available now or, if available, may not be available in the future at commercially reasonable rates. Ashland's ability to recover from its insurers for asbestos liabilities could also have an adverse impact on its results of operations. Projecting future asbestos costs is subject to numerous variables that are extremely difficult to predict. In addition to the significant uncertainties surrounding the number of claims that might be received, other variables include the type and severity of the disease alleged by each claimant, the long latency period associated with asbestos exposure, dismissal rates, costs of medical treatment, the impact of bankruptcies of other companies that are co-defendants in claims, uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, and the impact of potential changes in legislative or judicial standards. Furthermore, any predictions with respect to these variables are subject to even greater uncertainty as the projection period lengthens. In light of these inherent uncertainties, Ashland believes that its asbestos reserves represent the best estimate within a range of possible outcomes. As a part of the process to develop these estimates of future asbestos costs, a range of long-term cost models was developed. These models are based on national studies that predict the number of people likely to develop asbestos-related diseases and are heavily influenced by assumptions regarding long-term inflation rates for indemnity payments and legal defense costs, as well as other variables mentioned previously. Because of the inherent uncertainties in projecting future asbestos liabilities and establishing appropriate reserves, Ashland's actual asbestos costs could adversely affect its results of operations and, to the extent they exceed its reserves, could adversely affect its results of operations.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Ashland's corporate headquarters is located in Covington, Kentucky. Principal offices of other major operations are located in Wilmington, Delaware (Specialty Ingredients); Bridgewater, New Jersey (Specialty Ingredients); Dublin, Ohio (Specialty Ingredients, Composites and Intermediates and Solvents); and Shanghai, China; Hyderabad, India; Warsaw, Poland; and Schaffhausen, Switzerland (each of which are shared service centers of Ashland's business units). All of these locations are leased, except for the Wilmington, Delaware site and portions of the Dublin, Ohio facility that are owned. Principal manufacturing, marketing and other materially important physical properties of Ashland and its subsidiaries are described within the applicable business units under "Item 1" in this annual report on Form 10-K. All of Ashland's physical properties are owned or leased. Ashland believes its physical properties are suitable and adequate for the Company's business. Additional information concerning leases may be found in Note K of Notes to Consolidated Financial Statements in this annual report on Form 10-K.

ITEM 3. LEGAL PROCEEDINGS

The following is a description of Ashland's material legal proceedings.

Asbestos-Related Litigation

Ashland is subject to liabilities from claims alleging personal injury caused by exposure to asbestos. Such claims result primarily from indemnification obligations undertaken in 1990 in connection with the sale of Riley Stoker Corporation (Riley), a former subsidiary. Although Riley was neither a producer nor a manufacturer of asbestos, its industrial boilers contained some asbestos-containing components provided by other companies.

Hercules LLC (formerly Hercules Incorporated), an indirect wholly-owned subsidiary of Ashland, is also subject to liabilities from asbestos-related personal injury lawsuits involving claims which typically arise from alleged exposure to asbestos fibers from resin encapsulated pipe and tank products which were sold by one of Hercules' former subsidiaries to a limited industrial market.

Ashland and Hercules are also defendants in lawsuits alleging exposure to asbestos at facilities formerly or presently owned or operated by Ashland or Hercules.

For additional detailed information regarding liabilities arising from asbestos-related litigation, see "Management's Discussion and Analysis - Critical Accounting Policies - Asbestos Litigation" and Note O of Notes to Consolidated Financial Statements in this annual report on Form 10-K.

Environmental Proceedings

(a) *CERCLA and Similar State Law Sites* - Under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and similar state laws, Ashland and its subsidiaries may be subject to joint and several liability for cleanup costs in connection with alleged releases of hazardous substances at sites where it has been identified as a "potentially responsible party" (PRP). As of September 30, 2017, Ashland and its subsidiaries have been identified as a PRP by U.S. federal and state authorities, or by private parties seeking contribution, for the cost of environmental investigation and/or cleanup at 82 waste treatment or disposal sites. These sites are currently subject to ongoing investigation and remedial activities, overseen by the United States Environmental Protection Agency (USEPA) or a state agency, in which Ashland or its subsidiaries are typically participating as a member of a PRP group. Generally, the types of relief sought include remediation of contaminated soil and/or groundwater, reimbursement for past costs of site cleanup and administrative oversight and/or long-term monitoring of environmental conditions at the sites. The ultimate costs are not predictable with assurance.

(b) *Hattiesburg, Mississippi Resource Conservation and Recovery Act Matter* - In November 2008, the Mississippi Department of Environmental Quality (MDEQ) issued a Notice of Violation to Hercules' now-closed Hattiesburg, Mississippi manufacturing facility alleging that a process water impoundment basin at the facility had been operated as a hazardous waste storage and treatment facility without a permit in violation of the Resource Conservation and Recovery Act. In May 2011, the USEPA issued an inspection report from a September 2010 inspection with allegations similar to those of the MDEQ and promulgated an information request. Ashland has been working with the MDEQ and USEPA to settle this matter in the context of the shutdown and ongoing remediation of the Hattiesburg facility. The USEPA proposed a settlement penalty in excess of \$100,000. While it is reasonable to believe that this matter will involve a penalty from the MDEQ and/or the USEPA exceeding \$100,000, the potential penalty with respect to this enforcement matter should not be material to Ashland.

(c) *Lower Passaic River, New Jersey Matters* - Ashland, through two formerly owned facilities, and ISP, through a now-closed facility, have been identified as PRPs, along with approximately 70 other companies (the Cooperating Parties Group or the CPG), in a May 2007 Administrative Order of Consent (AOC) with the USEPA. The parties are required to perform a remedial investigation and feasibility study (RI/FS) of the entire 17 miles of the Passaic River. In June 2007, the USEPA separately commenced a Focused Feasibility Study (FFS) as an interim measure. In accordance with the 2007 AOC, in June 2012 the CPG voluntarily entered into another AOC for an interim removal action focused solely at mile 10.9 of the Passaic River. The allocations for the 2007 AOC and the 2012 removal action are based on interim allocations, are immaterial and have been accrued. In April 2014, the USEPA released the FFS. The CPG submitted the Draft RI/FS Report on April 30, 2015. The USEPA has released the FFS Record of Decision for the lower 8 miles and reached an agreement with Occidental to conduct and pay for the remedial design. The USEPA has advised that it will be working to secure similar agreements with other PRPs. The release of the FFS Record of Decision did not have a material adverse impact on Ashland's business and financial operations; however, there are a number of contingencies in the future that could possibly have a material impact including adverse rulings or verdicts, allocation proceedings and related orders.

For additional information regarding environmental matters and reserves, see Note O of Notes to Consolidated Financial Statements in this annual report on Form 10-K.

Other Pending Legal Proceedings

In addition to the matters described above, there are other various claims, lawsuits and administrative proceedings pending or threatened against Ashland and its current and former subsidiaries. Such actions are with respect to commercial matters, product liability, toxic tort liability and other environmental matters which seek remedies or damages, some of which are for substantial amounts. While Ashland cannot predict with certainty the outcome of such actions, it believes that adequate reserves have been recorded and losses already recognized with respect to such actions were immaterial as of September 30, 2017. There is a reasonable possibility that a loss exceeding amounts already recognized may be incurred related to these actions; however, Ashland believes that such potential losses were immaterial as of September 30, 2017.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM X. EXECUTIVE OFFICERS OF ASHLAND

The following is a list of Ashland's current executive officers, their ages and their positions and offices during the last five years (listed alphabetically after Ashland's Senior Vice Presidents).

WILLIAM A. WULFSOHN (age 55) is Chairman and Chief Executive Officer of Ashland Global Holdings Inc. since September 2016 and held the same positions at Ashland Inc. since January 1, 2015. Prior to joining Ashland, Mr. Wulfsohn served as President and Chief Executive Officer of Carpenter Technology Corp., a manufacturer of stainless steel, titanium, and other specialty metals and engineered products, from July 2010 to November 2014. Mr. Wulfsohn also served as a Director for Carpenter Technology Corp. from April 2009 to November 2014. Mr. Wulfsohn serves as a director of PolyOne Corporation and as a director of Valvoline Inc.

J. KEVIN WILLIS (age 52) is Senior Vice President and Chief Financial Officer of Ashland Global Holdings Inc. since September 2016. Mr. Willis held the same positions at Ashland Inc. and served in such capacities since May 2013. Mr. Willis served as Vice President of Finance and Controller for the Specialty Ingredients business unit from August 2011 until May 2013.

PETER J. GANZ (age 55) is Senior Vice President, General Counsel and Secretary of Ashland Global Holdings Inc. and has served as Senior Vice President and General Counsel of Ashland Inc. since July 2011 and Secretary since November 2012. From July 2011 to August 2016, Mr. Ganz served as Chief Compliance Officer of Ashland Inc.

ANNE T. SCHUMANN (age 57) is Senior Vice President, Chief Human Resources and Information Technology Officer of Ashland Global Holdings Inc. since March 2017. Prior to this role, Ms. Schumann served as the Vice President and Chief Information and Administrative Services Officer of Ashland Global Holdings Inc. and served in the same capacities with Ashland Inc. since 2008 and 2009, respectively.

J. WILLIAM HEITMAN (age 63) is Vice President and Controller of Ashland Global Holdings Inc. and has served in such capacities with Ashland Inc. since 2008.

KEITH C. SILVERMAN (age 50) is Vice President, Global Operations, Quality and Environmental Health and Safety of Ashland Global Holdings Inc. and served in similar capacities at Ashland Inc. since June 2012. Prior to joining Ashland, he spent a number of years at Merck & Co., Inc., a pharmaceutical company, where he held various positions of increasing responsibility in research and development as well as in global safety and the environment.

Each executive officer is elected by the Board of Directors of Ashland to a term of one year, or until a successor is duly elected, at the annual meeting of the Board of Directors, except in those instances where the officer is elected other than at an annual meeting of the Board of Directors, in which case his or her tenure will expire at the next annual meeting of the Board of Directors unless the officer is re-elected.

PART II

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

On September 20, 2016, Ashland Inc. became an indirect wholly owned subsidiary of Ashland Global Holdings Inc., and Ashland Inc.'s common stock ceased trading on the New York Stock Exchange (NYSE). Ashland Global Holdings Inc.'s common stock began trading on NYSE under the symbol "ASH" on September 20, 2016. See Quarterly Financial Information on page F-58 for information relating to market price and dividends of Ashland's Common Stock.

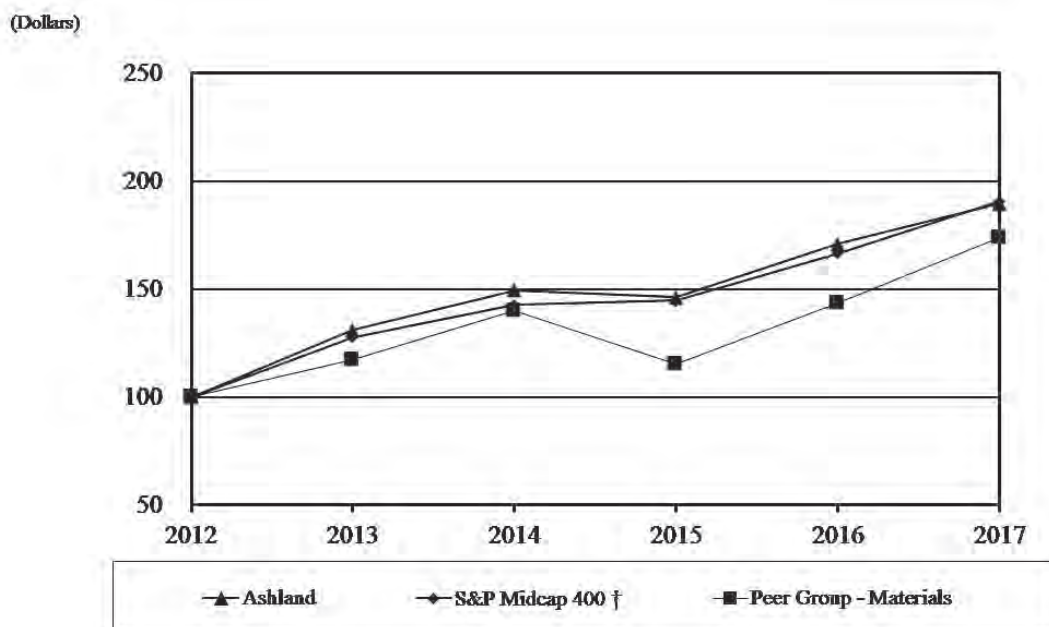
At October 31, 2017, there were approximately 11,400 holders of record of Ashland's Common Stock. Ashland Common Stock is listed on the NYSE (ticker symbol ASH) and has trading privileges on Nasdaq.

There were no sales of unregistered securities required to be reported under Item 5 of Form 10-K.

FIVE-YEAR TOTAL RETURN PERFORMANCE GRAPH

The following graph compares Ashland's five-year cumulative total shareholder return with the cumulative total return of the S&P MidCap 400[†] index and one peer group of companies. Ashland is listed in the S&P MidCap 400[†] index. The cumulative total shareholder return assumes the reinvestment of dividends. On May 12, 2017, Ashland completed the final separation of Valvoline Inc. with the pro rata distribution of 2.745338 shares of Valvoline Inc. common stock for every share of Ashland Common Stock to Ashland stockholders. The effect of the final separation of Valvoline Inc. is reflected in the cumulative total return of Ashland Common Stock as a reinvested dividend.

COMPARISON OF FIVE-YEAR CUMULATIVE TOTAL RETURN ASHLAND, S&P MIDCAP 400[†] INDEX AND PEER GROUP



	2012	2013	2014	2015	2016	2017
Ashland	100	131	149	146	171	189
S&P MidCap 400[†]	100	128	143	145	167	190
Peer Group - Materials	100	117	140	115	144	174

The peer group consists of the following industry indices:

- *Peer Group – Materials*: S&P 500[†] Materials (large-cap) and S&P MidCap 400[†] Materials. As of September 30, 2017, this peer group consisted of 54 companies.

Purchase of Company Common Stock

Share repurchase activity during the three months ended September 30, 2017 was as follows:

Q4 Fiscal Periods	Total Number of Shares Purchased	Average Price Paid per Share, including commission	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs (in millions) (a)
July 1, 2017 to July 31, 2017	—	\$ —	—	\$ 500
August 1, 2017 to August 31, 2017:				
Employee tax withholdings	13,014 (b)	61.12	—	500
September 1, 2017 to September 30, 2017:				
Employee tax withholdings	6,748 (b)	64.53	—	500
Total.....	<u>19,762</u>		<u>—</u>	<u>\$ 500</u>

(a) In April 2015, the Company's Board of Directors authorized a program to repurchase up to \$1 billion of the Company's stock, with the authorization expiring December 31, 2017. In September 2017, the Company's Board of Directors renewed the program for the remaining \$500 million. The Company's share repurchase program does not obligate it to acquire any specific number of shares. Under the program, shares may be repurchased in privately negotiated and/or open market transactions, including under plans complying with Rule 10b5-1 of the Exchange Act. As of September 30, 2017, \$500 million remains available for repurchase under this authorization.

(b) Shares withheld from employees to cover their withholding requirements for personal income taxes related to the vesting of restricted stock.

ITEM 6. SELECTED FINANCIAL DATA

See Five-Year Selected Financial Information on page F-59.

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

See Management's Discussion and Analysis of Financial Condition and Results of Operations on pages M-1 through M-38.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

See Quantitative and Qualitative Disclosures about Market Risk on page M-37.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The consolidated financial statements of Ashland presented in this annual report on Form 10-K are listed in the index on page F-1.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures – As of September 30, 2017, Ashland, under the supervision and with the participation of Ashland’s management, including Ashland’s Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of Ashland’s disclosure controls and procedures as defined in Exchange Act Rules 13a-15(e) and 15d-15(e). Based upon that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective as of September 30, 2017.

Internal Control over Financial Reporting - See Management’s Report on Internal Control Over Financial Reporting on page F-2 and the Reports of the Independent Registered Public Accounting Firm on pages F-3 and F-4.

Changes in Internal Control over Financial Reporting - During fiscal 2017, Ashland completed its purchase of Pharmachem. Although management believes appropriate internal controls and procedures have been maintained, Pharmachem’s controls and procedures for the recording, processing, and summarizing of financial information have not been fully evaluated by Ashland’s management as of September 30, 2017. As such, there is a risk that deficiencies may exist and not yet be identified that could constitute significant deficiencies or in the aggregate, a material weakness related to Pharmachem’s businesses. Otherwise, there have been no changes in Ashland’s internal control over financial reporting that occurred during the quarter ended September 30, 2017 that have materially affected, or are reasonably likely to materially affect, Ashland’s internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

There is hereby incorporated by reference the information to appear under the caption “Proposal One - Election of Directors” in Ashland’s Proxy Statement, which will be filed with the SEC within 120 days after September 30, 2017. See also the list of Ashland’s executive officers and related information under “Executive Officers of Ashland” in Part I - Item X in this annual report on Form 10-K.

There is hereby incorporated by reference the information to appear under the caption “Corporate Governance - Governance Principles” in Ashland’s Proxy Statement.

There is hereby incorporated by reference the information to appear under the caption “Corporate Governance - Stockholder Nominations of Directors” in Ashland’s Proxy Statement.

There is hereby incorporated by reference the information to appear under the caption “Audit Committee Report” regarding Ashland’s audit committee and audit committee financial experts, as defined under Item 407(d)(4) and (5) of Regulation S-K in Ashland’s Proxy Statement.

There is hereby incorporated by reference the information to appear under the caption “Corporate Governance - Section 16(a) Beneficial Ownership Reporting Compliance” in Ashland’s Proxy Statement.

ITEM 11. EXECUTIVE COMPENSATION

There is hereby incorporated by reference the information to appear under the captions “Compensation of Directors,” “Corporate Governance - Compensation Committee Interlocks and Insider Participation,” and “Executive Compensation,” in Ashland’s Proxy Statement.

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

There is hereby incorporated by reference the information to appear under the captions “Ashland Common Stock Ownership of Certain Beneficial Owners,” “Ashland Common Stock Ownership of Directors and Executive Officers of Ashland” and “Proposal Four - Approval of Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan - Equity Compensation Plan Information” in Ashland’s Proxy Statement.

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

There is hereby incorporated by reference the information to appear under the captions “Corporate Governance - Director Independence and Certain Relationships,” “Corporate Governance - Related Person Transaction Policy,” and “Audit Committee Report” in Ashland’s Proxy Statement.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

There is hereby incorporated by reference the information with respect to principal accounting fees and services to appear under the captions “Audit Committee Report” and “Proposal Two - Ratification of Independent Registered Public Accountants” in Ashland’s Proxy Statement.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) Documents filed as part of this Report

- (1) Financial Statements; and
- (2) See Item 15(b) in this annual report on Form 10-K

The consolidated financial statements of Ashland presented in this annual report on Form 10-K are listed in the index on page F-1.

Schedules other than that listed above have been omitted because of the absence of the conditions under which they are required or because the information required is shown in the consolidated financial statements or the notes thereto. Separate financial statements of unconsolidated affiliates are omitted because each company does not constitute a significant subsidiary using the 20% tests when considered individually. Summarized financial information for all unconsolidated affiliates is disclosed in Note E of Notes to Consolidated Financial Statements.

(b) Documents required by Item 601 of Regulation S-K

- 2.1 – Stock and Asset Purchase Agreement, dated as of February 18, 2014, between Ashland Inc. and CD&R Seahawk Bidco, LLC (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on February 24, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 2.2 – Sale and Purchase Agreement related to the ASK Chemicals Group, dated April 8, 2014, among Ashland Inc., Ashland International Holdings, Inc., Clariant Produkte (Deutschland) GmbH, Clariant Corp., mertus 158. GmbH, Ascot US Bidco Inc. and Ascot UK Bidco Limited (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on April 14, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 2.3 – Agreement and Plan of Merger dated May 31, 2016, by and among Ashland Inc., Ashland Global Holdings Inc. and Ashland Merger Sub Corp. (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on May 31, 2016 (SEC File No. 001-32532), and incorporated herein by reference).
- 3.1 – Amended and Restated Articles of Incorporation of Ashland Global Holdings Inc. (filed as Exhibit 3.1 to Ashland’s Form 8-K filed on September 20, 2016 (SEC File No. 001-32532), and incorporated by reference herein).
- 3.2 – Amended and Restated By-laws of Ashland Global Holdings Inc. (filed as Exhibit 3.1 to Ashland’s Form 8-K filed November 17, 2017 (SEC File No. 333-211719), and incorporated by reference herein).
- 4.1 – Ashland agrees to provide the SEC, upon request, copies of instruments defining the rights of holders of long-term debt of Ashland and all of its subsidiaries for which consolidated or unconsolidated financial statements are required to be filed with the SEC.
- 4.2 – Indenture, dated as of August 15, 1989, as amended and restated as of August 15, 1990, between Ashland Inc. and Citibank, N.A., as Trustee (filed as Exhibit 4.2 to Ashland’s Form 10-K for the fiscal year ended September 30, 2008 (SEC File No. 001-32532), and incorporated herein by reference).

- 4.3 – Agreement of Resignation, Appointment and Acceptance, dated as of November 30, 2006, by and among Ashland Inc., Wilmington Trust Company (Wilmington) and Citibank, N.A. (Citibank) whereby Wilmington replaced Citibank as Trustee under the Indenture dated as of August 15, 1989, as amended and restated as of August 15, 1990, between Ashland Inc. and Citibank (filed as Exhibit 4 to Ashland's Form 10-Q for the quarter ended December 31, 2006 (SEC File No. 001-32532), and incorporated herein by reference).
- 4.4 – Indenture, dated May 27, 2009, by and among Ashland Inc., the Guarantors and U.S. Bank National Association (filed as Exhibit 4.1 to Ashland's Form 10-Q for the quarter ended June 30, 2009 (SEC File No. 001-32532), and incorporated herein by reference).
- 4.5 – Warrant Agreement dated July 27, 1999 between Hercules and The Chase Manhattan Bank, as warrant agent (filed as Exhibit 4.4 to Hercules' Form 8-K filed on July 28, 1999 (SEC File No. 001-00496), and incorporated herein by reference).
- 4.6 – Form of Series A Junior Subordinated Deferrable Interest Debentures (filed as Exhibit 4.5 to Hercules' Form 8-K filed on July 28, 1999 (SEC File No. 001-00496), and incorporated herein by reference).
- 4.7 – Form of CRESTSM Unit (filed as Exhibit 4.7 to Hercules' Form 8-K filed on July 28, 1999 (SEC File No. 001-00496), and incorporated herein by reference).
- 4.8 – Form of Warrant (filed as Exhibit 4.8 to Hercules' Form 8-K filed on July 28, 1999 (SEC File No. 001-00496), and incorporated herein by reference).
- 4.9 – Form of \$100,000,000 6.6% Debenture due August 27, 2027 (filed as Exhibit 4.2 to Hercules' Form 8-K filed on July 30, 1997 (SEC File No. 001-00496), and incorporated herein by reference).
- 4.10 – Indenture, dated as of August 7, 2012, between Ashland Inc. and U.S. Bank N.A., as Trustee (filed as Exhibit 4.1 to Ashland's Form 8-K filed on September 21, 2012 (SEC File No. 001-32532), and incorporated herein by reference).
- 4.11 – First Supplemental Indenture, dated as of February 26, 2013, between Ashland Inc. and U.S. Bank National Association, as Trustee, in respect of the senior notes due 2022 (filed as Exhibit 4.11 to Ashland's Form 10-K for the fiscal year ended September 30, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 4.12 – Indenture, dated as of February 26, 2013, between Ashland Inc. and U.S. Bank National Association, as Trustee (filed as Exhibit 4.3 to Ashland's Form 8-K filed on February 27, 2013 (SEC File No. 001- 32532), and incorporated herein by reference).
- 4.13 – First Supplemental Indenture, dated as of February 26, 2013, between Ashland Inc. and U.S. Bank National Association, as Trustee, in respect of the senior notes due 2016, 2018 and 2043 (filed as Exhibit 4.4 to Ashland's Form 8-K filed on February 27, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 4.14 – Second Supplemental Indenture, dated as of March 14, 2013, between Ashland Inc. and U.S. Bank National Association, as Trustee, in respect of the senior notes due 2043 (filed as Exhibit 4.2 to Ashland's Form 8-K filed on March 18, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 4.15 – Second Supplemental Indenture dated October 19, 2016, among Ashland LLC, Ashland Global Holdings Inc. and US Bank National Association, to the Indenture dated as of August 7, 2012 between Ashland LLC and US Bank National Association (filed as Exhibit 4.1 to Ashland's Form 8-K filed on October 20, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 4.16 – Third Supplemental Indenture dated October 19, 2016, among Ashland LLC, Ashland Global Holdings Inc. and US Bank National Association, to the Indenture dated as of February 27, 2013 between Ashland LLC and US Bank National Association (filed as Exhibit 4.2 to Ashland's Form 8-K filed on October 20, 2016 (SEC File No. 333-211719), and incorporated herein by reference).

The following Exhibits 10.1 through 10.46 are contracts or compensatory plans or arrangements or management contracts required to be filed as exhibits pursuant to Items 601(b)(10)(ii)(A) and 601(b)(10)(iii)(A) and (B) of Regulation S-K.

- 10.1 – Ashland Inc. Deferred Compensation Plan for Non-Employee Directors and Amendment No. 1 (filed as Exhibit 10.5 to Ashland’s Form 10-Q for the quarter ended December 31, 2004 (SEC File No. 001-02918), and incorporated herein by reference).
- 10.2 – Ashland Inc. Deferred Compensation Plan and Amendment No. 1 (filed as Exhibit 10.3 to Ashland’s Form 10-Q for the quarter ended December 31, 2004 (SEC File No. 001-02918), and incorporated herein by reference).
- 10.3 – Amended and Restated Ashland Global Holdings Inc. Deferred Compensation Plan for Employees (2005) effective as of January 1, 2017 (filed as Exhibit 10.3 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.4 – Amended and Restated Ashland Inc. Deferred Compensation Plan for Non-Employee Directors (2005) (filed as Exhibit 10.4 to Ashland’s Form 10-K for the fiscal year ended September 30, 2008 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.5 – Amendment to the Amended and Restated Ashland Inc. Deferred Compensation Plan for Non-Employee Directors (2005) (filed as Exhibit 10.4 to Ashland’s Form 10-Q for the quarter ended March 31, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.6 – Amended and Restated Ashland Global Holdings Inc. Deferred Compensation Plan for Non-Employee Directors (2005) effective as of January 1, 2017 (filed as Exhibit 10.4 to Ashland’s Form 10-Q for the quarter ended December 31, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.7 – Ashland Supplemental Defined Contribution Plan for Certain Employees (filed as Exhibit 10.3 to Ashland’s Form 10-Q for the quarter ended March 31, 2011 (SEC File No. 001-32532), and incorporated herein by reference) (Frozen).
- 10.8 – Ashland Inc. Supplemental Defined Contribution Plan for Certain Employees effective January 1, 2015 (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on May 18, 2015 (SEC File No. 001-32532), and incorporated herein by reference) (Frozen).
- 10.9 – Form of Chief Executive Officer Change in Control Agreement (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on October 9, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.10 – Form of Executive Officer Change in Control Agreement (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on October 9, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.11 – Amended and Restated Ashland Inc. Incentive Plan (filed as Exhibit 10.17 to Ashland’s Form 10-K for the fiscal year ended September 30, 2009 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.12 – 2006 Ashland Inc. Incentive Plan (filed as Exhibit 10 to Ashland’s Form 10-Q for the quarter ended December 31, 2005 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.13 – Amended and Restated 2011 Ashland Inc. Incentive Plan (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on February 1, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.14 – Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (filed as Exhibit 10.21 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.15 – Form of Stock Appreciation Rights Award Agreement under the Amended and Restated 2011 Ashland Inc. Incentive Plan (filed as Exhibit 10.16 to Ashland’s Form 10-K for the fiscal year ended September 30, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.16 – Form of Performance Unit (LTIP) Award Agreement under the Amended and Restated 2011 Ashland Inc. Incentive Plan (filed as Exhibit 10.17 to Ashland’s Form 10-K for the fiscal year ended September 30, 2014 (SEC File No. 001-32532), and incorporated herein by reference).

- 10.17 – Form of Restricted Stock Award Agreement under the Amended and Restated 2011 Ashland Inc. Incentive Plan (filed as Exhibit 10.18 to Ashland’s Form 10-K for the fiscal year ended September 30, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.18 – Form of Restricted Stock Unit Agreement under the Amended and Restated 2011 Ashland Inc. Incentive Plan (filed as Exhibit 10.19 to Ashland’s Form 10-K for the fiscal year ended September 30, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.19 – Form of Restricted Stock Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (filed as Exhibit 10.5 to Ashland’s Form 10-Q for the quarter ended March 31, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.20 – Form of Restricted Stock Unit Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (filed as Exhibit 10.6 to Ashland’s Form 10-Q for the quarter ended March 31, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.21 – Form of Stock Appreciation Rights Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (filed as Exhibit 10.7 to Ashland’s Form 10-Q for the quarter ended March 31, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.22 – Form of Performance Unit (LTIP) Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (filed as Exhibit 10.8 to Ashland’s Form 10-Q for the quarter ended March 31, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.23 – Form of Restricted Stock Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (Double-Trigger Form) (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on July 20, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.24 – Letter Agreement between Ashland and Luis Fernandez-Moreno dated November 4, 2013 (filed as Exhibit 10.23 to Ashland’s Form 10-K for the fiscal year ended September 30, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.25 – Separation Agreement and General Release between Ashland and Luis Fernandez-Moreno dated February 28, 2017 (filed as Exhibit 10.4 to Ashland’s Form 10-Q for the quarter ended March 31, 2017 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.26 – Confidentiality, Non-Competition and Non-Solicitation Agreement between Ashland and Luis Fernandez-Moreno dated February 28, 2017 (filed as Exhibit 10.6 to Ashland’s Form 10-Q for the quarter ended March 31, 2017 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.27 – Letter Agreement between Ashland and William A. Wulfsohn, dated November 12, 2014 (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on November 17, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.28 – Separation Agreement and General Release between Ashland and Susan B. Esler dated October 1, 2015 (filed as Exhibit 10.40 to Ashland’s Form 10-K for the fiscal year ended September 30, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.29 – Separation Agreement and General Release between Ashland and Walter H. Solomon dated October 1, 2015 (filed as Exhibit 10.41 to Ashland’s Form 10-K for the fiscal year ended September 30, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.30 – Separation Agreement and General Release between Ashland and Gregory Elliott dated February 28, 2017 (filed as Exhibit 10.5 to Ashland’s Form 10-Q for the quarter ended March 31, 2017 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.31 – Form of Performance-Based Restricted Stock Award Agreement (filed as Exhibit 10.3 to Ashland’s Form 8-K filed on October 9, 2015 (SEC File No. 001-32532), and incorporated herein by reference).

- 10.32 – Form of Retention Award Agreement for certain Executive Officers (filed as Exhibit 10.43 to Ashland’s Form 10-K for the fiscal year ended September 30, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.33 – Form of Restricted Stock Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (Double-Trigger Form) (filed as Exhibit 10.37 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.34 – Form of Restricted Stock Unit Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (Double-Trigger Form) (filed as Exhibit 10.38 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.35 – Form of Stock Appreciation Rights Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (Double-Trigger Form) (filed as Exhibit 10.39 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.36 – Form of Performance Unit (LTIP) Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (Double-Trigger Form) (filed as Exhibit 10.40 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.37 – Form of Indemnification Agreement between Ashland and members of its Board of Directors (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on September 20, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.38 – Amendment to Ashland Inc. Supplemental Defined Contribution Plan for Certain Employees dated September 30, 2016 (Plan Freeze) (filed as Exhibit 10.43 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.39 – Ashland Severance Pay Plan effective as of August 1, 2016 (filed as Exhibit 10.48 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.40 – Ashland Severance Pay Plan effective as of January 1, 2017 (filed as Exhibit 10.49 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.41 – Ashland Global Holdings Inc. Non-Qualified Defined Contribution Plan, as amended (filed as Exhibit 10.1 to Ashland’s Form 10-Q for the quarter ended March 31, 2017 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.42 – Form of Cash-Settled Performance Unit (LTIP) Award Agreement under the Amended and Restated Ashland Global Holdings Inc. Incentive Plan (Double-Trigger Form) (filed as Exhibit 10.59 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.43 – Amended and Restated Hercules Deferred Compensation Plan effective January 1, 2008 (filed as Exhibit 10.8 to Ashland’s Form 10-K for the fiscal year ended on September 30, 2010 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.44 – Amendment to the Amended and Restated Hercules Deferred Compensation Plan dated September 30, 2016 (annuity cash-out) (filed as Exhibit 10.61 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.45 – Amended and Restated Ashland Inc. Deferred Compensation Plan for Employees (2005) (filed as Exhibit 10.3 to Ashland’s Form 10-K for the fiscal year ended September 30, 2008 (SEC File No. 001-32532) and incorporated herein by reference).

- 10.46 – Stock Purchase Agreement dated as of May 30, 2011, entered into by and among The Samuel J. Heyman 1981 Continuing Trust for Lazarus S. Heyman, The Samuel J. Heyman 1981 Continuing Trust for Eleanor S. Heyman, The Samuel J. Heyman 1981 Continuing Trust for Jennifer L. Heyman, The Samuel J. Heyman 1981 Continuing Trust for Elizabeth D. Heyman, The Lazarus S. Heyman Age 50 Trust for Assets Appointed Under Will of Lazarus S. Heyman, The Eleanor S. Heyman Age 50 Trust for Assets Appointed Under Will of Lazarus S. Heyman, The Jennifer L. Heyman Age 50 Trust for Assets Appointed Under Will of Lazarus S. Heyman, The Elizabeth D. Heyman Age 50 Trust for Assets Appointed Under Will of Lazarus S. Heyman, The Horizon Holdings Residual Trust, RFH Investment Holdings LLC, Ashland and Ronnie F. Heyman, as representative of the Seller Parties (filed as Exhibit 2.1 to Ashland's Form 8-K filed on May 31, 2011 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.47 – Transfer and Administration Agreement, dated as of August 31, 2012, among CVG Capital III LLC, Ashland Inc., Hercules Incorporated, Aqualon Company, ISP Technologies Inc., ISP Synthetic Elastomers LLC, and each other entity from time to time party thereto as an Originator, as Originators, Ashland Inc., as initial Master Servicer, each of Liberty Street Funding LLC, Market Street Funding LLC and Gotham Funding Corporation, as Conduit Investors and Uncommitted Investors, The Bank of Nova Scotia, as the Agent, a Letter of Credit Issuer, a Managing Agent, an Administrator and a Committed Investor, and the Letter of Credit Issuers, Managing Agents, Administrators, Uncommitted Investors and Committed Investors parties thereto from time to time (filed as Exhibit 10.1 to Ashland's Form 8-K filed on September 7, 2012 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.48 – Sale Agreement, dated as of August 31, 2012, among Ashland Inc., Hercules Incorporated, Aqualon Company, ISP Technologies Inc., ISP Synthetic Elastomers LLC and CVG Capital III LLC (filed as Exhibit 10.2 to Ashland's Form 8-K filed on September 7, 2012 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.49 – Amended and Restated Parent Undertaking, dated as of November 18, 2016, by Ashland LLC and Ashland Global Holdings Inc., as Guarantors, in favor of The Bank of Nova Scotia as Agent and the Secured Parties (filed as Exhibit 10.1 to Ashland's Form 10-Q for the quarter ended December 31, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.50 – First Amendment to Transfer and Administration Agreement, dated as of April 30, 2013, among Ashland Inc., CVG Capital III LLC, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and the Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.2 to Ashland's Form 10-Q for the quarter ended June 30, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.51 – Omnibus Amendment to Transfer and Administration Agreement, dated as of August 21, 2013, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and the Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.34 to Ashland's Form 10-K for the fiscal year ended September 30, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.52 – Third Amendment to Transfer and Administration Agreement, dated as of October 15, 2013, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and the Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.35 to Ashland's Form 10-K for the fiscal year ended September 30, 2013 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.53 – Fourth Amendment to Transfer and Administration Agreement, dated as of June 30, 2014, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and the Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.1 to Ashland's Form 10-Q for the quarter ended June 30, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.54 – Receivables Assignment Agreement, dated as of November 25, 2014, among Ashland Inc., as originator and master servicer, CVG Capital III LLC, Ashland Specialty Ingredients G.P., the Investors, Letter of Credit Issuers, Managing Agent and Administrators party thereto, and the Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.4 to Ashland's Form 10-Q for the quarter ended December 31, 2014 (SEC File No. 001-32532), and incorporated herein by reference).

- 10.55 – Sixth Amendment to Transfer and Administration Agreement, dated as of November 25, 2014, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and the Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.5 to Ashland's Form 10-Q for the quarter ended December 31, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.56 – Seventh Amendment dated as of August 28, 2015 to the Transfer and Administration Agreement dated as of August 31, 2012, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.1 to Ashland's Form 8-K filed on September 2, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.57 – Eighth Amendment dated as of September 30, 2015 to the Transfer and Administration Agreement as of August 31, 2012, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.1 to Ashland's Form 8-K filed on October 6, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.58 – First Amendment to Sale Agreement, dated as of June 30, 2014, among Ashland Inc., Hercules Incorporated, Ashland Specialty Ingredients G.P., ISP Technologies Inc., Ashland Elastomers LLC and CVG Capital III LLC (filed as Exhibit 10.2 to Ashland's Form 10-Q for the quarter ended June 30, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.59 – Originator Removal Agreement and Facility Amendment, dated as of July 28, 2014, by and among Ashland, Hercules Incorporated, Ashland Specialty Ingredients G.P., ISP Technologies Inc., Ashland Elastomers LLC, CVG Capital III LLC, the Investors, the Letter of Credit Issuers, Managing Agents and Administrators party thereto, and the Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.1 to Ashland's Form 8-K filed on August 1, 2014 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.60 – Ninth Amendment dated as of December 22, 2015 to the Transfer and Administration Agreement dated as of August 31, 2012, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.1 to Ashland's Form 8-K filed on December 28, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.61 – Tenth Amendment dated as of March 24, 2016 to the Transfer and Administration Agreement dated as of August 31, 2012, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as Agent for the Investors. (filed as Exhibit 10.1 to Ashland's Form 10-Q for the quarter ended March 31, 2016 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.62 – Eleventh Amendment dated as of August 1, 2016, to the Transfer and Administration Agreement dated as of August 31, 2012, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.80 to Ashland's Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.63 – Second Amendment dated as of August 1, 2016, to Sale Agreement, dated as of August 31, 2012, among Ashland Inc., Ashland Specialty Ingredients G.P., Valvoline LLC and CVG Capital III LLC (filed as Exhibit 10.81 to Ashland's Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.64 – Third Amendment dated as of November 18, 2016, to Sale Agreement dated as of August 31, 2012 among Ashland LLC, Ashland Specialty Ingredients G.P., each an Originator, and CVG Capital III LLC, as SPV (filed as Exhibit 10.2 to Ashland's Form 10-Q for the quarter ended December 31, 2016 (SEC File No. 333-211719), and incorporated herein by reference).

- 10.65 – Twelfth Amendment dated as of September 15, 2016 to the Transfer and Administration Agreement dated as of August 31, 2012, among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.3 to Ashland's Form 8-K filed on September 20, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.66 – Thirteenth Amendment dated as of November 18, 2016 to the Transfer and Administration Agreement dated as of August 31, 2012 among Ashland LLC, as Master Servicer, CVG Capital III LLC, as SPV, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.3 to Ashland's Form 10-Q for the quarter ended December 31, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.67 – Fourteenth Amendment dated as of March 21, 2017 to the Transfer and Administration Agreement dated as of August 31, 2012 among Ashland LLC, as Master Servicer, CVG Capital III LLC, as SPV, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.1 to Ashland's Form 8-K filed on March 27, 2017 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.68 – Fifteenth Amendment dated as of May 17, 2017 to the Transfer and Administration Agreement dated as of August 31, 2012 among Ashland LLC, as Master Servicer, CVG Capital III LLC, as SPV, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.6 to Ashland's Form 10-Q for the quarter ended June 30, 2017 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.69 – Originator Removal Agreement and Facility Amendment among Ashland Inc., CVG Capital III LLC, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors (filed as Exhibit 10.4 to Ashland's Form 8-K filed on September 20, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.70 – Originator Joinder Agreement dated as of August 1, 2016, by and among Ashland Inc., Valvoline LLC, the Investors, the Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as Agent for the Investors (filed as Exhibit 10.84 to Ashland's Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.71** – Sixteenth Amendment dated as of July 31, 2017 to the Transfer and Administration Agreement dated as of August 31, 2012 among Ashland LLC, as Master Servicer, CVG Capital III LLC, as SPV, the Originators, the Investors, Letter of Credit Issuers, Managing Agents and Administrators party thereto, and The Bank of Nova Scotia, as agent for the Investors.
- 10.72 – Master Confirmation - Uncollared Accelerated Share Repurchase, dated November 17, 2015, between Ashland Inc. and Goldman, Sachs & Co. (filed as Exhibit 10.1 to Ashland's Form 8-K filed on November 18, 2015 (SEC File No. 001-32532), and incorporated herein by reference).
- 10.73 – Credit Agreement, dated as of May 17, 2017, among Ashland LLC, as Borrower, The Bank of Nova Scotia, as Administrative Agent, Swing Line Lender and an L/C Issuer, each Lender and L/C Issuer party thereto and the other agents party thereto (filed as Exhibit 10.1 to Ashland's Form 8-K filed on May 18, 2017 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.74 – Amendment No. 1 dated as of May 19, 2017, among Ashland LLC, as Borrower (the "Borrower"), certain subsidiaries of the Borrower, The Bank of Nova Scotia, as Administrative Agent (the "Administrative Agent"), and Citibank, N.A., as the Incremental Revolving Credit Lender, to the Credit Agreement dated as of May 17, 2017, among the Borrower, the Administrative Agent, each lender and letter of credit issuer party thereto and the other agents party thereto (filed as Exhibit 10.1 to Ashland's Form 8-K filed on May 22, 2017 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.75 – Amendment No. 2 dated as of June 14, 2017, among Ashland LLC, as Borrower (the "Borrower"), certain subsidiaries of the Borrower, The Bank of Nova Scotia, as Administrative Agent (the "Administrative Agent"), and Citibank, N.A., as the Term B Lender, to the Credit Agreement dated as of May 17, 2017, among the Borrower, the Administrative Agent, each lender and letter of credit issuer party thereto and the other agents party thereto (filed as Exhibit 10.1 to Ashland's Form 8-K filed on June 14, 2017 (SEC File No. 333-211719) and incorporated herein by reference).

- 10.76 – Assumption Agreement dated September 20, 2016, by and between Ashland Global Holdings Inc. and Ashland Inc. (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on September 20, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.77 – Separation Agreement dated as of September 22, 2016, between and among Ashland Global Holdings Inc. and Valvoline Inc. (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on September 28, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.78 – Transition Services Agreement dated as of September 22, 2016, between and among Ashland Global Holdings Inc. and Valvoline Inc. (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on September 28, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.79 – Reverse Transition Services Agreement dated as of September 22, 2016, between and among Ashland Global Holdings Inc. and Valvoline Inc. (filed as Exhibit 10.3 to Ashland’s Form 8-K filed on September 28, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.80 – Tax Matters Agreement dated as of September 22, 2016, between and among Ashland Global Holdings Inc. and Valvoline Inc. (filed as Exhibit 10.4 to Ashland’s Form 8-K filed on September 28, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.81 – Employee Matters Agreement dated as of September 22, 2016, between and among Ashland Global Holdings Inc. and Valvoline Inc. (filed as Exhibit 10.5 to Ashland’s Form 8-K filed on September 28, 2016 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.82 – Stock Purchase Agreement, dated April 14, 2017, by and among Ashland LLC, Pharmachem Laboratories, Inc., the holders of common stock of Pharmachem Laboratories, Inc., Dr. David Peele, and Photon SH Representative LLC, solely as the shareholders’ representative (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on May 18, 2017 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.83 – Amendment No. 1 to the Stock Purchase Agreement, dated May 16, 2017, by and among Ashland LLC, Pharmachem Laboratories, Inc., the holders of common stock of Pharmachem Laboratories, Inc., Dr. David Peele, and Photon SH Representative LLC, solely as the shareholders’ representative (filed as Exhibit 2.2 to Ashland’s Form 8-K filed on May 18, 2017 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.84** – Amendment No. 2 to the Stock Purchase Agreement, dated August 23, 2017, by and among Ashland LLC, Pharmachem Laboratories, Inc., the holders of common stock of Pharmachem Laboratories, Inc., Dr. David Peele, and Photon SH Representative LLC, solely as the shareholders’ representative.
- 11** – Computation of Earnings Per Share (appearing in Note A of Notes to Consolidated Financial Statements in this annual report on Form 10-K).
- 12** – Computation of Ratio of Earnings to Fixed Charges.
- 21** – List of Subsidiaries.
- 23.1** – Consent of Ernst & Young LLP.
- 23.2** – Consent of Hamilton, Rabinovitz & Associates, Inc.
- 24** – Power of Attorney.
- 31.1** – Certification of William A. Wulfsohn, Chief Executive Officer of Ashland, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
- 31.2** – Certification of J. Kevin Willis, Chief Financial Officer of Ashland, pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.

- 32** – Certification of William A. Wulfsohn, Chief Executive Officer of Ashland, and J. Kevin Willis, Chief Financial Officer of Ashland, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
- 101.INS* XBRL Instance Document.
- 101.SCH* XBRL Taxonomy Extension Schema Document.
- 101.CAL* XBRL Taxonomy Extension Calculation Linkbase Document.
- 101.DEF* XBRL Taxonomy Extension Definition Linkbase Document.
- 101.LAB* XBRL Taxonomy Extension Label Linkbase Document.
- 101.PRE* XBRL Taxonomy Extension Presentation Linkbase Document.

*Attached as Exhibit 101 to this report are the following documents formatted in XBRL (Extensible Business Reporting Language): (i) Statements of Consolidated Comprehensive Income (Loss) for years ended September 30, 2017, 2016 and 2015; (ii) Consolidated Balance Sheets at September 30, 2017 and 2016; (iii) Statements of Consolidated Equity at September 30, 2017, 2016 and 2015; (iv) Statements of Consolidated Cash Flows for years ended September 30, 2017, 2016 and 2015; and (v) Notes to Consolidated Financial Statements.

**Filed herewith.

SM Service mark, Ashland or its subsidiaries, registered in various countries.

TM Trademark, Ashland or its subsidiaries, registered in various countries.

[†] Trademark owned by a third party.

Upon written or oral request, a copy of the above exhibits will be furnished at cost.

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.

ASHLAND GLOBAL HOLDINGS INC.

(Registrant)

By:

/s/ J. Kevin Willis

J. Kevin Willis

Senior Vice President and Chief Financial Officer

Date: November 20, 2017

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, in the capacities indicated, on November 20, 2017.

<u>Signatures</u>	<u>Capacity</u>
/s/ William A. Wulfsohn	
William A. Wulfsohn	Chairman of the Board, Chief Executive Officer and Director (Principal Executive Officer)
/s/ J. Kevin Willis	
J. Kevin Willis	Senior Vice President and Chief Financial Officer (Principal Financial Officer)
/s/ J. William Heitman	
J. William Heitman	Vice President and Controller (Principal Accounting Officer)
*	
Brendan M. Cummins	Director
*	
William G. Dempsey	Director
*	
Jay V. Ihlenfeld	Director
*	
Susan L. Main	Director
*	
Barry W. Perry	Director
*	
Mark C. Rohr	Director
*	
George A. Schaefer, Jr.	Director
*	
Janice J. Teal	Director
*	
Michael J. Ward	Director
*	
Kathleen Wilson-Thompson	
*By: /s/ Peter J. Ganz	
Peter J. Ganz	
Attorney-in-Fact	

Date: November 20, 2017

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

The following discussion should be read in conjunction with the Consolidated Financial Statements and the accompanying Notes to Consolidated Financial Statements for the years ended September 30, 2017, 2016 and 2015. As Ashland Global Holdings Inc. is the successor to Ashland Inc., the information set forth refers to Ashland Inc. for the periods prior to September 30, 2016 and to Ashland Global Holdings Inc. on and after September 30, 2016.

BUSINESS OVERVIEW

Ashland profile

Ashland is a premier global leader in providing specialty chemical solutions to customers in a wide range of consumer and industrial markets, including adhesives, architectural coatings, automotive, construction, energy, food and beverage, personal care and pharmaceutical. With approximately 6,500 employees worldwide, Ashland serves customers in more than 100 countries.

Ashland's sales generated outside of North America were 60% in 2017, 2016 and 2015. Sales by region expressed as a percentage of total consolidated sales were as follows:

Sales by Geography	2017	2016	2015
North America (a)	40%	40%	40%
Europe	33%	33%	33%
Asia Pacific	18%	18%	18%
Latin America & other	9%	9%	9%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

(a) Ashland includes only U.S. and Canada in its North American designation.

Reportable segments

Ashland's reporting structure is composed of three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents. For further descriptions of each reportable segment, see "Results of Operations – Reportable Segment Review" beginning on page M-13.

Sales by each reportable segment expressed as a percentage of total consolidated sales were as follows:

Sales by Reportable Segment	2017	2016	2015
Specialty Ingredients	68%	69%	66%
Composites	24%	22%	24%
Intermediates and Solvents	8%	9%	10%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

KEY DEVELOPMENTS

During 2017, the following operational decisions and economic developments had an impact on Ashland's current and future cash flows, results of operations and financial position.

Business results

Ashland's net income was \$28 million in 2017 compared to a net loss of \$28 million in 2016. Ashland's Adjusted EBITDA decreased by 5% during 2017 compared to 2016 to \$570 million (see U.S. GAAP reconciliation on page M-7). The decrease in Adjusted EBITDA was primarily due to declines in the Unallocated and other reportable segment, where there was a \$63 million decrease in pension and other postretirement income in 2017 resulting from the transfer of a substantial portion of the U.S. pension plans to Valvoline Inc. during September 2016. In addition, the prior year included \$22 million of previously allocated corporate costs to Valvoline. Excluding these two items, Adjusted EBITDA would have increased by \$13 million, or 2%. Reviewing the operational Adjusted EBITDA performance, both Specialty Ingredients and Composites slightly increased while I&S slightly decreased compared to 2016.

The following discussion outlines significant transactions announced or executed during 2017.

Ashland Separation of Valvoline

On September 22, 2015, Ashland announced that the Board of Directors approved proceeding with a plan to separate Ashland into two independent, publicly traded companies comprising of the new Ashland (now known as Ashland Global Holdings Inc.) and Valvoline Inc. The initial step of the separation, the initial public offering (IPO) of Valvoline Inc., closed on September 28, 2016. The total net proceeds after deducting underwriters' discount and other offering expenses received from the IPO were \$712 million, which were used primarily to repay debt incurred prior to the IPO and retained for Valvoline Inc.'s cash on hand. As discussed further within the Final Separation section, Ashland completed the distribution of its remaining shares in Valvoline Inc. on May 12, 2017. The new Ashland is a premier global leader in providing specialty chemical solutions to customers in a wide range of consumer and industrial markets. Key markets and applications include pharmaceutical, personal care, food and beverage, architectural coatings, adhesives, automotive, construction and energy.

After completing the IPO on September 28, 2016 and before the distribution of its remaining shares on May 12, 2017, Ashland owned 170 million shares of Valvoline Inc.'s common stock which represented approximately 83% of the total outstanding shares of Valvoline Inc.'s common stock. As a result, Ashland continued to consolidate Valvoline within the Consolidated Financial Statements up until the distribution of the remaining shares. The resulting outside stockholders' interests in Valvoline Inc., which was approximately 17% as of September 30, 2016, was presented separately as a noncontrolling interest within Ashland's equity in the Consolidated Balance Sheet. The amount of consolidated net income attributed to these previous minority holders was presented as a separate caption on the Statements of Consolidated Comprehensive Income.

Final Separation

Ashland completed the distribution of its remaining 170 million shares of common stock of Valvoline Inc. as a pro rata dividend on shares of Ashland common stock outstanding at the close of business on the record date of May 5, 2017. Based on the shares of Ashland common stock outstanding as of May 5, 2017, the record date for the distribution, each share of Ashland common stock received 2.745338 shares of Valvoline common stock in the distribution. The distribution was recorded at the carrying amount of Valvoline Inc.'s net assets which was a deficit of \$187 million as of May 12, 2017.

A Tax Matters Agreement between Ashland and Valvoline Inc. governs the rights and obligations after the spin-off regarding certain income taxes and other taxes, including certain tax liabilities and benefits, attributes, returns and contests.

Discontinued Operations Assessment

Valvoline met the criteria to qualify as a discontinued operation and accordingly, its assets, liabilities, operating results and cash flows have been classified as discontinued operations within the Consolidated Financial Statements. See Note E within the Notes to Consolidated Financial Statements for more information.

Certain indirect corporate costs included within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income (Loss) that were previously allocated to the Valvoline reportable segment do not qualify for classification within discontinued operations and continue to be reported as selling, general and administrative expense within continuing operations on a consolidated basis and within the Unallocated and other segment. These costs were \$22 million and \$23 million during 2016 and 2015, respectively.

Costs of transaction

Ashland recognized separation costs of \$95 million and \$88 million during 2017 and 2016, respectively, which are primarily related to transaction, consulting and legal fees. During 2017 and 2016, \$13 million and \$7 million, respectively, of the separation costs directly related to Valvoline were included within the discontinued operations caption of the Statements of Consolidated Comprehensive Income. Otherwise, separation costs are recorded within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income.

New Reportable Segments

Subsequent to completing the distribution of Valvoline Inc. during the current year, Ashland's operations are now managed within the following three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents. In previous years, Composites and Intermediates and Solvents were reporting units included within the Ashland Performance Materials reportable segment.

Pharmachem Acquisition

Background

On May 17, 2017, Ashland completed its acquisition of the stock of Pharmachem Laboratories, Inc. (Pharmachem), a leading provider of quality ingredients to the global health and wellness industries and high-value differentiated products to fragrance and flavor houses. With annual revenues of approximately \$300 million and 14 manufacturing facilities in the United States and

Mexico, New Jersey-based Pharmachem develops, manufactures and supplies custom and branded nutritional and fragrance products. Ashland has included Pharmachem within the Specialty Ingredients reporting segment.

Purchase price allocation

The acquisition was recorded by Ashland using the purchase method of accounting in accordance with U.S. GAAP whereby the total purchase price was allocated to tangible and intangible assets and liabilities acquired based on respective fair values.

The all-cash purchase price of Pharmachem was \$680 million which included working capital adjustments of approximately \$20 million. Ashland incurred \$5 million of transaction costs during 2017 related to the acquisition, which was recorded within the net loss on acquisitions and divestitures caption in the Statement of Consolidated Income. See Note C within the Notes to Consolidated Financial Statements for more information.

Financing Activities

2017 Credit Agreement

On May 17, 2017, in conjunction with the closing of the Pharmachem acquisition, Ashland entered into a secured credit agreement (the 2017 Credit Agreement) with a group of lenders. The 2017 Credit Agreement provided for (i) a \$250 million three-year term loan A facility (the Three-Year TLA Facility), (ii) a \$250 million five-year term loan A facility (the Five-Year TLA Facility and together with the Three-Year TLA Facility, the TLA Facilities) and (iii) a \$680 million five-year revolving credit facility (including a \$125 million letter of credit sublimit) (the 2017 Revolving Credit Facility). Proceeds of borrowings under the TLA Facilities were used solely to finance the acquisition of Pharmachem, while the proceeds of the 2017 Revolving Credit Facility were used to finance, in part, the acquisition of Pharmachem, to refinance the 2015 Senior Credit Agreement and for general corporate purposes. On May 19, 2017, Ashland entered into Amendment No. 1 to the 2017 Credit Agreement, which increased the aggregate commitments under the 2017 Revolving Credit Facility from \$680 million to \$800 million.

At Ashland's option, loans issued under the 2017 Credit Agreement bear interest at either LIBOR or an alternate base rate, in each case plus the applicable interest rate margin. Loans bear interest at LIBOR plus 1.75% per annum, in the case of LIBOR borrowings, or at the alternate base rate plus 0.75%, in the alternative, through and including the date of delivery of a quarterly compliance certificate and thereafter the interest rate will fluctuate between LIBOR plus 1.375% per annum and LIBOR plus 2.500% per annum (or between the alternate base rate plus 0.375% per annum and the alternate base rate plus 1.500% per annum), based upon Ashland's secured facilities ratings or the consolidated net leverage ratio (as defined in the 2017 Credit Agreement) (whichever yields a lower applicable interest rate margin) at such time. In addition, Ashland was required to pay fees of 0.25% per annum on the daily unused amount of the 2017 Revolving Credit Facility through and including the date of delivery of a compliance certificate, and thereafter the fee rate will fluctuate between 0.175% and 0.40% per annum, based upon Ashland's secured facilities rating or the consolidated net leverage ratio (whichever yields a lower applicable rate). The TLA Facilities may be prepaid at any time without premium. The Three-Year TLA Facility will not amortize and will be due on May 17, 2020. The Five-Year TLA Facility will not amortize in each of the first, second and third years and will amortize at a rate of 20% per annum in each of the fourth and fifth years (payable in equal quarterly installments), with the outstanding balance of the Five-Year TLA Facility to be paid on May 17, 2022.

On June 14, 2017, Ashland entered into Amendment No. 2 to the 2017 Credit Agreement, which provided for a new \$600 million seven-year senior secured term loan B facility (the 2017 TLB Facility). At Ashland's option, loans issued under the 2017 TLB Facility bear interest at either (x) LIBOR plus 2.00% per annum or (y) an alternate base rate plus 1.00% per annum. The 2017 TLB Facility may be prepaid at any time, subject to a prepayment premium if the prepayment is made on or prior to December 14, 2017 in connection with a Repricing Transaction (as defined in the 2017 Credit Agreement). The 2017 TLB Facility amortizes at a rate of 1.00% per annum (payable in equal quarterly installments) with the outstanding balance to be paid on May 17, 2024.

Ashland incurred \$15 million of new debt issuance costs in connection with the 2017 Credit Agreement, of which \$2 million was expensed immediately during 2017 within the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income. The remaining balance is amortized using the effective interest method. Additionally, as a result of the termination of the 2015 Senior Credit Agreement, Ashland recognized a \$5 million charge for the accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income.

The credit facilities under the 2017 Credit Agreement are guaranteed by Ashland Global Holdings Inc., Ashland Chemco Inc. and Ashland LLC's existing and future subsidiaries (other than certain immaterial subsidiaries, joint ventures, special purpose financing subsidiaries, regulated subsidiaries, foreign subsidiaries and certain other subsidiaries) and are secured by a first-priority security interest in substantially all of the personal property assets of Ashland and the guarantors, including all or a portion of the equity interests of certain of Ashland's domestic subsidiaries and first-tier foreign subsidiaries and, in certain cases, a portion of the equity interests of other foreign subsidiaries. The guarantees by Ashland's subsidiaries and pledge of security interests by such guarantors may, at Ashland's option, be released upon and during the occurrence of a Collateral Release Event (as defined in the 2017 Credit Agreement).

Redemption of 3.875% notes due 2018

In connection with the 2017 TLB Facility, Ashland redeemed all of its outstanding 3.875% senior notes due 2018 (2018 Senior Notes), of which approximately \$659 million were outstanding. Proceeds of borrowings under the 2017 TLB Facility, together with cash on hand, were used to pay for the redemption. Ashland recognized a \$13 million charge related to premiums paid and accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income.

Open market repurchases of 4.750% notes due 2022 and 3.875% notes due 2018

During 2017, Ashland executed open market repurchases of its 4.750% notes due 2022 (2022 Senior Notes) and its 3.875% notes due 2018 (2018 Senior Notes). As a result of these repurchases, the carrying values of the 2022 and 2018 Senior Notes were reduced by \$39 million and \$41 million, respectively. Ashland recognized a \$3 million charge related to premiums paid in the open market repurchases and accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income. As previously discussed, the remaining outstanding amount of the 2018 Senior Notes was redeemed during 2017.

6.50% junior subordinated notes due 2029

In December 2016, Hercules, an indirect wholly-owned subsidiary of Ashland, repurchased, through a cash tender offer, \$182 million of the aggregate principal par value amount of its 6.50% junior subordinated notes due 2029 (2029 Notes) for an aggregate purchase price of \$177 million. As a result, the carrying value of the 2029 Notes was reduced by \$90 million and Ashland recognized a \$92 million charge related to accelerated accretion of the recorded debt discount (compared to the total par value) and \$5 million of a net gain related to the repayment of the debt during 2017. The charge and net gain are included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income.

Subsidiary senior unsecured term loan

During August 2016, a wholly owned foreign subsidiary of Ashland entered into a credit agreement which provided for an aggregate principal amount of \$150 million in a senior unsecured term loan facility that matured on February 15, 2017. This term loan was drawn in full as of September 30, 2016 and was fully repaid during 2017.

Accounts receivable securitization

During the December 2015 quarter, the Transfer and Administration Agreement was amended to extend the termination date of the accounts receivable securitization facility from December 31, 2015 to March 22, 2017. During the March 2017 quarter, this facility was extended for an additional year with similar terms as the previous facility agreement. No other changes to the agreement within the current or prior year amendments are expected to have a significant impact to Ashland's results of operations and financial position.

RESULTS OF OPERATIONS – CONSOLIDATED REVIEW

Use of non-GAAP measures

Ashland has included within this document the following non-GAAP measures, on both a consolidated and reportable segment basis, which are not defined within U.S. GAAP and do not purport to be alternatives to net income or cash flows from operating activities as a measure of operating performance or cash flows:

- EBITDA - net income (loss), plus income tax expense (benefit), net interest and other financing expenses, and depreciation and amortization.
- Adjusted EBITDA - EBITDA adjusted for noncontrolling interests, discontinued operations, net gain (loss) on acquisitions and divestitures, other income and (expense) and key items (including the remeasurement gains and losses related to pension and other postretirement plans).
- Adjusted EBITDA margin - Adjusted EBITDA, which can include pro forma adjustments, divided by sales.
- Adjusted diluted earnings per share (EPS) - income (loss) from continuing operations, adjusted for key items, net of tax, divided by the average outstanding diluted shares for the applicable period.
- Free cash flow - operating cash flows less capital expenditures and certain other adjustments as applicable.

Management believes the use of EBITDA and Adjusted EBITDA measures on a consolidated and reportable segment basis assists investors in understanding the ongoing operating performance by presenting comparable financial results between periods. Ashland believes that by removing the impact of depreciation and amortization and excluding certain non-cash charges, amounts spent on interest and taxes and certain other charges that are highly variable from year to year, EBITDA and Adjusted EBITDA

provide Ashland's investors with performance measures that reflect the impact to operations from trends in changes in sales, margin and operating expenses, providing a perspective not immediately apparent from net income and operating income. The adjustments Ashland makes to derive the non-GAAP measures of EBITDA and Adjusted EBITDA exclude items which may cause short-term fluctuations in net income and operating income and which Ashland does not consider to be the fundamental attributes or primary drivers of its business. EBITDA and Adjusted EBITDA provide disclosure on the same basis as that used by Ashland's management to evaluate financial performance on a consolidated and reportable segment basis and provide consistency in our financial reporting, facilitate internal and external comparisons of Ashland's historical operating performance and its business units and provide continuity to investors for comparability purposes.

The Adjusted diluted EPS metric enables Ashland to demonstrate what effect key items have on an earnings per diluted share basis by taking income (loss) from continuing operations, adjusted for key items after tax that have been identified in the Adjusted EBITDA table, and dividing by the average outstanding diluted shares for the applicable period. Ashland's management believes this presentation is helpful to illustrate how the key items have impacted this metric during the applicable period.

The free cash flow metric enables Ashland to provide a better indication of the ongoing cash being generated that is ultimately available for both debt and equity holders as well as other investment opportunities. Unlike cash flow provided by operating activities, free cash flow includes the impact of capital expenditures from continuing operations, providing a more complete picture of cash generation. Free cash flow has certain limitations, including that it does not reflect adjustment for certain non-discretionary cash flows such as mandatory debt repayments. The amount of mandatory versus discretionary expenditures can vary significantly between periods.

These non-GAAP measures should be considered supplemental in nature and should not be construed as more significant than comparable measures defined by U.S. GAAP. Limitations associated with the use of these non-GAAP measures include that these measures do not present all of the amounts associated with our results as determined in accordance with U.S. GAAP. The non-GAAP measures provided are used by Ashland management and may not be determined in a manner consistent with the methodologies used by other companies. EBITDA and Adjusted EBITDA provide a supplemental presentation of Ashland's operating performance on a consolidated and reportable segment basis. Adjusted EBITDA generally includes adjustments for items that impact comparability between periods. In addition, certain financial covenants related to Ashland's 2017 Credit Agreement are based on similar non-GAAP measures and are defined further in the sections that reference this metric.

In accordance with U.S. GAAP, Ashland recognizes actuarial gains and losses for defined benefit pension and other postretirement benefit plans annually in the fourth quarter of each fiscal year and whenever a plan is determined to qualify for a remeasurement during a fiscal year. Actuarial gains and losses occur when actual experience differs from the estimates used to allocate the change in value of pension and other postretirement benefit plans to expense throughout the year or when assumptions change, as they may each year. Significant factors that can contribute to the recognition of actuarial gains and losses include changes in discount rates used to remeasure pension and other postretirement obligations on an annual basis or upon a qualifying remeasurement, differences between actual and expected returns on plan assets and other changes in actuarial assumptions, for example, the life expectancy of plan participants. Management believes Adjusted EBITDA, which includes the expected return on pension plan assets yet excludes both the actual return on pension plan assets and the impact of actuarial gains and losses, provides investors with a meaningful supplemental presentation of Ashland's operating performance (see the Adjusted EBITDA reconciliation table on page M-7 for additional details on exact amounts included within this non-GAAP measure related to pension and other postretirement plans.) Management believes these actuarial gains and losses are primarily financing activities that are more reflective of changes in current conditions in global financial markets (and in particular interest rates) that are not directly related to the underlying business. For further information on the actuarial assumptions and plan assets referenced above, see Note M of the Notes to Consolidated Financial Statements.

Consolidated review

Net income (loss)

Ashland's net income (loss) is primarily affected by results within operating income, net interest and other financing expense, net loss on acquisitions and divestitures, income taxes, discontinued operations and other significant events or transactions that are unusual or nonrecurring. Operating income includes Ashland's adjustment for the immediate recognition of the change in the fair value of the plan assets and net actuarial gains and losses for defined benefit pension plans and other postretirement benefit plans each fiscal year.

Key financial results for 2017, 2016 and 2015 included the following:

- Ashland's net income (loss) attributable to Ashland amounted to income of \$1 million in 2017, a loss of \$29 million in 2016, and income of \$309 million in 2015, or \$0.01, \$(0.47) and \$4.54 diluted earnings (loss) per share, respectively.

- Ashland's net income attributable to noncontrolling interest amounted to \$27 million and \$1 million during 2017 and 2016, respectively, and reflects the noncontrolling interest of Valvoline Inc. for the period after the IPO close on September 28, 2016 and before the final distribution occurred on May 12, 2017.
- Discontinued operations, which are reported net of taxes, resulted in income of \$133 million, \$255 million and \$321 million during 2017, 2016 and 2015, respectively.
- Loss from continuing operations, which excludes results from discontinued operations, amounted to \$105 million in 2017, \$283 million in 2016 and \$12 million in 2015.
- The effective income tax expense rate of 7% for 2017, income tax benefit rate of 8% for 2016, and income tax benefit rate of 92% for 2015, were significantly impacted by a number of discrete items.
- Ashland incurred pretax net interest and other financing expense of \$234 million, \$173 million and \$174 million during 2017, 2016 and 2015, respectively, and was impacted by certain charges associated with debt financing activity during each year.
- Net loss on acquisitions and divestitures totaled \$6 million, \$8 million and \$89 million during 2017, 2016 and 2015, respectively.
- Operating income (loss) amounted to income of \$142 million in 2017, a loss of \$127 million in 2016, and income of \$112 million in 2015.

For further information on the items reported above, see the discussion in the comparative Statements of Consolidated Comprehensive Income (Loss) caption review analysis.

Operating income (loss)

Operating income (loss) amounted income of \$142 million in 2017, a loss of \$127 million in 2016, and income of \$112 million in 2015. The current and prior years' operating income include certain key items that are excluded to arrive at Adjusted EBITDA. These key items are summarized as follows:

- Separation, restructuring and other costs, net, include the following:
 - \$82 million and \$81 million of costs related to the separation of Valvoline during 2017 and 2016, respectively (which included \$2 million of accelerated depreciation during both 2017 and 2016);
 - \$17 million of restructuring charges related the closure of a manufacturing plant and the termination of a contract at a manufacturing facility during 2017 (which included \$14 million of accelerated depreciation);
 - \$4 million of integration costs related to the acquisition of Pharmachem during 2017;
 - \$3 million of accelerated depreciation related to the closure of an office building during 2017;
 - \$7 million of restructuring costs (including \$4 million of accelerated depreciation, a \$5 million income adjustment to the previously recorded accrual for a restructuring plan within an existing manufacturing facility, \$4 million of charges related to the exit from a toller agreement and restructuring of a manufacturing facility, and \$4 million of charges related to the restructuring of office buildings) during 2016; and
 - \$27 million of restructuring costs (including \$6 million of accelerated depreciation and \$17 million related to the restructuring plan within an existing manufacturing facility) during 2015;
- \$13 million of costs related to unplanned plant shutdowns during 2017 include the following:
 - \$7 million of costs related to the temporary shutdown of an Intermediates and Solvents manufacturing plant due to a fire; and
 - \$6 million of costs related to the temporary shutdown of a Specialty Ingredients manufacturing plant due to a hurricane;
- \$9 million, \$15 million and \$12 million net environmental charges during 2017, 2016 and 2015, respectively;
- \$7 million of noncash charges related to the fair value adjustment of inventory acquired from Pharmachem at the date of acquisition during 2017;
- \$6 million, \$142 million and \$208 million related to pension and other postretirement plan remeasurement losses during 2017, 2016 and 2015, respectively, from the immediate recognition from the change in fair value of the plan assets and net actuarial gains and losses for defined benefit pension plans and other postretirement plans;

- \$6 million, \$12 million and \$92 million of a net loss on acquisitions and divestitures during 2017, 2016 and 2015, respectively;
- \$5 million and \$15 million charges for legal reserves during 2017 and 2016, respectively;
- \$181 million impairment related to the Intermediates and Solvents reportable segment during 2016;
- \$11 million of income related to a legacy benefit for former directors during 2016;
- \$13 million charge related to a customer claim during 2015 and a subsequent \$5 million income adjustment to the customer claim during 2016;
- \$11 million impairment charge related to certain in-process research and development (IPR&D) assets associated with the acquisition of International Specialty Products Inc. (ISP) in 2011 during 2015; and
- \$16 million of tax indemnity income and a \$7 million charge for a stock incentive plan award modification during 2015.

Operating income for 2017, 2016 and 2015 included depreciation and amortization of \$301 million, \$302 million and \$306 million, respectively (which includes accelerated depreciation of \$19 million, \$6 million and \$6 million, respectively, for each year).

EBITDA and Adjusted EBITDA

EBITDA totaled \$551 million, \$416 million and \$644 million for 2017, 2016 and 2015, respectively. EBITDA and Adjusted EBITDA results in the following table have been prepared to illustrate the ongoing effects of Ashland's operations, which exclude certain key items, including the net loss on certain acquisitions and divestitures during 2017, 2016 and 2015, since management believes the use of such non-GAAP measures on a consolidated and reportable segment basis assists investors in understanding the ongoing operating performance by presenting the financial results between periods on a more comparable basis.

(In millions)	2017	2016	2015
Net income (loss)	\$ 28	\$ (28)	\$ 309
Income tax expense (benefit)	7	(25)	(139)
Net interest and other financing expense	234	173	174
Depreciation and amortization (a)	282	296	300
EBITDA	551	416	644
Income from discontinued operations (net of taxes)	(133)	(255)	(321)
Separation, restructuring and other costs, net	87	82	21
Accelerated depreciation	19	6	6
Unplanned plant shutdowns	13	—	—
Environmental reserve adjustments	9	15	12
Inventory fair value adjustment	7	—	—
Losses on pension and other postretirement plan remeasurements	6	142	208
Net loss on acquisitions and divestitures (c)	6	12	92
Legal reserve	5	15	—
Impairments	—	181	11
Benefit/stock incentive adjustment	—	(11)	7
Customer claim adjustment	—	(5)	13
Tax indemnification adjustment	—	—	(16)
Adjusted EBITDA (b)	\$ 570	\$ 598	\$ 677

(a) Excludes \$19 million, \$6 million and \$6 million of accelerated depreciation during 2017, 2016 and 2015, respectively.

(b) Includes \$8 million, \$(42) million and \$(22) million during 2017, 2016 and 2015, respectively, of net periodic pension and other postretirement costs (income) recognized ratably through the fiscal year. These costs (income) are comprised of service cost, interest cost, expected return on plan assets, and amortization of prior service credit and are disclosed in further detail in Note M of the Notes to Consolidated Financial Statements.

(c) Excludes income of \$4 million and \$3 million during 2016 and 2015, respectively, related to ongoing adjustments of previous divestiture transactions.

Diluted EPS and Adjusted Diluted EPS

The following table reflects the U.S. GAAP calculation for the loss from continuing operations adjusted for the cumulative diluted EPS effect for key items after tax that have been identified in the Adjusted EBITDA table in the previous section. The Adjusted EPS for the loss from continuing operations in the following table has been prepared to illustrate the ongoing effects of Ashland's operations since management believes the use of non-GAAP measures on a consolidated and reportable segment basis assists investors in understanding the ongoing operating performance by presenting the financial results between periods on a more comparable basis.

	2017	2016	2015
Diluted EPS from continuing operations (as reported)	\$ (1.69)	\$ (4.51)	\$ (0.18)
Key items	4.13	6.76	3.39
Adjusted diluted EPS from continuing operations (non-GAAP)	<u>\$ 2.44</u>	<u>\$ 2.25</u>	<u>\$ 3.21</u>

Statements of Consolidated Comprehensive Income (Loss) – caption review

A comparative analysis of the Statements of Consolidated Comprehensive Income (Loss) by caption is provided as follows for the years ended September 30, 2017, 2016 and 2015.

(In millions)	2017	2016	2015	2017 change	2016 change
Sales	\$ 3,260	\$ 3,019	\$ 3,420	\$ 241	\$ (401)

The following table provides a reconciliation of the change in sales between fiscal years 2017 and 2016 and between fiscal years 2016 and 2015.

(In millions)	2017 change	2016 change
Volume	\$ 139	\$ (88)
Pricing	40	(157)
Product mix	(39)	(24)
Currency exchange	(12)	(54)
Acquisitions and divestitures	113	(78)
Change in sales	<u>\$ 241</u>	<u>\$ (401)</u>

Sales for 2017 increased \$241 million, or 8%, compared to 2016. The acquisition of Pharmachem within the Specialty Ingredients reportable segment increased sales by \$104 million, or 3%, while the net impact of other acquisitions and divestitures increased sales by \$9 million. Improved volume increased sales by \$139 million, or 5%, while higher pricing increased sales by \$40 million. Product mix decreased sales by \$39 million and unfavorable foreign currency exchange decreased sales by \$12 million.

Sales for 2016 decreased \$401 million, or 12%, compared to 2015. Pricing declines and lower volumes decreased sales by \$157 million, or 5% percent, and \$88 million, or 3%, respectively. Divestitures of certain divisions and product lines decreased sales by \$78 million, or 2%, unfavorable foreign currency exchange decreased sales by \$54 million, and product mix decreased sales by \$24 million.

(In millions)	2017	2016	2015	2017 change	2016 change
Cost of sales	\$ 2,372	\$ 2,153	\$ 2,532	\$ 219	\$ (379)
Gross profit as a percent of sales	27.2%	28.7%	26.0%		

Fluctuations in cost of sales are driven primarily by raw material prices, volume and changes in product mix, currency exchange, losses or gains on pension and other postretirement benefit plan remeasurements, and other certain charges incurred as a result of changes or events within the businesses or restructuring activities.

The following table provides a reconciliation of the changes in cost of sales between fiscal years 2017 and 2016 and between fiscal years 2016 and 2015.

(In millions)	2017 change	2016 change
Acquisitions and divestitures	\$ 81	\$ (69)
Volume and product mix	67	(76)
Production costs	52	(119)
Unplanned plant shutdowns	13	—
Accelerated depreciation	10	(2)
Inventory fair value adjustment	7	—
Customer claim	5	(15)
Severance and other costs	4	(18)
Pension and other postretirement benefit plans expense	(13)	(40)
Currency exchange	(7)	(40)
Change in cost of sales	<u>\$ 219</u>	<u>\$ (379)</u>

Cost of sales for 2017 increased \$219 million, or 10%, compared to 2016. The Pharmachem acquisition increased cost of sales by \$72 million, or 3%, while the net impact of other acquisitions and divestitures increased cost of sales by \$9 million. Changes in volume and product mix and higher production costs increased cost of sales by \$67 million, or 3%, and 52 million, or 2%, respectively. Favorable currency exchange decreased cost of sales by \$7 million.

Pension and other postretirement net periodic costs (income) reduced cost of sales by \$13 million compared to 2016, while charges for unplanned plant shutdowns increased cost of sales by \$13 million. Other key items combined to increase cost of sales by \$26 million compared to 2016.

Cost of sales for 2016 decreased \$379 million, or 15%, compared to 2015 primarily due to lower production costs, changes in volume and product mix, and the net impact of the acquisition and divestiture of certain divisions and product lines. These factors decreased cost of sales by \$119 million, or 5%, \$76 million, or 3%, and \$69 million, or 3%, respectively. Favorable foreign currency exchange decreased cost of sales by \$40 million.

Pension and other postretirement plans expense decreased cost of sales by \$40 million, primarily as a result of decreased remeasurement losses in 2016 compared to 2015, mainly due to fluctuations in discount rates. Key items primarily related to severance and other costs and customer claim adjustments resulted in a \$35 million decrease to cost of sales in 2016 compared to 2015.

(In millions)	2017	2016	2015	2017 change	2016 change
Selling, general and administrative expense	\$ 670	\$ 914	\$ 692	\$ (244)	\$ 222
As a percent of sales	20.6%	30.3%	20.2%		

Selling, general and administrative expense for 2017 decreased 27% compared to 2016, while expenses as a percent of sales decreased 9.7 percentage points. Key drivers of the fluctuation in selling, general and administrative expense compared to 2016 were:

- a decrease of \$181 million due to the impairment of the Intermediates and Solvents reportable segment during 2016;
- a \$98 million decrease in expense in 2017 compared to 2016 due to fluctuations in adjustments from the losses for pension and postretirement benefit plans;
- an increase of \$38 million due to higher pension and other postretirement income in 2016 primarily due to the transfer of a substantial portion of the U.S. pension plans to Valvoline Inc. during September 2016;
- \$21 million and \$38 million in net environmental-related expenses during 2017 and 2016, respectively;
- \$17 million of incremental costs related to Pharmachem's operations and \$4 million of Pharmachem integration costs during 2017;
- \$5 million and \$15 million charges for legal reserves during 2017 and 2016, respectively; and

- \$11 million of income related to the termination of a legacy benefit for former directors during 2016.

Selling, general and administrative expense for 2016 increased 32% compared to 2015, while expenses as a percent of sales increased 10.1 percentage points. Key drivers of the fluctuation in selling, general and administrative expense compared to 2015 were:

- an increase of \$181 million due to the impairment of the Intermediates and Solvents reportable segment during 2016;
- \$81 million of costs related to the separation of Valvoline and \$4 million of restructuring charges related to office buildings during 2016;
- a \$33 million decrease in expense in 2016 compared to 2015 due to fluctuations in adjustments from the losses for pension and postretirement benefit plans;
- \$11 million of income related to the termination of a legacy benefit for former directors during 2016; and
- tax indemnification income of \$16 million and a stock incentive award modification resulting in expense of \$7 million during 2015.

(In millions)	2017	2016	2015	2017 change	2016 change
Research and development expense	\$ 83	\$ 87	\$ 99	\$ (4)	\$ (12)

Research and development expense during 2017 remained relatively consistent with the expense in 2016.

Research and development expense for 2016 decreased \$12 million as compared to 2015 primarily due to an impairment of \$11 million related to certain IPR&D assets associated with a previous acquisition during 2015.

(In millions)	2017	2016	2015	2017 change	2016 change
Equity and other income					
Equity income	\$ —	\$ 1	\$ 3	\$ (1)	\$ (2)
Other income	7	7	12	—	(5)
	<u>\$ 7</u>	<u>\$ 8</u>	<u>\$ 15</u>	<u>\$ (1)</u>	<u>\$ (7)</u>

Total equity and other income remained relatively consistent with the prior year.

Total equity and other income decreased \$7 million during 2016 compared to 2015 primarily due to a decrease from nonrecurring tax consulting income recorded during 2015.

(In millions)	2017	2016	2015	2017 change	2016 change
Net interest and other financing expense (income)					
Interest expense	\$ 232	\$ 180	\$ 166	\$ 52	\$ 14
Interest income	(4)	(5)	(6)	1	1
Available-for-sale securities income	(11)	(8)	(3)	(3)	(5)
Other financing costs	17	6	17	11	(11)
	<u>\$ 234</u>	<u>\$ 173</u>	<u>\$ 174</u>	<u>\$ 61</u>	<u>\$ (1)</u>

Net interest and other financing expense increased \$61 million in 2017 compared to 2016. Interest expense increased during the current year primarily due to \$92 million of accelerated accretion related to the December 2016 tender offer of the 2029 notes, partially offset by a decrease in interest expense due to lower debt levels maintained in 2017 compared to 2016. The current year included interest expense of \$9 million related to accelerated debt issuance costs associated with 2017 financing activity, which was comprised of \$7 million of accelerated amortization of previously capitalized debt issuance costs and \$2 million of new debt issuance costs immediately recognized, while the prior year included interest expense of \$6 million related to accelerated debt issuance costs associated with 2016 financing activity. The increase in other financing costs was primarily due to a net \$9 million charge for early redemption premium payments during 2017. The available-for-sale securities income of \$11 million compared

to \$8 million in the prior year represents investment income related to restricted investments discussed in Note F of the Notes to Consolidated Financial Statements.

Net interest and other financing expense decreased \$1 million in 2016 compared to 2015. In connection with financing activities during 2016 and 2015, interest expense included \$6 million of accelerated debt issuance costs during 2016 compared to \$2 million of accelerated amortization for previously capitalized debt issuance costs and \$2 million of new debt issuance costs expensed immediately during 2015. The remaining increase in interest expense is due to higher debt levels maintained in 2016 compared to 2015. Changes in other financing costs for 2016 compared to 2015 is primarily the result of a \$9 million charge related to the early redemption premium payment for the tender of certain notes in 2015. The available-for-sale securities income of \$8 million in 2016 compared to \$3 million in 2015 represents investment income related to restricted investments discussed in Note F of the Notes to Consolidated Financial Statements.

(In millions)	2017	2016	2015	2017 change	2016 change
Net gain (loss) on acquisitions and divestitures					
Pharmachem acquisition	\$ (5)	\$ —	\$ —	\$ (5)	\$ —
Composites manufacturing facility	4	—	—	4	—
Specialty Ingredients joint venture	(4)	(12)	—	8	(12)
Elastomers	—	—	(86)	—	86
Kelowna	—	2	—	(2)	2
Other	(1)	2	(3)	(3)	5
	<u>\$ (6)</u>	<u>\$ (8)</u>	<u>\$ (89)</u>	<u>\$ 2</u>	<u>\$ 81</u>

Net loss on acquisitions and divestitures during 2017 included a net loss of \$5 million from the acquisition of Pharmachem, a loss of \$4 million recognized for the Specialty Ingredients joint venture divestiture in China and a loss of \$1 million due to post-closing adjustments related to other previous divestitures, partially offset by a net gain of \$4 million related to a Composites manufacturing facility.

Net loss on acquisitions and divestitures during 2016 included a \$12 million impairment related to a Specialty Ingredients joint venture, as well as a gain on the sale of the Kelowna plant and other post-closing adjustments related to previous divestitures of \$2 million each.

Net loss on acquisitions and divestitures during 2015 primarily included the pre-tax loss on sale related to Elastomers of \$86 million, as well as a net \$3 million loss due to other post-closing adjustments related to previous divestitures.

(In millions)	2017	2016	2015	2017 change	2016 change
Income tax expense (benefit)	\$ 7	\$ (25)	\$ (139)	\$ 32	\$ 114
Effective tax rate	(7)%	8 %	92 %		
Effective tax rate (excluding key items)	7 %	(5)%	(2)%		

The 2017 effective tax rate was impacted by jurisdictional income mix, \$87 million of tax expense related to deemed dividend inclusions and a \$25 million tax benefit for the reversal of a valuation allowance related to the utilization of foreign tax credits.

The 2016 effective tax rate was impacted by jurisdictional income mix and net unfavorable adjustments primarily related to a nondeductible goodwill impairment for the Intermediates and Solvents division, valuation allowances for domestic attributes, accruals for unrecognized tax benefits and items related to the separation of Valvoline.

The 2015 effective tax rate was impacted by jurisdictional income mix and net favorable items predominantly due to the release of certain valuation allowances related to state deferred tax assets. These favorable adjustments were partially offset by an accrual for an unrecognized tax benefit and tax related to certain global restructuring steps.

(In millions)	2017	2016	2015	2017 change	2016 change
Income (loss) from discontinued operations					
(net of taxes)					
Valvoline	\$ 159	\$ 286	\$ 203	\$ (127)	\$ 83
Asbestos-related litigation	(25)	(30)	110	5	(140)
Water Technologies	2	—	7	2	(7)
Other	(3)	(1)	1	(2)	(2)
	<u>\$ 133</u>	<u>\$ 255</u>	<u>\$ 321</u>	<u>\$ (122)</u>	<u>\$ (66)</u>

As a result of the full separation of Valvoline Inc. on May 12, 2017, the operating results related to Valvoline Inc., including the operating results of the former Valvoline reportable segment, have been reflected as discontinued operations (net of tax) within the Statements of Consolidated Comprehensive Income (Loss) for all periods presented. Valvoline's sales included in discontinued operations during 2017, 2016 and 2015 were \$1,237 million (reflective of sales until the full separation on May 12, 2017), \$1,929 million and \$1,967 million, respectively. Valvoline's pre-tax income of discontinued operations during 2017, 2016 and 2015 totaled \$240 million, \$444 million and \$320 million, respectively.

Asbestos-related activity during the current and prior years included the after-tax net adjustments to the asbestos reserves and receivables of \$25 million and \$30 million, respectively. The net gain of \$110 million during 2015 included an after-tax gain of \$120 million related to the January 2015 asbestos insurance settlement, partially offset by after-tax net expense adjustments to the asbestos reserves and receivables, including the adjustments for changes in estimates as well as a deferred tax adjustment.

Water Technologies activity during the current year was related to post-closing adjustments. Water Technologies activity during 2015 related primarily to income of \$5 million due to a foreign pension plan remeasurement discussed in Note M in the Notes to Consolidated Financial Statements as well as other post-closing adjustments.

(In millions)	2017	2016	2015	2017 change	2016 change
Net income attributable to noncontrolling interest	\$ 27	\$ 1	\$ —	\$ 26	\$ 1

Since Ashland's ownership interest in Valvoline Inc. was approximately 83% after completing the IPO on September 28, 2016 and before the distribution of its remaining shares of Valvoline on May 12, 2017, the amount of net income attributable to the outside stockholders' approximately 17% noncontrolling interest in Valvoline Inc. was presented in accordance with U.S. GAAP within this caption in the Statements of Consolidated Comprehensive Income (Loss) for 2017 and 2016.

Other comprehensive income (loss)

A comparative analysis of the components of other comprehensive income (loss) is provided below for the last three fiscal years ended September 30.

(In millions)	2017	2016	2015	2017 change	2016 change
Other comprehensive income (loss)					
(net of taxes)					
Unrealized translation gain (loss)	\$ 81	\$ (14)	\$ (369)	\$ 95	\$ 355
Pension and postretirement obligation adjustment	(4)	14	(18)	(18)	32
Net change in available-for-sale securities	15	17	(11)	(2)	28
	<u>\$ 92</u>	<u>\$ 17</u>	<u>\$ (398)</u>	<u>\$ 75</u>	<u>\$ 415</u>

Total other comprehensive income (loss), net of tax, increased \$75 million in 2017 as compared to 2016 as a result of the following components.

- In 2017, the unrealized gain (loss) from foreign currency translation adjustments was income of \$81 million, compared to a loss of \$14 million during 2016. The fluctuations in unrealized translation gains and losses are primarily due to translating foreign subsidiary financial statements from local currencies to U.S. Dollars.

- The pension and postretirement obligation adjustment was a loss of \$4 million during 2017 compared to income of \$14 million during 2016. Of these amounts, \$4 million and \$41 million during the current and prior years, respectively, of unrecognized prior service credits, net of tax, relating to pension and other postretirement benefit plans were amortized and reclassified into net income. Additional unrecognized prior service credits, net of tax, of \$55 million during 2016 were included in other comprehensive income (loss) as a result of the pension and other postretirement plan remeasurements.
- Gains of \$15 million and \$17 million on available-for-sale securities, net of tax, related to restricted investments, were recognized within other comprehensive income (loss) during 2017 and 2016, respectively.

Total other comprehensive income (loss), net of tax, increased \$415 million in 2016 as compared to 2015 as a result of the following components.

- In 2016, other comprehensive income (loss), net of tax, from foreign currency translation adjustments was a loss of \$14 million, compared to a loss of \$369 million during 2015. The fluctuations in unrealized translation gains and losses are primarily due to translating foreign subsidiary financial statements from local currencies to U.S. Dollars. The prior year was significantly impacted by fluctuations in the Euro compared to the U.S. Dollar.
- The pension and postretirement obligation adjustment was income of \$14 million and a loss of \$18 million during 2016 and 2015, respectively. Of these amounts, \$41 million and \$17 million during 2016 and 2015, respectively, of unrecognized prior service credits, net of tax, relating to pension and other postretirement benefit plans were amortized and reclassified into net income. Additional unrecognized prior service credits, net of tax, of \$55 million during 2016 and prior service cost, net of tax, of \$1 million during 2015 were included in other comprehensive income (loss) as a result of the pension and other postretirement plan remeasurements.
- \$17 million of unrealized gains and \$11 million of unrealized losses on available-for-sale securities, net of tax, related to restricted investments, was recognized within other comprehensive income (loss) during 2016 and 2015, respectively.

RESULTS OF OPERATIONS – REPORTABLE SEGMENT REVIEW

Subsequent to completing the distribution of Valvoline Inc. during the current year, Ashland's operations are now managed within the following three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents. In previous years, Composites and Intermediates and Solvents were reporting units included within the Ashland Performance Materials reportable segment.

Results of Ashland's reportable segments are presented based on its management and internal accounting structure. The structure is specific to Ashland; therefore, the financial results of Ashland's reportable segments are not necessarily comparable with similar information for other comparable companies. Ashland allocates all costs to its reportable segments except for certain significant company-wide restructuring activities and other costs or adjustments that relate to former businesses that Ashland no longer operates. The service cost component of pension and other postretirement benefits costs is allocated to each reportable segment on a ratable basis; while the remaining components of pension and other postretirement benefits costs are recorded to Unallocated and other. Ashland refines its expense allocation methodologies to the reportable segments from time to time as internal accounting practices are improved, more refined information becomes available and the industry or market changes. Significant revisions to Ashland's methodologies are adjusted for all segments on a retrospective basis.

The EBITDA and Adjusted EBITDA amounts presented within this business section are provided as a means to enhance the understanding of financial measurements that Ashland has internally determined to be relevant measures of comparison for each segment. Each of these non-GAAP measures is defined as follows: EBITDA (operating income plus depreciation and amortization), Adjusted EBITDA (EBITDA adjusted for key items, which may include pro forma effects for significant acquisitions or divestitures, as applicable), and Adjusted EBITDA margin (Adjusted EBITDA, which may include pro forma adjustments, divided by sales or sales adjusted for pro forma results). Ashland does not allocate items to each reportable segment below operating income, such as interest expense and income taxes. As a result, reportable segment EBITDA and Adjusted EBITDA are reconciled directly to operating income since it is the most directly comparable Statements of Consolidated Comprehensive Income (Loss) caption.

The following table shows sales, operating income, depreciation and amortization and statistical operating information by reportable segment for each of the last three years ended September 30.

(In millions)	2017	2016	2015
Sales			
Specialty Ingredients	\$ 2,216	\$ 2,089	\$ 2,263
Composites (a)	779	669	834
Intermediates and Solvents	265	261	323
	<u>\$ 3,260</u>	<u>\$ 3,019</u>	<u>\$ 3,420</u>
Operating income (loss)			
Specialty Ingredients	\$ 233	\$ 237	\$ 239
Composites	67	63	61
Intermediates and Solvents	(12)	(181)	26
Unallocated and other	(146)	(246)	(214)
	<u>\$ 142</u>	<u>\$ (127)</u>	<u>\$ 112</u>
Depreciation and amortization			
Specialty Ingredients	\$ 243	\$ 243	\$ 244
Composites	22	22	27
Intermediates and Solvents	31	31	32
Unallocated and other	5	6	3
	<u>\$ 301</u>	<u>\$ 302</u>	<u>\$ 306</u>
Operating information			
Specialty Ingredients (b)			
Sales per shipping day	\$ 8.8	\$ 8.2	\$ 8.9
Metric tons sold (thousands)	317.2	307.4	324.3
Gross profit as a percent of sales	32.7%	33.9%	32.4%
Composites (b)			
Sales per shipping day	\$ 3.1	\$ 2.6	\$ 3.3
Metric tons sold (thousands)	346.4	309.1	341.0
Gross profit as a percent of sales	19.8%	22.6%	19.2%
Intermediates and Solvents (b)			
Sales per shipping day	\$ 1.1	\$ 1.0	\$ 1.3
Metric tons sold (thousands)	137.0	136.7	135.6
Gross profit as a percent of sales	6.5%	11.0%	17.8%

(a) Fiscal 2015 includes \$40 million of sales from the divested Elastomers division for the period October 1, 2014 through the completion of the sale on December 1, 2014. See Note D within the Notes to Consolidated Financial Statements for more information.

(b) Sales are defined as sales and operating revenues. Gross profit is defined as sales, less cost of sales.

Sales by region expressed as a percentage of reportable segment sales for each of the last three fiscal years ended September 30 were as follows. Ashland includes only U.S. and Canada in its North American designation.

	2017		
Sales by Geography	Specialty Ingredients	Composites	Intermediates and Solvents
North America	40%	47%	22%
Europe	31%	30%	57%
Asia Pacific	19%	15%	18%
Latin America & other	10%	8%	3%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

2016			
Sales by Geography	Specialty Ingredients	Composites	Intermediates and Solvents
North America	39%	50%	22%
Europe	31%	30%	58%
Asia Pacific	20%	14%	16%
Latin America & other	10%	6%	4%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

2015			
Sales by Geography	Specialty Ingredients	Composites	Intermediates and Solvents
North America	39%	51%	23%
Europe	32%	28%	59%
Asia Pacific	19%	15%	14%
Latin America & other	10%	6%	4%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

Specialty Ingredients

Specialty Ingredients is a global leader in cellulose ethers, vinyl pyrrolidones and biofunctionals. It offers industry-leading products, technologies and resources for solving formulation and product-performance challenges. Specialty Ingredients uses natural, synthetic and semisynthetic polymers derived from cellulose ethers, vinyl pyrrolidones, acrylic polymers, polyester and polyurethane-based adhesives, and plant and seed extract. Specialty Ingredient' end markets offer comprehensive and innovative solutions for today's demanding consumer and industrial applications. Key customers include: pharmaceutical companies; makers of personal care products, food and beverages; makers of nutraceuticals and supplements; manufacturers of paint, coatings and construction materials; packaging and converting; and oilfield service companies.

On May 17, 2017, Ashland completed its acquisition of the stock of Pharmachem, a leading provider of quality ingredients to the global health and wellness industries and high-value differentiated products to fragrance and flavor houses. With annual revenues of approximately \$300 million and 14 manufacturing facilities in the United States and Mexico, New Jersey-based Pharmachem develops, manufactures and supplies custom and branded nutritional and fragrance products. See Note C within the Notes to Consolidated Financial Statements for more information.

Ashland completed the transfer of its ownership interest in a consolidated joint venture during 2017 and sold the industrial biocides assets during 2015. See Note D of the Notes to Consolidated Financial Statements for information on these divestitures.

2017 compared to 2016

Specialty Ingredients' sales increased \$127 million, or 6%, to \$2,216 million in 2017. The acquisition of Pharmachem in the current year increased sales by \$104 million, or 5%, while a tollor agreement exit and the divestiture of a joint venture combined to decrease sales by \$13 million. Volume increased sales by \$72 million as metric tons increased to 317.2 thousand in 2017, while mix declined sales by \$32 million during the current fiscal year. Unfavorable foreign currency exchange decreased sales by \$10 million, while improved product pricing increased sales by \$6 million.

Gross profit during 2017 increased \$18 million compared to 2016. The acquisition of Pharmachem in 2017 increased gross profit by \$32 million while improved volume and mix combined to increase gross profit by \$21 million. These increases were partially offset by decreases due to pricing and higher costs of \$29 million, which included a \$32 million impact from the following key items during 2017 and 2016:

- \$17 million of restructuring charges related the closure of a manufacturing plant and the termination of a contract at a manufacturing facility during 2017 (which included \$14 million of accelerated depreciation);
- \$7 million of noncash charges related to the fair value assessment of inventory acquired from Pharmachem at the date of acquisition during 2017;
- \$6 million of costs related to the temporary shutdown of a manufacturing plant due to a hurricane during 2017;
- \$1 million of net restructuring income and \$4 million of accelerated depreciation related to a restructuring plan within an existing manufacturing facility during 2016; and

- \$5 million of income related to a customer claim adjustment during 2016.

Additionally, unfavorable foreign currency exchange and the divestiture of a joint ventures decreased gross profit by \$4 million and \$2 million, respectively. In total, gross profit margin during 2017 decreased 1.2 percentage points to 32.7% as compared to 2016.

Selling, general and administrative expenses (which includes research and development expenses throughout the reportable segment discussion and analysis) increased \$20 million during 2017 as compared to 2016, primarily due to incremental costs of \$17 million related to Pharmachem's operations. Equity and other income (loss) decreased \$2 million compared to 2016.

Operating income totaled \$233 million for 2017 compared to \$237 million in 2016. EBITDA decreased \$14 million to \$462 million in 2017, while Adjusted EBITDA increased \$17 million to \$493 million. Adjusted EBITDA margin decreased 0.6 percentage points in 2017 to 22.2%.

2016 compared to 2015

Specialty Ingredients' sales decreased \$174 million, or 8%, to \$2,089 million in 2016. Energy market sales decreased \$55 million compared to 2015 primarily due to lower volume as a result of reduced demand by customers, specifically those within industries negatively impacted by a low oil price environment. In addition, pricing declines reduced sales by \$45 million. The divestiture of the industrial biocides assets and the exit from the redispersible powders product line decreased sales by \$24 million and \$11 million, respectively. Unfavorable foreign currency exchange and changes in volume and product mix combined decreased sales by \$27 million and \$12 million, respectively.

Gross profit during 2016 decreased \$26 million compared to 2015. Gross profit included certain key items during 2016 and 2015 as follows:

- as part of a restructuring plan within an existing manufacturing facility, 2016 included a net \$1 million of restructuring income and \$4 million of accelerated depreciation, while 2015 included severance and other costs of \$17 million and accelerated depreciation of \$6 million; and
- 2016 included \$5 million of income related to a customer claim adjustment while 2015 included a \$13 million charge related to a customer claim.

Additionally, gross profit within the energy market decreased \$17 million compared to 2015 primarily as a result of the unfavorable impact of lower volumes. The remaining gross profit decline of \$47 million compared to 2015 was partially due to planned plant turnarounds, which reduced gross profit by \$19 million during 2016, while lower costs, primarily raw materials, was offset by pricing declines. Volume and changes in product mix combined to decrease gross profit by \$13 million while unfavorable foreign currency exchange decreased gross profit by \$11 million. The divestiture of the industrial biocides assets decreased gross profit by \$4 million during 2016. In total, gross profit margin during 2016 increased 1.5 percentage points to 33.9% as compared to 2015.

Selling, general and administrative expense decreased \$24 million, or 5%, during 2016 as compared to 2015. The decrease was primarily due to an \$11 million impairment of IPR&D assets within research and development expenses during 2015 and favorable foreign currency exchange of \$8 million. Inflationary increases were offset by other savings initiatives. Equity and other income (loss) remained consistent compared to 2015.

Operating income totaled \$237 million for 2016 compared to \$239 million in 2015. EBITDA decreased \$1 million to \$476 million in 2016. Adjusted EBITDA decreased \$51 million to \$476 million in 2016. Adjusted EBITDA margin decreased 0.5 percentage points in 2016 to 22.8%.

EBITDA and Adjusted EBITDA reconciliation

The following EBITDA and Adjusted EBITDA presentation for the three annual periods is provided as a means to enhance the understanding of financial measurements that Ashland has internally determined to be relevant measures of comparison for the results of Specialty Ingredients. Adjusted EBITDA results have been prepared to illustrate the ongoing effects of Ashland's operations, which exclude certain key items. The key items within the current year related to \$17 million restructuring charges for the closure of a manufacturing plant and the termination of a contract at a manufacturing facility (which included \$14 million of accelerated depreciation and \$3 million of severance and other restructuring costs), \$7 million for the revaluation of Pharmachem inventory, \$6 million of charges related to an unplanned plant shutdown and \$1 million of severance costs. The prior year included \$4 million of restructuring charges, partially offset by a \$5 million income adjustment to a severance accrual, while 2015 included \$17 million of severance and other costs related to a manufacturing facility restructuring plan during 2015. The \$4 million and \$6 million of accelerated depreciation in 2016 and 2015, respectively, related to a manufacturing facility restructuring plan. The \$13 million adjustment during 2015 related to a customer claim which was subsequently adjusted by \$5 million during 2016. There were environmental reserve adjustments of \$2 million and \$3 million during 2016 and 2015, respectively. The impairment of \$11 million during 2015 relates to certain in-process research and development assets associated with a previous acquisition.

(In millions)	September 30		
	2017	2016	2015
Operating income	\$ 233	\$ 237	\$ 239
Depreciation and amortization (a)	229	239	238
EBITDA	462	476	477
Severance and other costs	4	(1)	17
Accelerated depreciation	14	4	6
Inventory fair value adjustment	7	—	—
Unplanned plant shutdown	6	—	—
Environmental reserve adjustment	—	2	3
Customer claim	—	(5)	13
Impairment of IPR&D assets	—	—	11
Adjusted EBITDA	<u>\$ 493</u>	<u>\$ 476</u>	<u>\$ 527</u>

(a) Excludes \$14 million, \$4 million and \$6 million of accelerated depreciation during 2017, 2016 and 2015, respectively.

Composites

Composites is a global leader in unsaturated polyester resins, vinyl ester resins and gelcoats. The Composites business manufactures and sells a broad range of general-purpose and high-performance grades of unsaturated polyester and vinyl ester resins, gelcoats and low-profile additives for the reinforced plastics industry. The products in the Composites business provide an array of functional properties including corrosion resistance, fire retardance, ultraviolet resistance, water and chemical resistance, high mechanical strength, impact and scratch resistance and high strength-to-weight ratios. Key end markets include transportation, construction, marine and infrastructure. In addition, the business manufactures and sells molten maleic anhydride for the manufacture of a variety of products such as unsaturated polyester resins, copolymers, lubricating oil additives, alkenyl succinic anhydrides, malic acid, fumaric acid and numerous derivative chemicals. Key markets include composites, personal care, dispersants and paper sizing.

Elastomers results were included in the Composites reportable segment results of operations within the Statements of Consolidated Comprehensive Income (Loss) until its December 1, 2014 sale. For additional information on the divestiture of the Elastomers division, see Note D of the Notes to Consolidated Financial Statements.

2017 compared to 2016

Composites' sales increased \$110 million to \$779 million in 2017. Volume increased sales by \$59 million, or 9%, as metric tons increased to 346.4 thousand in 2017. Improved product pricing increased sales by \$35 million, or 5%, while the acquisition of an unsaturated polyester resins manufacturing facility in the current year increased sales by \$22 million, or 3%. Unfavorable product mix decreased sales by \$6 million.

Gross profit increased \$3 million in 2017 compared to 2016. Volume increased gross profit by \$15 million while the impact of the manufacturing facility acquisition increased gross profit by \$2 million. Pricing effects were offset by higher costs to decrease gross profit by \$10 million and unfavorable product mix decreased gross profit by \$4 million. In total, gross profit margin during 2017 decreased 2.8 percentage points to 19.8% as compared to 2016.

Selling, general and administrative expense decreased \$3 million during 2017 compared to 2016, primarily due to declines in employee related costs of \$2 million and a reduction in bad debt expense of \$2 million. Equity and other income (loss) decreased \$2 million compared to 2016.

Operating income totaled \$67 million in 2017 compared to \$63 million in 2016. EBITDA increased \$4 million to \$89 million in 2017, while the EBITDA margin decreased 1.3 percentage points to 11.4% in 2017.

2016 compared to 2015

Composites' sales decreased \$165 million, or 20%, to \$669 million in 2016 compared to 2015. Lower product pricing decreased sales by \$66 million, or 8%, and the divestiture of the Elastomers division resulted in a loss of sales of \$40 million, or 5%. Lower volume decreased sales by \$30 million, or 4%, and unfavorable foreign currency exchange decreased sales by \$20 million, or 2%. Changes in product mix decreased sales by \$9 million.

Gross profit decreased \$9 million in 2016 compared to 2015. Lower volume and product mix combined to decrease gross profit by \$11 million while pricing effects were more than offset by lower costs, increasing gross profit by \$10 million. The sale of Elastomers and unfavorable foreign currency exchange each decreased gross profit by \$4 million. In total, gross profit margin during 2016 increased 3.4 percentage points as compared to 2015 to 22.6%.

Selling, general and administrative expenses decreased \$12 million during 2016 compared to 2015. This decrease was primarily due to declines in employee related costs of \$6 million, the sale of the Elastomers division of \$3 million and favorable foreign currency exchange of \$3 million. Equity and other income (loss) decreased \$1 million during 2016 compared to 2015.

Operating income totaled \$63 million in 2016 compared to \$61 million in 2015. EBITDA decreased \$3 million to \$85 million in 2016. EBITDA margin increased 2.1 percentage points to 12.7% in 2016.

EBITDA reconciliation

The following EBITDA presentation for the three annual periods is provided as a means to enhance the understanding of financial measurements that Ashland has internally determined to be relevant measures of comparison for the results of Composites. There were no unusual or key items that affected comparability for EBITDA during the current and prior years.

(In millions)	September 30		
	2017	2016	2015
Operating income	\$ 67	\$ 63	\$ 61
Depreciation and amortization	22	22	27
EBITDA	<u>\$ 89</u>	<u>\$ 85</u>	<u>\$ 88</u>

Intermediates and Solvents

Intermediates and Solvents is a leading producer of 1,4 butanediol (BDO) and related derivatives, including tetrahydrofuran and n-methylpyrrolidone. These products are used as chemical intermediates in the production of engineering polymers and polyurethanes, and as specialty process solvents in a wide array of applications including electronics, pharmaceuticals, water filtration membranes and more. Butanediol is also supplied to Ashland's Specialty Ingredients business for use as a raw material.

2017 compared to 2016

Intermediates and Solvents' sales increased \$4 million to \$265 million in 2017. The net impact of volume and product pricing increased sales by \$7 million with metric tons sold increasing to 137.0 thousand. This increase was partially offset by unfavorable foreign currency exchange and lower product pricing, which decreased sales by \$2 million and \$1 million, respectively.

Gross profit decreased \$12 million during 2017 compared to 2016. Pricing effects were offset by higher costs to decrease gross profit by \$12 million, which included the impact of higher facility turn around costs of \$9 million and incremental costs of \$7 million related to the temporary shutdown of a manufacturing plant due to a fire. Higher volumes increased gross profit by \$2 million which was offset by unfavorable product mix of \$2 million. In total, gross profit margin during 2017 decreased 4.5 percentage points to 6.5%.

Selling, general and administrative expense decreased \$181 million during 2017 as compared to 2016, primarily due to the non-cash long lived asset impairment recorded during 2016. See further discussion of this impairment within the "Critical Accounting Policies" section of Management's Discussion and Analysis.

Operating loss totaled \$12 million in 2017 as compared to \$181 million in 2016. EBITDA increased \$169 million to \$19 million in 2017, while Adjusted EBITDA decreased \$5 million to \$26 million. Adjusted EBITDA margin decreased 2.1 percentage points to 9.8% in 2017.

2016 compared to 2015

Intermediates and Solvents' sales decreased \$62 million, or 19%, to \$261 million in 2016. Lower product pricing decreased sales by \$45 million, or 14%, while changes in product mix decreased sales by \$15 million, or 5%. Unfavorable foreign currency exchange decreased sales by \$6 million while higher volume levels increased sales by \$4 million.

Gross profit decreased \$28 million during 2016 compared to 2015. Pricing declines, partially offset by lower raw material costs, decreased gross profit by \$42 million while lower facility turn around costs in 2016 compared to 2015 resulted in an increase in gross profit of \$14 million. In total, gross profit margin during 2016 decreased 6.8 percentage points to 11.0%.

Excluding the \$181 million impairment charge recorded during 2016 that was previously discussed in the "2017 compared to 2016" narrative, selling, general and administrative expenses decreased by \$2 million primarily due to employee related costs.

Operating income (loss) totaled a loss of \$181 million in 2016 as compared to income of \$26 million in 2015. EBITDA decreased \$208 million to a loss of \$150 million in 2016, while Adjusted EBITDA decreased \$27 million to \$31 million in 2016. Adjusted EBITDA margin decreased 6.1 percentage points to 11.9% in 2016.

EBITDA and Adjusted EBITDA reconciliation

The following EBITDA and Adjusted EBITDA presentation for the three annual periods is provided as a means to enhance the understanding of financial measurements that Ashland has internally determined to be relevant measures of comparison for the results of Intermediates and Solvents. Adjusted EBITDA results have been prepared to illustrate the ongoing effects of Ashland's operations, which exclude certain key items such as \$7 million of costs related to the temporary shutdown of a manufacturing plant due to a fire during 2017 and the \$181 million non-cash long lived asset impairment recorded in 2016. There were no unusual or key items that affected comparability for Adjusted EBITDA during 2015.

(In millions)	September 30		
	2017	2016	2015
Operating income (loss)	\$ (12)	\$ (181)	\$ 26
Depreciation and amortization	31	31	32
EBITDA	19	(150)	58
Unplanned plant shutdown	7	—	—
Impairment	—	181	—
Adjusted EBITDA	<u>\$ 26</u>	<u>\$ 31</u>	<u>\$ 58</u>

Unallocated and other

The following table summarizes the key components of the Unallocated and other segment's operating income (loss) for each of the last three years ended September 30.

(In millions)	September 30		
	2017	2016	2015
Losses on pension and other postretirement plan remeasurements	\$ (6)	\$ (142)	\$ (208)
Pension and other postretirement net periodic income (a)	2	65	44
Restructuring activities (includes separation, severance, integration and stranded divestiture costs)	(100)	(125)	(41)
Legal reserve	(5)	(15)	—
Environmental reserves for divested businesses	(20)	(36)	(29)
Tax indemnity income	—	—	16
Other income (expense)	(17)	7	4
Total unallocated expense	<u>\$ (146)</u>	<u>\$ (246)</u>	<u>\$ (214)</u>

(a) Amounts exclude service costs of \$9 million, \$22 million and \$22 million in 2017, 2016 and 2015, respectively, which are allocated to Ashland's reportable segments.

Unallocated and other recorded expense of \$146 million, \$246 million and \$214 million for 2017, 2016, and 2015, respectively. Unallocated and other includes pension and other postretirement net periodic costs and income within continuing operations that have not been allocated to reportable segments. These costs include interest cost, expected return on assets and amortization of prior service credit as these items are considered financing activities managed at the corporate level, as opposed to service costs which are allocated to reportable segments. The recurring pension and other postretirement components in Unallocated and other resulted in income of \$2 million, \$65 million and \$44 million during 2017, 2016 and 2015, respectively. Unallocated and other also includes gains and losses on pension and other postretirement plan remeasurements which resulted in losses of \$6 million, \$142 million and \$208 million in 2017, 2016 and 2015, respectively. The decrease in pension and other postretirement income and remeasurements in the current year is primarily due to the transfer of a substantial portion of the U.S. pension plans to Valvoline Inc. during September 2016.

The remaining unallocated items included charges for restructuring activities of \$100 million, \$125 million and \$41 million during 2017, 2016 and 2015, respectively. Restructuring activities primarily included \$82 million and \$81 million of costs related to the separation of Valvoline during both 2017 and 2016, respectively, along with stranded divestiture costs of \$13 million, \$37 million, and \$35 million in 2017, 2016 and 2015, respectively. Of these stranded divestiture costs, \$22 million and \$23 million related to costs previously allocated to the Valvoline reportable segment during 2016 and 2015, respectively. Additional, restructuring activities included \$4 million of integration charges during 2017 related to the acquisition of Pharmachem.

Additionally, Unallocated and other included environmental charges related to previously divested businesses of \$20 million, \$36 million and \$29 million during 2017, 2016 and 2015, respectively, and charges for legal reserves of \$5 million and \$15 million during 2017 and 2016, respectively.

FINANCIAL POSITION

Liquidity

Ashland had \$566 million in cash and cash equivalents as of September 30, 2017, of which \$556 million was held by foreign subsidiaries and had no significant limitations that would prohibit remitting the funds to satisfy corporate obligations. However, if this amount was repatriated to the United States, additional taxes would likely need to be accrued and paid depending on the source of the earnings remitted. Ashland currently has no plans to repatriate any amounts for which additional U.S. taxes would need to be accrued.

Ashland's cash flows from operating, investing and financing activities, as reflected in the Statements of Consolidated Cash Flows, are summarized as follows.

(In millions)	2017	2016	2015
Cash provided (used) by:			
Operating activities from continuing operations	\$ 255	\$ 372	\$ (256)
Investing activities from continuing operations	(829)	(177)	(391)
Financing activities from continuing operations	154	(1,845)	(30)
Discontinued operations	(197)	1,589	588
Effect of currency exchange rate changes on cash and cash equivalents	(5)	(8)	(47)
Net increase (decrease) in cash and cash equivalents	<u>\$ (622)</u>	<u>\$ (69)</u>	<u>\$ (136)</u>

Ashland paid income taxes of \$79 million during 2017 compared to \$108 million in 2016 and \$226 million in 2015. Cash receipts for interest income were \$4 million in 2017, \$5 million in 2016 and \$6 million in 2015, while cash payments for interest expense amounted to \$132 million in 2017, \$162 million in 2016 and \$149 million in 2015.

Operating activities

The following discloses the cash flows associated with Ashland's operating activities for 2017, 2016 and 2015, respectively.

(In millions)	2017	2016	2015
Cash flows provided (used) by operating activities from continuing operations			
Net income (loss)	\$ 28	\$ (28)	\$ 309
Income from discontinued operations (net of tax)	(133)	(255)	(321)
Adjustments to reconcile income from continuing operations to cash flows from operating activities			
Depreciation and amortization	301	302	306
Original issue discount and debt issuance cost amortization	109	18	18
Deferred income taxes	(30)	(29)	(49)
Equity income from affiliates	—	(1)	(3)
Distributions from equity affiliates	1	2	4
Stock based compensation expense - Note P	20	30	30
Loss on early retirement of debt	9	—	9
Realized gain and investment income on available-for-sale securities	(11)	(8)	(3)
Net loss on acquisitions and divestitures - Notes C and D	4	8	89
Impairments	—	181	11
Pension contributions	(7)	(33)	(610)
Loss on pension and other postretirement plan remeasurements	6	142	208
Change in operating assets and liabilities (a)	(42)	43	(254)
Total cash flows provided (used) by operating activities from continuing operations	<u>\$ 255</u>	<u>\$ 372</u>	<u>\$ (256)</u>

(a) Excludes changes resulting from operations acquired or sold.

Cash flows provided (used) by operating activities from continuing operations, a major source of Ashland's liquidity, amounted to \$255 million in 2017, \$372 million in 2016 and \$(256) million in 2015. The significant decline in operating cash flow during 2015 related primarily to \$610 million of pension contributions, which included a \$500 million voluntary pension plan contribution made in June 2015 for plans impacted by a pension settlement program. The \$500 million voluntary pension plan contribution was primarily related to Ashland's largest U.S. qualified pension plan which has since been transferred to Valvoline as discussed within Note M of the Notes to Consolidated Financial Statements.

Operating Activities - Operating Assets and Liabilities

Excluding the voluntary pension contribution in 2015, the cash results during each year were primarily driven by net income, excluding discontinued operation results, adjusted for certain non-cash items including depreciation and amortization (including debt issuance cost amortization), losses on acquisitions and divestitures as well as changes in working capital, which are fluctuations within accounts receivable, inventory, trade payables and accrued expenses. Ashland continues to emphasize working capital management as a high priority and focus.

The following details certain changes in key operating assets and liabilities for 2017, 2016 and 2015, respectively.

(In millions)	2017	2016	2015
Cash flows from assets and liabilities (a)			
Accounts receivable	\$ (64)	\$ 77	\$ 211
Inventories	(23)	48	45
Trade and other payables	60	(99)	(228)
Other assets and liabilities	(15)	17	(282)
Change in operating assets and liabilities	<u>\$ (42)</u>	<u>\$ 43</u>	<u>\$ (254)</u>

(a) Excludes changes resulting from operations acquired or sold.

Changes in net working capital accounted for an outflow of \$27 million in 2017 and inflows of \$26 million and \$28 million in 2016 and 2015, respectively, and were driven by the following:

- Accounts receivable - Changes in accounts receivable resulted in a \$64 million outflow of cash in 2017 compared to cash inflows of \$77 million and \$211 million in 2016 and 2015, respectively. The cash outflow in 2017 was

primarily the result of increased accounts receivable due to higher sales during the fourth quarter of 2017 compared to 2016 and 2015.

- Inventory - Changes in inventory resulted in a cash outflow of \$23 million in 2017 compared to cash inflows of \$48 million and \$45 million in 2016 and 2015, respectively, and were primarily due to sales volumes and inventory management.
- Trade and other payables - Changes in trade and other payables resulted in a cash inflow of \$60 million in 2017 compared to cash outflows of \$99 million and \$228 million in 2016 and 2015, respectively, which were primarily driven by fluctuations in trade payables and incentive compensation payouts from the prior year paid during the first quarter of each fiscal year. During 2014, there were increased accruals for incentive compensation and severance related to the 2014 global restructuring which resulted in large cash outflows in 2015.

The remaining cash outflow of \$15 million in 2017, cash inflow of \$17 million in 2016 and cash outflow of \$282 million in 2015 were primarily due to income taxes paid or income tax refunds, interest paid, and adjustments to certain accruals and long term assets and liabilities.

Operating Activities - Summary

Operating cash flows for 2017 included a loss from continuing operations of \$105 million, \$6 million of net losses on pension and other postretirement plan remeasurements and noncash adjustments of \$301 million for depreciation and amortization, and \$109 million for original issue discount and debt issuance cost amortization, including \$92 million of accelerated accretion related to the tender offer of the 2029 notes.

Operating cash flows for 2016 included a loss from continuing operations of \$283 million, \$142 million of net losses on pension and other postretirement plan remeasurements and noncash adjustments of \$302 million for depreciation and amortization, and \$18 million for debt issuance cost amortization. Operating cash flows for 2016 also included noncash adjustments of \$181 million related to the impairment of Intermediates and Solvents.

Operating cash flows for 2015 included a loss from continuing operations of \$12 million, \$208 million of net losses on pension and other postretirement plan remeasurements and noncash adjustments of \$306 million for depreciation and amortization, and \$18 million for debt issuance cost amortization, as well as the previously discussed \$610 million of pension contributions.

Investing activities

The following discloses the cash flows associated with Ashland's investing activities for 2017, 2016 and 2015.

(In millions)	2017	2016	2015
Cash flows provided (used) by investing activities from continuing operations			
Additions to property, plant and equipment	\$ (199)	\$ (231)	\$ (220)
Proceeds from disposal of property, plant and equipment	5	2	1
Purchase of operations - net of cash acquired	(680)	—	(8)
Proceeds from sale of operations or equity investments	18	19	139
Net purchases of funds restricted for specific transactions	(2)	(4)	(320)
Reimbursement from restricted investments	27	33	6
Proceeds from sale of available-for-sale securities	19	10	315
Purchase of available-for-sale securities	(19)	(10)	(315)
Proceeds from the settlement of derivative instruments	5	9	18
Payments for the settlement of derivative instruments	(3)	(5)	(7)
Total cash flows used by investing activities from continuing operations	<u>\$ (829)</u>	<u>\$ (177)</u>	<u>\$ (391)</u>

Cash used by investing activities was \$829 million in 2017 compared to \$177 million and \$391 million for 2016 and 2015, respectively. The significant cash investing activities for the current year primarily related to cash outflows of \$680 million for the acquisition of Pharmachem and \$199 million for capital expenditures. The current year also included reimbursements of \$27 million from the restricted renewable annual trust established as a result of the January 2015 asbestos insurance settlement.

The significant cash investing activities for 2016 included capital expenditures of \$231 million and reimbursements of \$33 million from the restricted renewable annual trust established as a result of the January 2015 asbestos insurance settlement.

The significant cash investing activities for 2015 included capital expenditures of \$220 million and proceeds of \$139 million from divestitures which primarily included \$105 million from the sale of the Elastomers division and approximately \$30 million from the sale of industrial biocides assets. Funds restricted for specific transactions represent the receipt of the January 2015 asbestos insurance settlement funds of \$335 million into a restricted renewable annual trust, partially offset by the reclassification into cash and cash equivalents of \$15 million of assets previously restricted in use for property transactions. Additionally, the purchase of and proceeds from the sale of available-for-sale securities of \$315 million related to investment activity involving equity and corporate bond funds within the asbestos trust.

Financing activities

The following discloses the cash flows associated with Ashland's financing activities for 2017, 2016 and 2015, respectively.

(In millions)	2017	2016	2015
Cash flows provided (used) by financing activities from continuing operations			
Proceeds from issuance of long-term debt	\$ 1,100	\$ —	\$ 1,100
Repayment of long-term debt	(915)	(1,095)	(623)
Premium on long-term debt repayment	(17)	—	(9)
Proceeds (repayment) from short-term debt	75	(156)	(3)
Repurchase of common stock	—	(500)	(397)
Debt issuance costs	(15)	—	(9)
Cash dividends paid	(77)	(97)	(98)
Excess tax benefits related to share-based payments	3	3	9
Total cash flows provided (used) by financing activities from continuing operations	<u>\$ 154</u>	<u>\$ (1,845)</u>	<u>\$ (30)</u>

Cash provided (used) by financing activities was \$154 million for 2017, \$(1,845) million for 2016, and \$(30) million for 2015. Significant cash financing activities for the current year included cash outflows of \$915 million primarily related to the full repayment of the 2018 notes and partial repayments of the 2029 notes and 2022 notes. The current year also included cash inflows of \$1,100 million from the issuance of the TLA Facilities and the TLB Facility. See further discussion regarding financing activities within the "Key Developments" section of Management's Discussion and Analysis herein. Additionally, the current year included short-term debt net cash inflows of \$75 million primarily related to debt outstanding on the 2017 Revolving Credit Facility and the accounts receivable securitization, partially offset by the repayment of the term loan due 2017. The current year included cash dividends paid of \$1.23 per share, for a total of \$77 million.

Significant cash financing activities during 2016 included the repayment of long-term debt of \$1,095 million primarily related to the 2015 Term Loan Facility. Additionally, 2016 included a cash outflow of \$500 million for the repurchase of common stock and short-term net debt repayments of \$156 million primarily related to the debt repayments under Ashland's 2015 revolving credit facility and the accounts receivable securitization facility, and the issuance of the \$150 million term loan facility due 2017. Ashland also paid cash dividends of \$1.56 per share, for a total of \$97 million.

Significant cash financing activities during 2015 primarily included the 2015 Senior Credit Agreement, the redemption of the 2016 Senior Notes, and the repurchase of common stock. As a result of the 2015 Senior Credit Agreement and redemption of the 2016 Senior Notes, Ashland received \$1,100 million from the issuance of the 2015 term loan facility and repaid \$623 million in long-term debt. In addition, Ashland repurchased \$397 million of common stock and paid cash dividends of \$1.46 per share, for a total of \$98 million.

Cash provided by discontinued operations

The following discloses the cash flows associated with Ashland's discontinued operations for 2017, 2016 and 2015, respectively.

(In millions)	2017	2016	2015
Cash provided (used) by discontinued operations			
Operating cash flows	\$ 110	\$ 293	\$ 589
Investing cash flows	(290)	(155)	(1)
Financing cash flows	(17)	1,451	—
Total cash provided (used) by discontinued operations	<u>\$ (197)</u>	<u>\$ 1,589</u>	<u>\$ 588</u>

Cash flows for discontinued operations in 2017 and 2016 primarily related to net cash outflows of \$158 million and net cash inflows of \$1,629 million, respectively, related to the activity of Valvoline Inc. The remaining cash flows for discontinued operations for these years related to other previously divested businesses, including net payments of asbestos and environmental liabilities.

Cash provided by discontinued operations during 2015 included \$319 million of net cash inflows related to the activity of Valvoline Inc., \$398 million of cash received, before taxes, related to the January 2015 asbestos insurance settlement, and \$48 million of delayed cash proceeds for a foreign entity from the sale of Water Technologies. These inflows were partially offset by \$91 million in tax payments primarily from the Water Technologies sale and a \$20 million payment for the working capital settlement related to the disposition of Water Technologies. The remaining cash flows in 2015 principally related to other previously divested businesses, including net payments of asbestos and environmental liabilities.

Free cash flow and other liquidity information

The following represents Ashland's calculation of free cash flow for the disclosed periods and reconciles free cash flow to cash flows provided by operating activities from continuing operations. Free cash flow does not reflect adjustments for certain non-discretionary cash flows such as mandatory debt repayments. See "Results of Operations - Consolidated Review - Use of non-GAAP measures" for additional information.

(In millions)	September 30		
	2017	2016	2015
Cash flows provided (used) by operating activities from continuing operations	\$ 255	\$ 372	\$ (256)
Less:			
Additions to property, plant and equipment	(199)	(231)	(220)
Discretionary contribution to pension plans	—	—	500
Free cash flows	<u>\$ 56</u>	<u>\$ 141</u>	<u>\$ 24</u>

At September 30, 2017, working capital (current assets minus current liabilities, excluding current assets and current liabilities of discontinued operations and long-term debt due within one year) amounted to \$941 million, compared to \$1,315 million at the end of 2016. Liquid assets (cash, cash equivalents and accounts receivable) amounted to 122% of current liabilities (excluding current liabilities of discontinued operations) at September 30, 2017 and 180% at September 30, 2016.

The following summary reflects Ashland's cash, investment securities and unused borrowing capacity as of September 30, 2017, 2016 and 2015.

(In millions)	September 30		
	2017	2016	2015
Cash and cash equivalents	\$ 566	\$ 1,017	\$ 1,257
Unused borrowing capacity			
2017 Revolving Credit Facility	\$ 579	\$ —	\$ —
2015 Revolving Credit Facility	—	742	1,013
Accounts receivable securitization facility	35	80	10

The borrowing capacity remaining under the 2017 Revolving Credit Facility was \$579 million due to an outstanding balance of \$173 million, as well as a reduction of \$48 million for letters of credit outstanding at September 30, 2017. In total, Ashland's available liquidity position, which includes cash, the revolving credit facilities and accounts receivable securitization facility, was \$1,180 million at September 30, 2017 as compared to \$1,839 million at September 30, 2016 and \$2,280 million at September 30, 2015. For further information, see Note I within the Notes to Consolidated Financial Statements.

Capital resources

Debt

The following summary reflects Ashland's debt as of September 30, 2017 and 2016.

(In millions)	September 30	
	2017	2016
Short-term debt (includes current portion of long-term debt)	\$ 235	\$ 170
Long-term debt (less current portion and debt issuance cost discounts) (a)	2,584	2,325
Total debt	<u>\$ 2,819</u>	<u>\$ 2,495</u>

(a) Includes \$25 million and \$20 million of debt issuance cost discounts as of September 30, 2017 and 2016, respectively.

The current portion of long-term debt was \$6 million at September 30, 2017. Debt as a percent of capital employed was 45% at September 30, 2017 and 44% at September 30, 2016. At September 30, 2017, Ashland's total debt had an outstanding principal balance of \$2,897 million, discounts of \$53 million, and debt issuance costs of \$25 million. The scheduled aggregate maturities of long-term debt for the next five fiscal years (including the current portion and excluding debt issuance costs) are as follows: \$6 million in 2018, \$11 million in 2019, \$269 million in 2020, \$56 million in 2021 and \$1,279 million in 2022.

Credit Agreements and Refinancing

2017 Credit Agreement

On May 17, 2017, in conjunction with the closing of the Pharmachem acquisition, Ashland entered into a secured credit agreement (the 2017 Credit Agreement) with a group of lenders. The 2017 Credit Agreement provided for (i) a \$250 million three-year term loan A facility (the Three-Year TLA Facility), (ii) a \$250 million five-year term loan A facility (the Five-Year TLA Facility and together with the Three-Year TLA Facility, the TLA Facilities) and (iii) a \$680 million five-year revolving credit facility (including a \$125 million letter of credit sublimit) (the 2017 Revolving Credit Facility). Proceeds of borrowings under the TLA Facilities were used solely to finance the acquisition of Pharmachem, while the proceeds of the 2017 Revolving Credit Facility were used to finance, in part, the acquisition of Pharmachem, to refinance the 2015 Senior Credit Agreement and for general corporate purposes. On May 19, 2017, Ashland entered into Amendment No. 1 to the 2017 Credit Agreement, which increased the aggregate commitments under the 2017 Revolving Credit Facility from \$680 million to \$800 million.

At Ashland's option, loans issued under the 2017 Credit Agreement bear interest at either LIBOR or an alternate base rate, in each case plus the applicable interest rate margin. Loans bear interest at LIBOR plus 1.75% per annum, in the case of LIBOR borrowings, or at the alternate base rate plus 0.75%, in the alternative, through and including the date of delivery of a quarterly compliance certificate and thereafter the interest rate will fluctuate between LIBOR plus 1.375% per annum and LIBOR plus 2.500% per annum (or between the alternate base rate plus 0.375% per annum and the alternate base rate plus 1.500% per annum), based upon Ashland's secured facilities ratings or the consolidated net leverage ratio (as defined in the 2017 Credit Agreement) (whichever yields a lower applicable interest rate margin) at such time. In addition, Ashland was required to pay fees of 0.25% per annum on the daily unused amount of the 2017 Revolving Credit Facility through and including the date of delivery of a compliance certificate, and thereafter the fee rate will fluctuate between 0.175% and 0.40% per annum, based upon Ashland's secured facilities rating or the consolidated net leverage ratio (whichever yields a lower applicable rate). The TLA Facilities may be prepaid at any time without premium. The Three-Year TLA Facility will not amortize and will be due on May 17, 2020. The Five-Year TLA Facility will not amortize in each of the first, second and third years and will amortize at a rate of 20% per annum in each of the fourth and fifth years (payable in equal quarterly installments), with the outstanding balance of the Five-Year TLA Facility to be paid on May 17, 2022.

On June 14, 2017, Ashland entered into Amendment No. 2 to the 2017 Credit Agreement, which provided for a new \$600 million seven-year senior secured term loan B facility (the 2017 TLB Facility). At Ashland's option, loans issued under the 2017 TLB Facility bear interest at either (x) LIBOR plus 2.00% per annum or (y) an alternate base rate plus 1.00% per annum. The 2017 TLB Facility may be prepaid at any time, subject to a prepayment premium if the prepayment is made on or prior to December 14, 2017 in connection with a Repricing Transaction (as defined in the 2017 Credit Agreement). The 2017 TLB Facility amortizes at a rate of 1.00% per annum (payable in equal quarterly installments) with the outstanding balance to be paid on May 17, 2024.

Ashland incurred \$15 million of new debt issuance costs in connection with the 2017 Credit Agreement, of which \$2 million was expensed immediately during 2017 within the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income. The remaining balance is amortized using the effective interest method. Additionally, as a result of the termination of the 2015 Senior Credit Agreement, Ashland recognized a \$5 million charge for the accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income.

The credit facilities under the 2017 Credit Agreement are guaranteed by Ashland Global Holdings Inc., Ashland Chemco Inc. and Ashland LLC's existing and future subsidiaries (other than certain immaterial subsidiaries, joint ventures, special purpose financing subsidiaries, regulated subsidiaries, foreign subsidiaries and certain other subsidiaries) and are secured by a first-priority security interest in substantially all of the personal property assets of Ashland and the guarantors, including all or a portion of the equity interests of certain of Ashland's domestic subsidiaries and first-tier foreign subsidiaries and, in certain cases, a portion of the equity interests of other foreign subsidiaries. The guarantees by Ashland's subsidiaries and pledge of security interests by such guarantors may, at Ashland's option, be released upon and during the occurrence of a Collateral Release Event (as defined in the 2017 Credit Agreement).

Senior notes refinancing, 2015 Senior Credit Agreement and 2016 Amendment

During June of 2015, Ashland completed certain refinancing transactions related to the \$600 million 3.000% senior notes due in 2016 (2016 Senior Notes). Ashland commenced and completed a cash tender offer to purchase for cash any and all of its outstanding 2016 Senior Notes. At the close of the tender offer, \$550 million aggregate principal amount of the 2016 Senior Notes was tendered by note holders, representing approximately 92% of the outstanding 2016 Senior Notes, which have been purchased by Ashland. Subsequently, Ashland redeemed the remaining balance of the 2016 Senior Notes of \$50 million on July 23, 2015.

In connection with the tender offer and redemption, in June 2015, Ashland entered into a new Credit Agreement (the 2015 Senior Credit Agreement). The 2015 Senior Credit Agreement replaced the \$1.2 billion senior unsecured revolving credit facility (the 2013 Senior Credit Facility), and was comprised of a new five-year senior unsecured revolving credit facility in an aggregate amount of \$1.2 billion (the 2015 Revolving Credit Facility), which included a \$250 million letter of credit sublimit and a \$100 million swing line loan sublimit, and a five-year senior unsecured term loan facility in an aggregate principal amount of \$1.1 billion (the 2015 term loan facility). The 2015 Senior Credit Agreement was not guaranteed, was unsecured and could be prepaid at any time without premium or penalty.

At Ashland's option, borrowings under the 2015 Revolving Credit Facility bore interest at either LIBOR or an alternate base rate, in each case plus the applicable interest rate margin. The loans' interest rate fluctuated between LIBOR plus 1.375% per annum and LIBOR plus 2.50% per annum (or between the alternate base rate plus 0.375% per annum and the alternate base rate plus 1.50% per annum), based upon Ashland's corporate credit ratings or the consolidated gross leverage ratio (as defined in the 2015 Senior Credit Agreement) (whichever yields a lower applicable interest rate margin) at such time. In addition, Ashland was required to pay fees of 0.25% per annum on the daily unused amount of the 2015 Revolving Credit Facility through and including June 30, 2015, and thereafter the fee rate fluctuated between 0.175% and 0.40% per annum, based upon Ashland's corporate credit ratings or the consolidated gross leverage ratio (whichever yields a lower fee rate).

During 2015, Ashland used the proceeds from borrowings under the \$1.1 billion term loan facility along with cash on hand (i) to fund the tender offer of the 2016 Senior Notes, (ii) to prepay in full the outstanding loans under the 2013 Senior Credit Facility, (iii) to pay accrued interest, fees and expenses under the 2013 Senior Credit Facility and the 2016 Senior Notes, (iv) to contribute funds to the U.S. pension plans impacted by the pension plan settlement program, and (v) to pay fees and expenses incurred in connection with the entry into the 2015 Senior Credit Agreement. As a result of the tender offer and redemption, Ashland recognized a \$9 million charge related to early redemption premium payments, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income (Loss) in 2015.

Ashland incurred \$10 million of new debt issuance costs in connection with the 2015 Senior Credit Agreement, of which \$2 million was expensed immediately during 2015 within the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income. The remaining balance was amortized over the term of the 2015 Senior Credit Agreement using the effective interest method. Additionally, as a result of the termination of the 2013 Senior Credit Facility and the repayment of the 2016 Senior Notes, Ashland recognized a \$2 million charge during 2015 for the accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income.

During July 2016, Ashland amended the 2015 Senior Credit Agreement to permit the Reorganization and the series of events relating to the separation of Valvoline Inc. Additionally, the amendment provided that if the aggregate principal amount of the Valvoline debt reaches \$750 million, Ashland would be required to use the net proceeds of such borrowings to repay the 2015 term loan facility and/or permanently reduce its existing revolving credit commitments under the 2015 Senior Credit Agreement in an aggregate amount of up to \$1 billion. As a result of the July 2016 amendment and the Valvoline debt borrowings in connection with the separation, Ashland reduced its revolving borrowing capacity to \$800 million.

The 2015 Term Loan Facility balance was repaid in full in connection with the combined Ashland and Valvoline financing activities during September 2016. In connection with these transactions, Ashland recognized a \$6 million charge for the accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income (Loss) in 2016.

Other Financing Activities

Redemption of 3.875% notes due 2018

In connection with the 2017 TLB Facility, Ashland redeemed all of its outstanding 3.875% senior notes due 2018 (2018 Senior Notes), of which approximately \$659 million were outstanding. Proceeds of borrowings under the 2017 TLB Facility, together with cash on hand, were used to pay for the redemption. Ashland recognized a \$13 million charge related to premiums paid and accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income.

Open market repurchases of 4.750% notes due 2022 and 3.875% notes due 2018

During 2017, Ashland executed open market repurchases of its 4.750% notes due 2022 (2022 Senior Notes) and its 3.875% notes due 2018 (2018 Senior Notes). As a result of these repurchases, the carrying values of the 2022 and 2018 Senior Notes were reduced by \$39 million and \$41 million, respectively. Ashland recognized a \$3 million charge related to premiums paid in the open market repurchases and accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income. As previously discussed, the remaining outstanding amount of the 2018 Senior Notes was redeemed during 2017.

6.50% junior subordinated notes due 2029

In December 2016, Hercules, an indirect wholly-owned subsidiary of Ashland, repurchased, through a cash tender offer, \$182 million of the aggregate principal par value amount of its 6.50% junior subordinated notes due 2029 (2029 Notes) for an aggregate purchase price of \$177 million. As a result, the carrying value of the 2029 Notes was reduced by \$90 million and Ashland recognized a \$92 million charge related to accelerated accretion of the recorded debt discount (compared to the total par value) and \$5 million of a net gain related to the repayment of the debt during 2017. The charge and net gain are included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income.

Accounts receivable securitization

On August 31, 2012, Ashland entered into a \$350 million accounts receivable securitization facility pursuant to (i) a Sale Agreement, among Ashland and certain of its direct and indirect subsidiaries (each an Originator and collectively, the Originators) and CVG Capital III LLC, a wholly-owned “bankruptcy remote” special purpose subsidiary of the Originators (CVG) and (ii) a Transfer and Administration Agreement, among CVG, each Originator, Ashland, as Master Servicer, certain Conduit Investors, Uncommitted Investors, Letter of Credit Issuers, Managing Agents, Administrators and Committed Investors, and The Bank of Nova Scotia, as agent for various secured parties (the Agent). The Transfer and Administration Agreement had a term of three years, but was extendable at the discretion of Ashland and the Investors. During 2016, the termination date of the commitments under the Transfer and Administration Agreement was extended from December 31, 2015, the previous termination extension date, to March 22, 2017. During the March 2017 quarter, this facility was extended for an additional year with similar terms as the previous facility agreement.

Under the Sale Agreement, each Originator will transfer, on an ongoing basis, certain of its accounts receivable, certain related assets and the right to the collections on those accounts receivable to CVG. Under the terms of the Transfer and Administration Agreement, CVG could, from time to time, obtain up to \$350 million (in the form of cash or letters of credit for the benefit of Ashland and its subsidiaries) from the Conduit Investors, the Uncommitted Investors and/or the Committed Investors through the sale of an undivided interest in such accounts receivable, related assets and collections. Subsequently during 2014 and 2015, the available funding for qualifying receivables under the accounts receivable securitization facility was reduced from \$350 million to \$275 million during 2014 and from \$275 million to \$250 million during 2015 due to the divestitures that occurred during the fiscal years. The accounts receivable securitization facility was reduced from \$250 million to \$100 million when Valvoline was removed as an Originator as part of the combined Ashland and Valvoline financing activities in September 2016. Ashland accounts for the securitization facility as secured borrowings, and the receivables sold pursuant to the facility are included in the Consolidated Balance Sheets as accounts receivable. Fundings under the Transfer and Administration Agreement will be repaid as accounts receivable are collected, with new fundings being advanced (through daily reinvestments) as new accounts receivable are originated by the Originators and transferred to CVG, with settlement generally occurring monthly. Ashland continues to classify any borrowings under this facility as a short-term debt instrument within the Consolidated Balance Sheets. Once sold to CVG, the accounts receivable, related assets and rights to collection described above are separate and distinct from each Originator’s own assets and are not available to its creditors should such Originator become insolvent. Substantially all of CVG’s assets have been pledged to the Agent in support of its obligations under the Transfer and Administration Agreement.

At September 30, 2017 and 2016, the outstanding amount of accounts receivable transferred by Ashland to CVG was \$155 million and \$133 million, respectively. There were \$56 million of borrowings under the facility as of September 30, 2017, while Ashland had no borrowings under the facility as of September 30, 2016. The weighted-average interest rate for this instrument was 2.8% for 2017 and 1.5% for 2016.

Subsidiary senior unsecured term loan

During August 2016, a wholly owned foreign subsidiary of Ashland entered into a credit agreement which provided for an aggregate principal amount of \$150 million in a senior unsecured term loan facility that matured on February 15, 2017. This term loan was drawn in full as of September 30, 2016 and was fully repaid during 2017.

Ashland debt covenant restrictions

Ashland's debt contains usual and customary representations, warranties and affirmative and negative covenants, including financial covenants for leverage and interest coverage ratios, limitations on liens, additional subsidiary indebtedness, restrictions on subsidiary distributions, investments, mergers, sale of assets and restricted payments and other customary limitations. As of September 30, 2017, Ashland was in compliance with all debt agreement covenant restrictions.

The maximum consolidated net leverage ratio permitted under Ashland's most recent credit agreement (the 2017 Credit Agreement) is 4.50. The 2017 Credit Agreement defines the consolidated net leverage ratio as the ratio of consolidated indebtedness minus unrestricted cash and cash equivalents to consolidated EBITDA (Covenant Adjusted EBITDA) for any measurement period. In general, the 2017 Credit Agreement defines Covenant Adjusted EBITDA as net income plus consolidated interest charges, taxes, depreciation and amortization expense, fees and expenses related to capital market transactions and proposed or actual acquisitions and divestitures, restructuring and integration charges, noncash stock and equity compensation expense, and any other nonrecurring expenses or losses that do not represent a cash item in such period or any future period; less any noncash gains or other items increasing net income. The computation of Covenant Adjusted EBITDA differs from the calculation of EBITDA and Adjusted EBITDA, which have been reconciled on page M-7. In general, consolidated indebtedness includes debt plus all purchase money indebtedness, banker's acceptances and bank guaranties, deferred purchase price of property or services, attributable indebtedness and guarantees.

The minimum required consolidated interest coverage ratio under the 2017 Credit Agreement during is 3.0. The 2017 Credit Agreement defines the consolidated interest coverage ratio as the ratio of Covenant Adjusted EBITDA to consolidated interest charges for any measurement period.

At September 30, 2017, Ashland's calculation of the consolidated net leverage ratio was 3.8, which is below the maximum consolidated net leverage ratio permitted under the 2017 Credit Agreement of 4.50. At September 30, 2017, Ashland's calculation of the consolidated interest coverage ratio was 4.7, which exceeds the minimum required consolidated ratio of 3.0.

Any change in Covenant Adjusted EBITDA of \$100 million would have an approximate 0.5x effect on the consolidated net leverage ratio and a 0.8x effect on the consolidated interest coverage ratio. Any change in consolidated indebtedness of \$100 million would affect the consolidated net leverage ratio by approximately 0.2x.

Ashland credit ratings

Ashland's corporate credit rating with Standard & Poor's is BB, while Moody's Investor Services is Ba2. Moody's Investor Services and Standard & Poor's outlooks both remained at stable. Subsequent changes to these ratings may have an effect on Ashland's borrowing rate or ability to access capital markets in the future.

Additional capital resources

Ashland cash projection

Ashland projects that cash flow from operations and other available financial resources such as cash on hand and revolving credit should be sufficient to meet investing and financing requirements to enable Ashland to comply with the covenants and other terms of its financing obligations. These projections are based on various assumptions that include, but are not limited to: operational results, capital expenditures, working capital needs and tax payment and receipts.

Total Equity

Total equity increased \$241 million since September 30, 2016 to \$3,406 million at September 30, 2017. The increase of \$241 million was primarily due to \$187 million related to the distribution of Valvoline Inc., \$27 million of net income attributable to the noncontrolling interest in Valvoline Inc., \$81 million related to deferred translation gains, \$15 million for common shares issued under stock incentive and other plans and \$15 million of a net change in the gain on available-for-sale securities. These increases were partially offset by \$77 million of regular cash dividends.

Stock repurchase programs

During 2015, Ashland's Board of Directors approved a \$1 billion share repurchase authorization (the 2015 stock repurchase program) that was set to expire on December 31, 2017. This authorization allows for common shares to be repurchased in open market transactions, privately negotiated transactions or pursuant to one or more accelerated stock repurchase programs or Rule 10b5-1 plans.

During 2017, Ashland's Board of Directors extended this \$1 billion share repurchase authorization indefinitely. As further described in the stock repurchase program agreements section below, there is \$500 million currently remaining on this authorization.

Stock repurchase program agreements

In November 2015, under the 2015 stock repurchase program, Ashland announced that it entered into an accelerated share repurchase agreement (2016 ASR Agreement) with Goldman Sachs & Co. Under the 2016 ASR Agreement, Ashland paid an initial purchase price of \$500 million and received an initial delivery of approximately 3.9 million shares of common stock during November 2015. In February 2016, Goldman Sachs & Co. exercised their early termination option under the 2016 ASR Agreement and the pricing period was closed. The settlement price, which represents the weighted average price of Ashland's common stock over the pricing period less a discount, was \$99.01 per share. Based on this settlement price, the final number of shares repurchased by Ashland that were delivered by Goldman Sachs & Co. under the 2016 ASR Agreement was 5.1 million shares. Ashland received the additional 1.2 million shares during 2016 to settle the difference between the initial share delivery and the total number of shares repurchased. After the 2016 ASR Agreement, \$500 million of share repurchase authorization remains under the 2015 stock repurchase authorization.

During 2015, Ashland announced and completed accelerated share repurchase agreements (2015 ASR Agreements) with Deutsche Bank and JPMorgan to repurchase an aggregate of \$270 million of Ashland's common stock. Under the 2015 ASR Agreements, Ashland paid an initial purchase price of \$270 million, split evenly between the financial institutions and received an initial delivery of approximately 1.9 million shares of common stock. The 2015 ASR Agreements had a variable maturity, at the financial institutions option, with a maximum pricing period termination date of July 31, 2015. During 2015, Deutsche Bank and JPMorgan exercised their early termination option under the 2015 ASR Agreements and the pricing period was closed. The settlement price, which represents the weighted average price of Ashland's common stock over the pricing period less a discount, was \$125.22 per share. Based on this settlement price, the final number of shares repurchased by Ashland that were delivered by the financial institutions under the 2015 ASR Agreements was 2.2 million shares. Ashland received the additional 0.3 million shares from the financial institutions during 2015 to settle the difference between the initial share delivery and the total number of shares repurchased.

Stockholder dividends

During May 2017, subsequent to the final distribution of Valvoline Inc.'s common stock, the Board of Directors announced a quarterly cash dividend of 22.5 cents per share to eligible shareholders at record. This amount was paid for quarterly dividends in the third and fourth quarters of fiscal 2017 and represents a reduction from the previous quarterly dividend of 39 cents per share.

In May 2015, the Board of Directors of Ashland announced a quarterly cash dividend increase to 39 cents per share to eligible shareholders of record. This amount was paid for quarterly dividends during the first and second quarters of fiscal 2017, each quarter of fiscal 2016 and the third and fourth quarters of fiscal 2015. This amount was an increase from the quarterly cash dividend of 34 cents per share paid during the first and second quarters of fiscal 2015.

Capital expenditures

Capital expenditures were \$199 million for 2017 and averaged \$217 million during the last three years. A summary of capital expenditures by reportable segment during 2017, 2016 and 2015 follow.

(In millions)	2017	2016	2015
Specialty Ingredients	\$ 148	\$ 179	\$ 171
Composites	26	23	23
Intermediates and Solvents	10	13	10
Unallocated and other	15	16	16
Total capital expenditures	<u>\$ 199</u>	<u>\$ 231</u>	<u>\$ 220</u>

A summary of the capital employed in Ashland's current operations, which is calculated by adding equity to capital investment, as of the end of the last three years as follows.

(In millions)	2017	2016	2015
Capital employed (a)			
Specialty Ingredients	\$ 5,726	\$ 4,959	\$ 5,043
Composites	461	418	425
Intermediates and Solvents	250	267	445

(a) Excludes the assets and liabilities classified within unallocated and other which primarily includes debt and other long-term liabilities such as asbestos and pension. The net liability in unallocated and other was \$3,031 million, \$2,479 million and \$2,876 million as of September 30, 2017, 2016 and 2015, respectively.

Contractual obligations and other commitments

The following table aggregates Ashland's obligations and commitments to make future payments under existing contracts at September 30, 2017. Contractual obligations for which the ultimate settlement of quantities or prices are not fixed and determinable have been excluded.

(In millions)	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Contractual obligations					
Raw material and service contract purchase obligations (a)	\$ 309	\$ 102	\$ 109	\$ 79	\$ 19
Employee benefit obligations (b)	82	12	15	15	40
Operating lease obligations (c)	218	31	56	32	99
Debt	2,897	235	280	1,335	1,047
Interest payments (d)	1,253	128	261	246	618
Unrecognized tax benefits (e)	194	—	—	—	194
Total contractual obligations	<u>\$ 4,953</u>	<u>\$ 508</u>	<u>\$ 721</u>	<u>\$ 1,707</u>	<u>\$ 2,017</u>

Other commitments

Letters of credit (f)	\$ 48	\$ 48	\$ —	\$ —	\$ —
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- (a) Includes raw material and service contracts where minimal committed quantities and prices are fixed.
- (b) Includes estimated funding of Ashland's qualified U.S. and non-U.S. pension plans for 2018 as well as projected benefit payments through 2027 under Ashland's unfunded pension and other postretirement benefit plans. Excludes the benefit payments from the pension plan trust funds. See Note M of the Notes to Consolidated Financial Statements for additional information.
- (c) Includes leases for office buildings, retail outlets, transportation equipment, warehouses and storage facilities and other equipment. For further information, see Note K of the Notes to Consolidated Financial Statements.
- (d) Includes interest expense on both variable and fixed rate debt assuming no prepayments. Variable interest rates have been assumed to remain constant through the end of the term at rates that existed as of September 30, 2017.
- (e) Due to uncertainties in the timing of the effective settlement of tax positions with respect to taxing authorities, Ashland is unable to determine the timing of payments related to noncurrent unrecognized tax benefits, including interest and penalties. Therefore, these amounts were included in the "More than 5 years" column.
- (f) Ashland issues various types of letters of credit as part of its normal course of business. For further information, see Note I of the Notes to Consolidated Financial Statements.

OFF-BALANCE SHEET ARRANGEMENTS

As part of its normal course of business, Ashland is a party to various financial guarantees and other commitments. These arrangements involve elements of performance and credit risk that are not included in the Consolidated Balance Sheets. The possibility that Ashland would have to make actual cash expenditures in connection with these obligations is largely dependent on the performance of the guaranteed party, or the occurrence of future events that Ashland is unable to predict. Ashland has reserved the approximate fair value of these guarantees in accordance with U.S. GAAP.

NEW ACCOUNTING PRONOUNCEMENTS

For a discussion and analysis of recently issued accounting pronouncements and its impact on Ashland, see Note A of Notes to Consolidated Financial Statements.

CRITICAL ACCOUNTING POLICIES

The preparation of Ashland's Consolidated Financial Statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, sales and expenses, and the disclosures of contingent assets and liabilities. Significant items that are subject to such estimates and assumptions include, but are not limited to, long-lived assets (including goodwill and other intangible assets), income taxes, liabilities and receivables associated with asbestos litigation and environmental remediation. Although management bases its estimates on historical experience and various other assumptions that are believed to be reasonable under the circumstances, actual results could differ significantly from the estimates under different assumptions or conditions. Management has reviewed the estimates affecting these items with the Audit Committee of Ashland's Board of Directors.

Long-lived assets

Tangible assets

The cost of property, plant and equipment is depreciated by the straight-line method over the estimated useful lives of the assets. Buildings are depreciated principally over 12 to 35 years and machinery and equipment principally over 2 to 25 years. Ashland reviews property, plant and equipment asset groups for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Ashland monitors these changes and events on at least a quarterly basis. Examples of events or changes in circumstances could include, but are not limited to, a prolonged economic downturn, current period operating or cash flow losses combined with a history of losses or a forecast of continuing losses associated with the use of an asset group, or a current expectation that an asset group will be sold or disposed of before the end of its previously estimated useful life. Recoverability is based upon projections of anticipated future undiscounted cash flows associated with the use and eventual disposal of the property, plant and equipment asset groups, as well as specific appraisals in certain instances. Reviews occur at the lowest level for which identifiable cash flows are largely independent of cash flows associated with other property, plant and equipment asset groups. If the future undiscounted cash flows result in a value that is less than the carrying value, then the long-lived asset is considered impaired and a loss is recognized based on the amount by which the carrying amount exceeds the estimated fair value. Various factors that Ashland uses in determining the impact of these assessments include the expected useful lives of long-lived assets and the ability to realize any undiscounted cash flows in excess of the carrying amounts of such asset groups, and are affected primarily by changes in the expected use of the assets, changes in technology or development of alternative assets, changes in economic conditions, changes in operating performance and changes in expected future cash flows. Because judgment is involved in determining the fair value of property, plant and equipment asset groups, there is risk that the carrying value of these assets may require adjustment in future periods.

Total depreciation expense on property, plant and equipment for 2017, 2016 and 2015 was \$219 million, \$226 million and \$228 million, respectively. Depreciation expense for 2017, 2016 and 2015 included \$19 million, \$6 million and \$6 million, respectively, in accelerated depreciation. Capitalized interest for 2017, 2016 and 2015 was \$1 million, \$1 million and \$2 million, respectively.

Finite-lived intangible assets

Finite-lived intangible assets principally consist of certain trademarks and trade names, intellectual property, and customer relationships. These intangible assets are amortized on a straight-line basis over their estimated useful lives. The cost of trademarks and trade names is amortized principally over 3 to 25 years, intellectual property over 5 to 25 years and customer and supplier relationships over 3 to 24 years. Ashland reviews finite-lived intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Ashland monitors these changes and events on at least a quarterly basis.

Amortization expense recognized on finite-lived intangible assets was \$82 million for 2017, \$76 million for 2016 and \$78 million for 2015, and is primarily included in the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income.

Goodwill

Ashland reviews goodwill and indefinite-lived intangible assets for impairment annually or when events and circumstances indicate an impairment may have occurred. The annual assessment is performed as of July 1 and consists of Ashland determining each reporting unit's current fair value compared to its current carrying value. Ashland determined that its reporting units for the

allocation of goodwill are its three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents. The reporting units changed from prior years due to Ashland completing the distribution of Valvoline during the current year.

Goodwill associated with the reporting units as of September 30, 2017 was \$2,315 million for Specialty Ingredients, \$150 million for Composites, and zero for Intermediates and Solvents as a result of full impairment during 2016.

As part of the goodwill impairment assessment, Ashland compares the carrying value of each reporting unit to its respective estimated fair value. Ashland makes various estimates and assumptions in determining the estimated fair values of those reporting units through the use of a combination of discounted cash flow models and valuations based on earnings multiples for guideline public companies in each reporting unit's industry peer group. Discounted cash flow models are highly reliant on various assumptions. Significant assumptions Ashland utilized in these models for the current year included: projected business results and future industry direction, long-term growth factors and weighted-average cost of capital. The base models of future financial performance projections utilized in the goodwill impairment assessment reflect conservative assumptions on future operating performance as approved by Management and the Board of Directors. Ashland uses assumptions that it deems to be reasonable estimates of likely future events and compares the total fair values of each reporting unit to Ashland's market capitalization, and implied control premium, to determine if the fair values are reasonable compared to external market indicators. Subsequent changes in these key assumptions could affect the results of future goodwill impairment reviews.

If the comparison of the estimated fair value of the reporting unit to its carrying value indicates that a reporting unit's estimated fair value is less than its carrying value, it is adjusted to its calculated fair value and the adjustment represents the impairment charge.

In conjunction with the July 1, 2017 annual assessment of goodwill, Ashland's valuation techniques did not indicate any impairment for Specialty Ingredients or Composites. Based on sensitivity analyses performed, a negative 1% change in the long-term growth factor and the weighted-average cost of capital assumption, which are key assumptions, would not have resulted in the carrying value of these reporting units to exceed their respective calculated fair value. Because the fair value results for these reporting units did not indicate a potential impairment existed, Ashland did not record any goodwill impairment for these reporting units during 2017, 2016 and 2015. Subsequent to this annual impairment test, no indicators of impairment were identified for any of these reporting units.

In conjunction with the July 1, 2016 annual assessment of impairment of goodwill, Ashland's valuation techniques determined that the carrying value of the Intermediates and Solvents reporting unit exceeded its fair value at July 1, 2016, which resulted in the reporting unit failing the first step of the goodwill impairment test. Ashland then performed the second step of the goodwill impairment test, which involved, among other things, obtaining third-party appraisals of substantially all of Intermediates and Solvents' tangible and intangible assets. Based on the results of its goodwill impairment testing as of July 1, 2016, Ashland recorded a pre-tax goodwill impairment charge of \$171 million in the fourth quarter of 2016, which is in addition to a \$10 million impairment related to Intermediates and Solvents' property, plant and equipment, and resulted in a total \$181 million impairment charge for Intermediates and Solvents during 2016.

Key factors that affected Ashland's conclusion that an impairment of the Intermediates and Solvents reporting unit had occurred during the fourth quarter of 2016 included the continued deterioration in the butanediol commodity market during 2016. Market conditions for butanediol, a commodity chemical used in the production of polymers, solvents and fine chemicals, can vary significantly from year to year or even quarter to quarter. Throughout 2016, increasing levels of overcapacity for butanediol in the market, particularly in China, and the resulting weak pricing had a cumulating negative impact on the financial performance of the Intermediates and Solvents division. Butanediol commodity contract prices had fallen consistently during 2016. These factors contributed significantly to lower expected EBITDA results within the longer-term forecast period. Ashland prepares its annual forecast mid-August through October each year. As the 2016 forecast was developed, Ashland considered many factors when assessing the outlook for 2017 and beyond. Because of these factors, Ashland revised its forecasts down significantly, which ultimately led to the goodwill and other long-lived asset impairment charge for the Intermediates and Solvents reporting unit during the fourth quarter of 2016.

Ashland assessed and summed the total fair values of each reporting unit to Ashland's market capitalization at the annual assessment date to determine if the fair values are reasonable compared to external market indicators. The calculated fair value for each reporting unit summed together exceeded Ashland's market capitalization at the annual assessment date by approximately 25%. Ashland evaluated this implied control premium by comparing it to control premiums of recent comparable transactions, noting the 25% implied control premium was below levels of other recent comparable transactions. Accordingly, Ashland believed that its calculated fair values for its reporting units was an appropriately conservative estimate of fair value for purposes of the annual goodwill impairment assessment. If the implied control premium was not reasonable in light of this assessment, Ashland would reevaluate its fair value estimates of the reporting units by adjusting the discount rates and other assumptions as necessary.

Other indefinite-lived intangible assets

Other indefinite-lived intangible assets include certain trademarks and trade names. These assets had a carrying value of \$301 million as of September 30, 2017. Ashland reviews these intangible assets for possible impairment annually or whenever events or changes in circumstances indicate that carrying amounts may not be recoverable. Ashland tests these assets using a “relief-from-royalty” valuation method compared to the carrying value. Significant assumptions inherent in the valuation methodologies for these intangibles include, but are not limited to, such estimates as projected business results, growth rates, weighted-average cost of capital, and royalty rates. The assumptions utilized in the current year models are generally consistent with the prior year models. In conjunction with the July 1 annual assessment of indefinite-lived intangible assets, Ashland’s models did not indicate any impairment, as each indefinite-lived intangible asset’s fair value exceeded their carrying values.

Ashland’s assessment of an impairment charge on any of these assets classified currently as having indefinite lives, including goodwill, could change in future periods if any or all of the following events were to occur with respect to a particular reporting unit: a significant change in projected business results, a divestiture decision, increase in Ashland’s weighted-average cost of capital rates, decrease in growth rates or other assumptions, economic deterioration that is more severe or of a longer duration than anticipated, or another significant economic event. For further information, see Note H of Notes to Consolidated Financial Statements.

Income taxes

Ashland is subject to income taxes in the United States and numerous foreign jurisdictions. Significant judgment in the forecasting of taxable income using historical and projected future operating results is required in determining Ashland’s provision for income taxes and the related assets and liabilities. The provision for income taxes includes income taxes paid, currently payable or receivable, and deferred taxes. Under U.S. GAAP, deferred tax assets and liabilities are determined based on differences between financial reporting and tax basis of assets and liabilities, and are measured using enacted tax rates and laws that are expected to be in effect when the differences reverse. Deferred tax assets are also recognized for the estimated future effects of tax loss carryforwards. The effect on deferred taxes of changes in tax rates is recognized in the period in which the enactment date occurs. Valuation allowances are established when necessary on a jurisdictional basis to reduce deferred tax assets to the amounts expected to be realized. Deferred taxes are not provided on the unremitted earnings of subsidiaries outside of the United States when it is expected that these earnings are indefinitely reinvested. In the event that the actual outcome of future tax consequences differs from Ashland’s estimates and assumptions due to changes or future events such as tax legislation, geographic mix of earnings, completion of tax audits or earnings repatriation plans, the resulting change to the provision for income taxes could have a material effect on the Statement of Consolidated Comprehensive Income (Loss) and Consolidated Balance Sheet.

The recoverability of deferred tax assets and the recognition and measurement of uncertain tax positions are subject to various assumptions and judgment by Ashland. If actual results differ from the estimates made by Ashland in establishing or maintaining valuation allowances against deferred tax assets, the resulting change in the valuation allowance would generally impact earnings or other comprehensive income depending on the nature of the respective deferred tax asset. Additionally, the positions taken with regard to tax contingencies may be subject to audit and review by tax authorities, which may result in future taxes, interest and penalties. Positive and negative evidence is considered in determining the need for a valuation allowance against deferred tax assets, which includes such evidence as historical earnings, projected future earnings, tax planning strategies and expected timing of reversal of existing temporary differences.

In determining the recoverability of deferred tax assets Ashland gives consideration to all available positive and negative evidence including reversals of deferred tax liabilities (other than those with an indefinite reversal period), projected future taxable income, tax planning strategies and recent financial operations. Ashland attaches the most weight to historical earnings due to their verifiable nature. In evaluating the objective evidence that historical results provide, we consider three years of cumulative income or loss. In addition, Ashland has reflected increases and decreases in our valuation allowance based on the overall weight of positive versus negative evidence on a jurisdiction by jurisdiction basis.

Asbestos litigation

Ashland and Hercules have liabilities from claims alleging personal injury caused by exposure to asbestos. To assist in developing and annually updating independent reserve estimates for future asbestos claims and related costs given various assumptions, Ashland retained Hamilton, Rabinovitz & Associates, Inc. (HR&A). The methodology used by HR&A to project future asbestos costs is based largely on recent experience, including claim-filing and settlement rates, disease mix, enacted legislation, open claims and litigation defense. The claim experience of Ashland and Hercules are separately compared to the results of previously conducted third party epidemiological studies estimating the number of people likely to develop asbestos-related diseases. Those studies were undertaken in connection with national analyses of the population expected to have been exposed to asbestos. Using that information, HR&A estimates a range of the number of future claims that may be filed, as well as the related costs that may be incurred in resolving those claims. Changes in asbestos-related liabilities and receivables are recorded on an after-tax basis within the discontinued operations caption in the Statements of Consolidated Comprehensive Income. See Note N of the Notes to Consolidated Financial Statements for additional information.

Ashland asbestos-related litigation

The claims alleging personal injury caused by exposure to asbestos asserted against Ashland result primarily from indemnification obligations undertaken in 1990 in connection with the sale of Riley, a former subsidiary. The amount and timing of settlements and number of open claims can fluctuate from period to period.

Ashland asbestos-related liability

From the range of estimates, Ashland records the amount it believes to be the best estimate of future payments for litigation defense and claim settlement costs, which generally approximates the mid-point of the estimated range of exposure from model results. Ashland reviews this estimate and related assumptions quarterly and annually updates the results of a non-inflated, non-discounted approximate 50-year model developed with the assistance of HR&A.

During the most recent update completed during 2017, it was determined that the liability for Ashland asbestos-related claims should be increased by \$36 million. Total reserves for asbestos claims were \$419 million at September 30, 2017 compared to \$415 million at September 30, 2016.

Ashland asbestos-related receivables

Ashland has insurance coverage for certain litigation defense and claim settlement costs incurred in connection with its asbestos claims, and coverage-in-place agreements exist with the insurance companies that provide substantially all of the coverage that will be accessed.

For the Ashland asbestos-related obligations, Ashland has estimated the value of probable insurance recoveries associated with its asbestos reserve based on management's interpretations and estimates surrounding the available or applicable insurance coverage, including an assumption that all solvent insurance carriers remain solvent. Substantially all of the estimated receivables from insurance companies are expected to be due from domestic insurers, all of which are solvent.

In October 2012, Ashland and Hercules initiated various arbitration proceedings against Underwriters at Lloyd's, certain London companies and/or Chartis (AIG) member companies seeking to enforce these insurers' contractual obligations to provide indemnity for asbestos liabilities and defense costs under existing coverage-in-place agreements. In addition, Ashland and Hercules initiated a lawsuit in Kentucky state court against certain Berkshire Hathaway entities (National Indemnity Company and Resolute Management, Inc.) on grounds that these Berkshire Hathaway entities had wrongfully interfered with Underwriters' and Chartis' performance of their respective contractual obligations to provide asbestos coverage by directing the insurers to reduce and delay certain claim payments.

On January 13, 2015, Ashland and Hercules entered into a comprehensive settlement agreement related to certain insurance coverage for asbestos bodily injury claims with Underwriters at Lloyd's, certain London companies and Chartis (AIG) member companies, along with National Indemnity Company and Resolute Management, Inc., under which Ashland and Hercules received a total of \$398 million. In exchange, all claims were released against these entities for past, present and future coverage obligations arising out of the asbestos coverage-in-place agreements that were the subject of the pending arbitration proceedings. In addition, as part of this settlement, Ashland and Hercules released all claims against National Indemnity Company and Resolute Management, Inc. in the Kentucky state court action. As a result, the arbitration proceedings and the Kentucky state court action have been terminated.

As a result of this settlement, Ashland recorded an after-tax gain of \$120 million within the discontinued operations caption of the Statements of Consolidated Comprehensive Income (Loss) during 2015. The Ashland insurance receivable balance was also reduced as a result of this settlement by \$227 million within the Consolidated Balance Sheets.

In addition, during 2015, Ashland placed \$335 million of the settlement funds received into a renewable annual trust restricted for the purpose of paying for ongoing and future litigation defense and claim settlement costs incurred in conjunction with asbestos claims.

Ashland entered into settlement agreements totaling \$5 million and \$4 million with certain insurers during 2017 and 2016, respectively, which resulted in a reduction of the Ashland insurance receivable within the Consolidated Balance Sheets by the same amount.

At September 30, 2017, Ashland's receivable for recoveries of litigation defense and claim settlement costs from insurers amounted to \$155 million (excluding the Hercules receivable for asbestos claims). Receivables from insurers amounted to \$151 million at September 30, 2016. During 2017, the annual update of the model used for purposes of valuing the asbestos reserve and its impact on valuation of future recoveries from insurers, was completed. This model update resulted in a \$15 million increase in the receivable for probable insurance recoveries.

Hercules asbestos-related litigation

Hercules has liabilities from claims alleging personal injury caused by exposure to asbestos. Such claims typically arise from alleged exposure to asbestos fibers from resin encapsulated pipe and tank products which were sold by one of Hercules' former subsidiaries to a limited industrial market. The amount and timing of settlements and number of open claims can fluctuate from period to period.

Hercules asbestos-related liability

From the range of estimates, Ashland records the amount it believes to be the best estimate of future payments for litigation defense and claim settlement costs, which generally approximates the mid-point of the estimated range of exposure from model results. Ashland reviews this estimate and related assumptions quarterly and annually updates the results of a non-inflated, non-discounted approximate 50-year model developed with the assistance of HR&A. As a result of the most recent annual update of this estimate, completed during 2017, it was determined that the liability for Hercules asbestos-related claims should be increased by \$16 million. Total reserves for asbestos claims were \$323 million at September 30, 2017 compared to \$321 million at September 30, 2016.

Hercules asbestos-related receivables

For the Hercules asbestos-related obligations, certain reimbursement obligations pursuant to coverage-in-place agreements with insurance carriers exist. As a result, any increases in the asbestos reserve have been partially offset by probable insurance recoveries. Ashland has estimated the value of probable insurance recoveries associated with its asbestos reserve based on management's interpretations and estimates surrounding the available or applicable insurance coverage, including an assumption that all solvent insurance carriers remain solvent. The estimated receivable consists exclusively of solvent domestic insurers.

As a result of the January 2015 asbestos insurance settlement previously described, Hercules resolved all disputes with Chartist (AIG) member companies under their existing coverage-in-place agreement for past, present and future Hercules asbestos claims. As a result, during 2015, a \$22 million reduction in the insurance receivable balance within the Consolidated Balance Sheets was recorded.

As of September 30, 2017 and 2016, the receivables from insurers amounted to \$68 million and \$63 million, respectively. During 2017, the annual update of the model used for purposes of valuing the asbestos reserve and its impact on valuation of future recoveries from insurers was completed. This model update resulted in a \$5 million increase in the receivable for probable insurance recoveries.

Asbestos litigation cost projection

Projecting future asbestos costs is subject to numerous variables that are extremely difficult to predict. In addition to the significant uncertainties surrounding the number of claims that might be received, other variables include the type and severity of the disease alleged by each claimant, the long latency period associated with asbestos exposure, mortality rates, dismissal rates, costs of medical treatment, the impact of bankruptcies of other companies that are co-defendants in claims, uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, and the impact of potential changes in legislative or judicial standards. Furthermore, any predictions with respect to these variables are subject to even greater uncertainty as the projection period lengthens. In light of these inherent uncertainties, Ashland believes that the asbestos reserves for Ashland and Hercules represent the best estimate within a range of possible outcomes. As a part of the process to develop these estimates of future asbestos costs, a range of long-term cost models was developed. These models are based on national studies that predict the number of people likely to develop asbestos-related diseases and are heavily influenced by assumptions regarding long-term inflation rates for indemnity payments and legal defense costs, as well as other variables mentioned previously. Ashland has currently estimated in various models ranging from approximately 40 to 50 year periods that it is reasonably possible that total future litigation defense and claim settlement costs on an inflated and undiscounted basis could range as high as approximately \$660 million for the Ashland asbestos-related litigation (current reserve of \$419 million) and approximately \$510 million for the Hercules asbestos-related litigation (current reserve of \$323 million), depending on the combination of assumptions selected in the various models. If actual experience is worse than projected, relative to the number of claims filed, the severity of alleged disease associated with those claims or costs incurred to resolve those claims, or actuarial refinement or improvements to the assumptions used within these models are initiated, Ashland may need to further increase the estimates of the costs associated with asbestos claims and these increases could be material over time.

Environmental remediation and asset retirement obligations

Ashland is subject to various federal, state and local environmental laws and regulations that require environmental assessment or remediation efforts (collectively environmental remediation) at multiple locations. At September 30, 2017, such locations included 82 waste treatment or disposal sites where Ashland has been identified as a potentially responsible party under Superfund or similar state laws, 126 current and former operating facilities (including certain operating facilities conveyed as part of the MAP Transaction) and about 1,225 service station properties, of which 61 are being actively remediated.

Ashland's reserves for environmental remediation and related environmental litigation amounted to \$163 million at September 30, 2017 compared to \$177 million at September 30, 2016, of which \$121 million at September 30, 2017 and \$134 million at September 30, 2016 were classified in other noncurrent liabilities on the Consolidated Balance Sheets. The remaining reserves were classified in accrued expenses and other liabilities on the Consolidated Balance Sheets.

The total reserves for environmental remediation reflect Ashland's estimates of the most likely costs that will be incurred over an extended period to remediate identified conditions for which the costs are reasonably estimable, without regard to any third-party recoveries. Engineering studies, probability techniques, historical experience and other factors are used to identify and evaluate remediation alternatives and their related costs in determining the estimated reserves for environmental remediation. Ashland continues to discount certain environmental sites and regularly adjusts its reserves as environmental remediation continues. Ashland has estimated the value of its probable insurance recoveries associated with its environmental reserve based on management's interpretations and estimates surrounding the available or applicable insurance coverage. At September 30, 2017 and 2016, Ashland's recorded receivable for these probable insurance recoveries was \$15 million and \$23 million, respectively, of which \$14 million and \$15 million, respectively, were classified in other noncurrent assets in the Consolidated Balance Sheets.

Environmental remediation reserves are subject to numerous inherent uncertainties that affect Ashland's ability to estimate its share of the costs. Such uncertainties involve the nature and extent of contamination at each site, the extent of required cleanup efforts under existing environmental regulations, widely varying costs of alternate cleanup methods, changes in environmental regulations, the potential effect of continuing improvements in remediation technology, and the number and financial strength of other potentially responsible parties at multiparty sites. Although it is not possible to predict with certainty the ultimate costs of environmental remediation, Ashland currently estimates that the upper end of the reasonably possible range of future costs for identified sites could be as high as approximately \$416 million. The largest reserve for any site is approximately 15% of the remediation reserve.

OUTLOOK

Ashland issued its financial outlook for fiscal 2018 as shown in the table below.

	FY2018 Outlook
Adjusted EBITDA	
Specialty Ingredients	\$560 - \$590 million
Composites	\$85 - \$95 million
Intermediates & Solvents	\$40 - \$50 million
Unallocated and other	(\$35 - \$45 million)
Key Operating Metrics	
Free cash flow	>\$220 million
Adjusted EPS	\$3.20 - \$3.40
Corporate Items	
Depreciation & amortization	~\$290 million
Interest expense	\$125 - \$135 million
Effective tax rate	8 - 13%
Capital expenditures	\$195 - \$205 million
Diluted share count	~64 million

EFFECTS OF INFLATION AND CHANGING PRICES

Ashland's financial statements are prepared on the historical cost method of accounting in accordance with U.S. GAAP and, as a result, do not reflect changes in the purchasing power of the U.S. dollar. Monetary assets (such as cash, cash equivalents and accounts receivable) lose purchasing power as a result of inflation, while monetary liabilities (such as accounts payable and indebtedness) result in a gain, because they can be settled with dollars of diminished purchasing power. As of September 30, 2017, Ashland's monetary assets exceed its monetary liabilities, leaving it currently more exposed to the effects of future inflation. However, given the recent consistent stability of inflation in the United States in the past decade as well as forward economic outlooks, current inflationary pressures seem moderate.

Certain of the industries in which Ashland operates are capital-intensive, and replacement costs for its plant and equipment generally would substantially exceed their historical costs. Accordingly, depreciation and amortization expense would be greater if it were based on current replacement costs. However, because replacement facilities would reflect technological improvements and changes in business strategies, such facilities would be expected to be more productive than existing facilities, mitigating at least part of the increased expense.

Ashland uses the LIFO method to value a relatively small portion of its inventories to provide a better matching of revenues with current costs. However, LIFO values such inventories below their replacement costs during inflationary periods.

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements including, without limitation, statements made under the caption "Management's Discussion and Analysis of Financial Condition and Results of Operation" (MD&A), within the meaning of Section 27A of the Securities Act of 1933, as amended and Section 21E of the Securities Exchange Act of 1934, as amended. Ashland has identified some of these forward-looking statements with words such as "anticipates," "believes," "expects," "estimates," "is likely," "predicts," "projects," "forecasts," "objectives," "may," "will," "should," "plans" and "intends" and the negative of these words or other comparable terminology. Ashland may from time to time make forward-looking statements in its Annual Report to Shareholders, quarterly reports and other filings with the Securities and Exchange Commission (SEC), news releases and other written and oral communications. These forward-looking statements are based on Ashland's expectations and assumptions, as of the date such statements are made, regarding Ashland's future operating performance and financial condition, as well as the economy and other future events or circumstances. Ashland's expectations and assumptions include, without limitation, those mentioned within the MD&A, internal forecasts and analyses of current and future market conditions and trends, management plans and strategies, operating efficiencies and economic conditions (such as prices, supply and demand, cost of raw materials, and the ability to recover raw-material cost increases through price increases), and risks and uncertainties associated with the following: the impact of acquisitions and/or divestitures that Ashland has made or may make, including the acquisition of Pharmachem (including the possibility that Ashland may not realize the anticipated benefits from such transactions); Ashland's substantial indebtedness (including the possibility that such indebtedness and related restrictive covenants may adversely affect Ashland's future cash flows, results of operations, financial condition and its ability to repay debt); the potential that Ashland does not realize all of the expected benefits of the separation of its Valvoline business; and severe weather, natural disasters, cyber events and legal proceedings and claims (including product recalls, environmental and asbestos matters). Various risks and uncertainties may cause actual results to differ materially from those stated, projected or implied by any forward-looking statements, including, without limitation, risks and uncertainties affecting Ashland that are contained in "Use of estimates, risks and uncertainties" in Note A of Notes to Consolidated Financial Statements and in Item 1A of this Annual Report on Form 10-K. Ashland believes its expectations and assumptions are reasonable, but there can be no assurance that the expectations reflected herein will be achieved. Unless legally required, Ashland undertakes no obligation to update any forward-looking statements made in this Form 10-K whether as a result of new information, future events or otherwise. Information on Ashland's website is not incorporated into or a part of this Form 10-K.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Ashland conducts business in a variety of foreign currencies. Accordingly, Ashland regularly uses foreign currency derivative instruments to manage exposure on certain transactions denominated in foreign currencies to curtail potential earnings volatility effects of certain assets and liabilities, including short-term inter-company loans, denominated in currencies other than Ashland's functional currency of an entity. These derivative contracts generally require exchange of one foreign currency for another at a fixed rate at a future date and generally have maturities of less than twelve months. All contracts are valued at fair value with net changes in fair value recorded within the selling, general and administrative expense caption. The impacts of these contracts were largely offset by gains and losses resulting from the impact of changes in exchange rates on transactions denominated in non-functional currencies.

As of September 30, 2017 and 2016, Ashland had not identified any significant credit risk on open derivative contracts. The potential loss from a hypothetical 10% adverse change in foreign currency rates on Ashland's open foreign currency derivative instruments would be largely offset by gains resulting from the impact of changes in exchange rates on transactions denominated in non-functional currencies. Ashland did not transact or have open any significant hedging contracts with respect to commodities or any related raw material requirements as of and for the year ended September 30, 2017.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management is responsible for the preparation and integrity of the Consolidated Financial Statements and other financial information included in this annual report on Form 10-K. Such financial statements are prepared in accordance with accounting principles generally accepted in the United States. Accounting principles are selected and information is reported which, using management's best judgment and estimates, present fairly Ashland's consolidated financial position, results of operations and cash flows. The other financial information in this annual report on Form 10-K is consistent with the Consolidated Financial Statements.

Ashland's management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f). Ashland's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of Ashland's Consolidated Financial Statements. Ashland's internal control over financial reporting is supported by a code of business conduct which summarizes our guiding values such as obeying the law, adhering to high ethical standards and acting as responsible members of the communities where we operate. Compliance with that Code forms the foundation of our internal control systems, which are designed to provide reasonable assurance that Ashland's assets are safeguarded and its records reflect, in all material respects, transactions in accordance with management's authorization. The concept of reasonable assurance is based on the recognition that the cost of a system of internal control should not exceed the related benefits. Management believes that adequate internal controls are maintained by the selection and training of qualified personnel, by an appropriate division of responsibility in all organizational arrangements, by the establishment and communication of accounting and business policies, and by internal audits.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements and even when determined to be effective, can only provide reasonable assurance with respect to financial statement preparation and presentation. Also, projections of any evaluation of effectiveness to future periods are subject to the risks that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The Board, subject to stockholder ratification, selects and engages the independent auditors based on the recommendation of the Audit Committee. The Audit Committee, composed of directors who are not members of management, reviews the adequacy of Ashland's policies, procedures, controls and risk management strategies, the scope of auditing and other services performed by the independent auditors, and the scope of the internal audit function. The Committee holds meetings with Ashland's internal auditor and independent auditors, with and without management present, to discuss the findings of their audits, the overall quality of Ashland's financial reporting and their evaluation of Ashland's internal controls. The report of Ashland's Audit Committee can be found in Ashland's 2017 Proxy Statement.

Management assessed the effectiveness of Ashland's internal control over financial reporting as of September 30, 2017. Management conducted its assessment utilizing the framework described in *Internal Control - Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on this assessment, management believes that Ashland maintained effective internal control over financial reporting as of September 30, 2017.

Management's assessment of the effectiveness of Ashland's internal control over financial reporting as of September 30, 2017 excluded Pharmachem Laboratories, Inc. (Pharmachem) which was acquired by Ashland in the third quarter of 2017. Total assets and total sales recorded by Ashland related to this acquisition represented 10% of Ashland's consolidated total assets and 3% of Ashland's consolidated sales, respectively, as of and for the year ended September 30, 2017. Companies are allowed to exclude acquisitions from their assessment of internal control over financial reporting during the first year of an acquisition while integrating the acquired company under guidelines established by the Securities and Exchange Commission.

Ernst & Young LLP, an independent registered public accounting firm, has audited and reported on the Consolidated Financial Statements of Ashland Global Holdings Inc. and Consolidated Subsidiaries as of and for the year ended September 30, 2017 and the effectiveness of Ashland's internal control over financial reporting as of September 30, 2017. The reports of the independent registered public accounting firm are contained in this Annual Report on Form 10-K.

/s/ William A. Wulfsohn
William A. Wulfsohn
Chairman of the Board and Chief Executive Officer

/s/ J. Kevin Willis
J. Kevin Willis
Senior Vice President and Chief Financial Officer
November 20, 2017

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Ashland Global Holdings Inc. and Consolidated Subsidiaries

We have audited Ashland Global Holdings Inc. and Consolidated Subsidiaries' internal control over financial reporting as of September 30, 2017, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). Ashland Global Holdings Inc. and Consolidated Subsidiaries' management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

As indicated in the accompanying Management's Report on Internal Control over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Pharmachem Laboratories, Inc., which is included in the 2017 consolidated financial statements of Ashland Global Holdings Inc. and Consolidated Subsidiaries and constituted 10% of total assets and 3% of sales, respectively, as of and for the year then ended. Our audit of internal control over financial reporting of Ashland Global Holdings Inc. and Consolidated Subsidiaries also did not include an evaluation of the internal control over financial reporting of Pharmachem Laboratories, Inc.

In our opinion, Ashland Global Holdings Inc. and Consolidated Subsidiaries maintained, in all material respects, effective internal control over financial reporting as of September 30, 2017, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of Ashland Global Holdings Inc. and Consolidated Subsidiaries as of September 30, 2017 and 2016, and the related consolidated statements of comprehensive income (loss), equity and cash flows for each of the three years in the period ended September 30, 2017 of Ashland Global Holdings Inc. and Consolidated Subsidiaries and our report dated November 20, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Cincinnati, Ohio
November 20, 2017

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Ashland Global Holdings Inc. and Consolidated Subsidiaries

We have audited the accompanying consolidated balance sheets of Ashland Global Holdings Inc. and Consolidated Subsidiaries (the "Company") as of September 30, 2017 and 2016, and the related consolidated statements of comprehensive income (loss), equity and cash flows for each of the three years in the period ended September 30, 2017. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Ashland Global Holdings Inc. and Consolidated Subsidiaries at September 30, 2017 and 2016, and the consolidated results of their operations and their cash flows for each of the three years in the period ended September 30, 2017, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Ashland Global Holdings Inc. and Consolidated Subsidiaries' internal control over financial reporting as of September 30, 2017, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated November 20, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

Cincinnati, Ohio
November 20, 2017

Ashland Global Holdings Inc. and Consolidated Subsidiaries
Statements of Consolidated Comprehensive Income (Loss)
Years Ended September 30

(In millions except per share data)	2017	2016	2015
Sales	\$ 3,260	\$ 3,019	\$ 3,420
Cost of sales	2,372	2,153	2,532
Gross profit	888	866	888
Selling, general and administrative expense (a)	670	914	692
Research and development expense	83	87	99
Equity and other income	7	8	15
Operating income (loss)	142	(127)	112
Net interest and other financing expense - Note I	234	173	174
Net loss on acquisitions and divestitures - Notes C and D	(6)	(8)	(89)
Loss from continuing operations before income taxes	(98)	(308)	(151)
Income tax expense (benefit) - Note L	7	(25)	(139)
Loss from continuing operations	(105)	(283)	(12)
Income from discontinued operations (net of tax) - Note E	133	255	321
Net income (loss)	28	(28)	309
Net income attributable to noncontrolling interest (b)	27	1	—
Net income (loss) attributable to Ashland	<u>\$ 1</u>	<u>\$ (29)</u>	<u>\$ 309</u>

PER SHARE DATA - NOTE A

Basic earnings per share

Loss from continuing operations	\$ (1.69)	\$ (4.51)	\$ (0.18)
Income from discontinued operations attributable to Ashland	1.70	4.04	4.72
Net income (loss) attributable to Ashland	<u>\$ 0.01</u>	<u>\$ (0.47)</u>	<u>\$ 4.54</u>

Diluted earnings per share

Loss from continuing operations	\$ (1.69)	\$ (4.51)	\$ (0.18)
Income from discontinued operations attributable to Ashland	1.70	4.04	4.72
Net income (loss) attributable to Ashland	<u>\$ 0.01</u>	<u>\$ (0.47)</u>	<u>\$ 4.54</u>

COMPREHENSIVE INCOME (LOSS)

Net income (loss)	\$ 28	\$ (28)	\$ 309
Other comprehensive income (loss), net of tax			
Unrealized translation gain (loss)	81	(14)	(369)
Pension and postretirement obligation adjustment	(4)	14	(18)
Net change in available-for-sale securities	15	17	(11)
Other comprehensive income (loss)	92	17	(398)
Comprehensive income (loss)	120	(11)	(89)
Comprehensive income attributable to noncontrolling interest	27	1	—
Comprehensive income (loss) attributable to Ashland	<u>\$ 93</u>	<u>\$ (12)</u>	<u>\$ (89)</u>

- (a) During 2016, selling, general and administrative expense included an impairment charge of \$181 million related to the Intermediates and Solvents reportable segment. See Note H for more information.
- (b) Represents the income attributable to the previous noncontrolling interest in Valvoline Inc., whose results are now included within discontinued operations. See Note B for more information.

See Notes to Consolidated Financial Statements.

Ashland Global Holdings Inc. and Consolidated Subsidiaries

Consolidated Balance Sheets

At September 30

(In millions)	2017	2016
Assets		
Current assets		
Cash and cash equivalents	\$ 566	\$ 1,017
Accounts receivable (a)	612	529
Inventories - Note A	634	539
Other assets	91	89
Current assets of discontinued operations - Note E	—	714
Total current assets	1,903	2,888
Noncurrent assets		
Property, plant and equipment - Note G		
Cost	3,762	3,615
Accumulated depreciation	1,792	1,715
Net property, plant and equipment	1,970	1,900
Goodwill - Note H	2,465	2,138
Intangibles - Note H	1,319	1,061
Restricted investments - Note F	302	292
Asbestos insurance receivable - Note N	209	196
Deferred income taxes - Note L	28	35
Other assets - Note J	422	437
Noncurrent assets of discontinued operations - Note E	—	1,053
Total noncurrent assets	6,715	7,112
Total assets	\$ 8,618	\$ 10,000
Liabilities and Equity		
Current liabilities		
Short-term debt - Note I	\$ 235	\$ 170
Trade and other payables	409	376
Accrued expenses and other liabilities	324	313
Current liabilities of discontinued operations - Note E	—	379
Total current liabilities	968	1,238
Noncurrent liabilities		
Long-term debt - Note I	2,584	2,325
Employee benefit obligations - Note M	191	195
Asbestos litigation reserve - Note N	694	686
Deferred income taxes - Note L	375	315
Other liabilities - Note J	400	361
Noncurrent liabilities of discontinued operations - Note E	—	1,715
Total noncurrent liabilities	4,244	5,597
Commitments and contingencies - Notes K and N		
Equity - Notes O and P		
Common stock, par value \$.01 per share, 200 million shares authorized		
Issued 62 million shares in 2017 and 2016	1	1
Paid-in capital	931	923
Retained earnings	2,696	2,704
Accumulated other comprehensive loss	(222)	(281)
Total Ashland stockholders' equity	3,406	3,347
Noncontrolling interest (b)	—	(182)
Total equity	3,406	3,165
Total liabilities and equity	\$ 8,618	\$ 10,000

(a) Accounts receivable includes an allowance for doubtful accounts of \$9 million and \$10 million at September 30, 2017 and 2016, respectively.

(b) Represents the previous noncontrolling interest in Valvoline Inc. held outside of Ashland which is now included within discontinued operations. See Note B for more information.

See Notes to Consolidated Financial Statements.

Ashland Global Holdings Inc. and Consolidated Subsidiaries
Statements of Consolidated Equity

(In millions)	Common stock	Paid-in capital	Retained earnings	Accumulated other comprehensive income (loss)	Noncontrolling interest (b)	Total
Balance at September 30, 2014						
Total comprehensive income (loss)	\$ 1	\$ —	\$ 3,475	\$ 107	\$ —	\$ 3,583
Net income						
Other comprehensive loss			309	(398)		309
Dividends, \$1.46 per common share			(98)			(398)
Common shares issued under stock incentive and other plans (c) (d)		46	(8)			(98)
Repurchase of common shares (e)			(397)			38
Balance at September 30, 2015	1	46	3,281	(291)	—	(397)
Total comprehensive income (loss)						3,037
Net income (loss)			(29)		1	(28)
Other comprehensive income			(97)	17		17
Dividends, \$1.56 per common share						(97)
Common shares issued under stock incentive and other plans (c) (d)		24				24
Repurchase of common shares (e)		(49)	(451)			(500)
Valvoline Inc. initial public offering (b)		902		(7)	(183)	712
Balance at September 30, 2016	1	923	2,704	(281)	(182)	3,165
Total comprehensive income (loss)						
Net income			1		27	28
Other comprehensive income			(77)	92		92
Dividends, \$1.23 per common share						(77)
Common shares issued under stock incentive and other plans (c) (d)		15				15
Distribution of Valvoline Inc. (b)		(7)	68	(33)	152	187
Other					7	—
Distributions to noncontrolling interest					(4)	(4)
Balance at September 30, 2017	1	931	2,696	(222)	—	3,406

(a) At September 30, 2017 and 2016, the accumulated other comprehensive loss of \$222 million and \$281 million, respectively, was comprised of unrecognized prior service credits as a result of certain employee benefit plan amendments of \$3 million and \$46 million, respectively, net unrealized translation losses of \$246 million and \$333 million, respectively, and net unrealized gains on available for sale securities of \$21 million and \$6 million, respectively. As of September 30, 2016, the unrecognized prior service credits and the net unrealized translation loss excluded amounts attributable to noncontrolling interest of \$9 million and \$2 million, respectively. The accumulated other comprehensive income that was distributed to Valvoline Inc. included \$39 million of unrecognized prior service credits and \$6 million of net unrealized translation losses.

(b) See Note B for discussion of the noncontrolling interest and the initial public offering and distribution of Valvoline Inc.

(c) Includes income tax benefits resulting from the exercise of stock options of \$4 million in 2017, \$4 million in 2016 and \$8 million in 2015.

(d) Common shares issued were 42,861, 417,584 and 441,609 for 2017, 2016 and 2015, respectively.

(e) Common shares repurchased were 5,049,911 and 3,944,356 for 2016 and 2015, respectively.

See Notes to Consolidated Financial Statements.

Ashland Global Holdings Inc. and Consolidated Subsidiaries

Statements of Consolidated Cash Flows

Years Ended September 30

(In millions)	2017	2016	2015
Cash flows provided (used) by operating activities from continuing operations			
Net income (loss)	\$ 28	\$ (28)	\$ 309
Income from discontinued operations (net of tax)	(133)	(255)	(321)
Adjustments to reconcile income from continuing operations to cash flows from operating activities			
Depreciation and amortization	301	302	306
Original issue discount and debt issuance cost amortization	109	18	18
Deferred income taxes	(30)	(29)	(49)
Equity income from affiliates	—	(1)	(3)
Distributions from equity affiliates	1	2	4
Stock based compensation expense - Note P	20	30	30
Loss on early retirement of debt	9	—	9
Realized gain and investment income on available-for-sale securities	(11)	(8)	(3)
Net loss on acquisitions and divestitures - Notes C and D	4	8	89
Impairments	—	181	11
Pension contributions	(7)	(33)	(610)
Loss on pension and other postretirement plan remeasurements	6	142	208
Change in operating assets and liabilities (a)	(42)	43	(254)
Total cash flows provided (used) by operating activities from continuing operations	255	372	(256)
Cash flows provided (used) by investing activities from continuing operations			
Additions to property, plant and equipment	(199)	(231)	(220)
Proceeds from disposal of property, plant and equipment	5	2	1
Purchase of operations - net of cash acquired	(680)	—	(8)
Proceeds from sale of operations or equity investments	18	19	139
Net purchases of funds restricted for specific transactions	(2)	(4)	(320)
Reimbursement from restricted investments	27	33	6
Proceeds from sale of available-for-sale securities	19	10	315
Purchase of available-for-sale securities	(19)	(10)	(315)
Proceeds from the settlement of derivative instruments	5	9	18
Payments for the settlement of derivative instruments	(3)	(5)	(7)
Total cash flows used by investing activities from continuing operations	(829)	(177)	(391)
Cash flows provided (used) by financing activities from continuing operations			
Proceeds from issuance of long-term debt	1,100	—	1,100
Repayment of long-term debt	(915)	(1,095)	(623)
Premium on long-term debt repayment	(17)	—	(9)
Proceeds (repayment) from short-term debt	75	(156)	(3)
Repurchase of common stock	—	(500)	(397)
Debt issuance costs	(15)	—	(9)
Cash dividends paid	(77)	(97)	(98)
Excess tax benefits related to share-based payments	3	3	9
Total cash flows provided (used) by financing activities from continuing operations	154	(1,845)	(30)
Cash used by continuing operations	(420)	(1,650)	(677)
Cash provided (used) by discontinued operations			
Operating cash flows	110	293	589
Investing cash flows	(290)	(155)	(1)
Financing cash flows	(17)	1,451	—
Total cash provided (used) by discontinued operations	(197)	1,589	588
Effect of currency exchange rate changes on cash and cash equivalents	(5)	(8)	(47)
Increase (decrease) in cash and cash equivalents	(622)	(69)	(136)
Cash and cash equivalents - beginning of year	1,017	1,257	1,393
Cash transferred to Valvoline	171	(171)	—
Cash and cash equivalents - end of year	<u>\$ 566</u>	<u>\$ 1,017</u>	<u>\$ 1,257</u>
Changes in assets and liabilities (a)			
Accounts receivable	\$ (64)	\$ 77	\$ 211
Inventories	(23)	48	45
Trade and other payables	60	(99)	(228)
Other assets and liabilities	(15)	17	(282)
Change in operating assets and liabilities	<u>\$ (42)</u>	<u>\$ 43</u>	<u>\$ (254)</u>
Supplemental disclosures			
Interest paid	\$ 132	\$ 162	\$ 149
Income taxes paid	79	108	226

(a) Excludes changes resulting from operations acquired or sold.

See Notes to Consolidated Financial Statements.

NOTE A – SIGNIFICANT ACCOUNTING POLICIES

Principles of consolidation and basis of presentation

On September 20, 2016, Ashland was reincorporated under the laws of the State of Delaware through a tax-free reorganization under a new holding company structure (the Reorganization). As a result of the Reorganization, Ashland Global Holdings Inc. replaced Ashland Inc. as the publicly held corporation and, through its subsidiaries, now conducts all of the operations that historically were conducted by Ashland Inc. Pursuant to the terms of the Reorganization, each outstanding share of Ashland common stock was automatically converted into one share of Ashland Global Holdings Inc. common stock. Following consummation of the Reorganization, (i) Ashland Inc. was converted into Ashland LLC, an indirect, wholly owned subsidiary of Ashland Global Holdings Inc., and (ii) Ashland Global Holdings Inc., as the new holding company, through its subsidiaries, conducts all of the operations conducted by Ashland Inc. immediately prior to the Reorganization. The Consolidated Financial Statements include the accounts of Ashland Global Holdings Inc. and its majority owned subsidiaries and, when applicable, entities for which Ashland has a controlling financial interest or is the primary beneficiary (Ashland). For entities for which Ashland has a controlling financial interest but owns less than 100%, the outside stockholders' interests are shown as noncontrolling interests. Investments in joint ventures and 20% to 50% owned affiliates where Ashland has the ability to exert significant influence are accounted for under the equity method.

The accompanying Consolidated Financial Statements have been prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP) and U.S. Securities and Exchange Commission (SEC) regulations. All intercompany transactions and balances have been eliminated. Additionally, certain prior period data, primarily related to discontinued operations, have been reclassified in the Consolidated Financial Statements and accompanying notes to conform to the current period presentation, as further described in this section.

On May 12, 2017, Ashland completed the distribution of its remaining 170 million shares of common stock of Valvoline Inc. which represented approximately 83% of the total outstanding shares of Valvoline Inc.'s common stock. This distribution of Valvoline represented a strategic shift in Ashland's business and, in accordance with U.S. GAAP, qualified as a discontinued operation. Accordingly, Valvoline's assets, liabilities, operating results and cash flows for all periods presented have been classified as discontinued operations within the Consolidated Financial Statements. See Note B for additional information on the separation of Valvoline Inc. The term Valvoline as used herein, depending on context, refers to either Valvoline Inc. or Valvoline as a previous reportable segment of Ashland.

Subsequent to completing the distribution of Valvoline Inc. during the current year, Ashland's operations are now managed within the following three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents. In previous years, Composites and Intermediates and Solvents were reporting units included within the Ashland Performance Materials reportable segment.

During 2016 and 2015, Ashland sold certain assets in its portfolio of businesses which were not reflected as discontinued operations in accordance with U.S. GAAP. See Notes D and Q for additional information on these activities as well as Ashland's current reportable segment results.

Use of estimates, risks and uncertainties

The preparation of Ashland's Consolidated Financial Statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and the disclosures of contingent assets and liabilities. Significant items that are subject to such estimates and assumptions include, but are not limited to, long-lived assets (including goodwill and other intangible assets), income taxes and liabilities and receivables associated with asbestos litigation and environmental remediation. Although management bases its estimates on historical experience and various other assumptions that are believed to be reasonable under the circumstances, actual results could differ significantly from the estimates under different assumptions or conditions.

Ashland's results are affected by domestic and international economic, political, legislative, regulatory and legal actions. Economic conditions, such as recessionary trends, inflation, interest and monetary exchange rates, government fiscal policies and changes in the prices of certain key raw materials, can have a significant effect on operations. While Ashland maintains reserves for anticipated liabilities and carries various levels of insurance, Ashland could be affected by civil, criminal, regulatory or administrative actions, claims or proceedings relating to asbestos, environmental remediation or other matters.

Cash and cash equivalents

Cash and cash equivalents include cash on hand and highly liquid investments maturing within three months after purchase.

NOTE A – SIGNIFICANT ACCOUNTING POLICIES (continued)**Allowance for doubtful accounts**

Ashland records an allowance for doubtful accounts as a best estimate of the amount of probable credit losses for accounts receivable. Each month, Ashland reviews this allowance and considers factors such as customer credit, past transaction history with the customer and changes in customer payment terms when determining whether the collection of a receivable is reasonably assured. Past due balances over 90 days and over a specified amount are reviewed individually for collectibility. The allowance for doubtful accounts is adjusted when it becomes probable a receivable will not be recovered.

A progression of activity in the allowance for doubtful accounts is presented in the following table.

(In millions)	2017	2016	2015
Allowance for doubtful accounts - beginning of year	\$ 10	\$ 7	\$ 8
Adjustments to net income	4	4	3
Reserves utilized	(4)	(2)	(3)
Other changes	(1)	1	(1)
Allowance for doubtful accounts - end of year	<u>\$ 9</u>	<u>\$ 10</u>	<u>\$ 7</u>

Inventories

Inventories are carried at the lower of cost or net realizable value. Inventories are primarily stated at cost using the weighted-average cost method. In addition, certain chemicals with a replacement cost of \$108 million at September 30, 2017 and \$102 million at September 30, 2016 are valued at cost using the last-in, first-out (LIFO) method.

The following summarizes Ashland's inventories as of the Consolidated Balance Sheet dates.

(In millions)	2017	2016
Finished products	\$ 390	\$ 377
Raw materials, supplies and work in process	245	163
LIFO reserves	(1)	(1)
	<u>\$ 634</u>	<u>\$ 539</u>

A progression of activity in the inventory reserves, which reduce the amounts of finished products and raw materials, supplies and work in process reported, is presented in the following table.

(In millions)	2017	2016	2015
Inventory reserves - beginning of year	\$ 31	\$ 31	\$ 47
Adjustments to net income	6	6	9
Reserves utilized	(8)	(6)	(5)
Dispositions and other changes	—	—	(20)
Inventory reserves - end of year	<u>\$ 29</u>	<u>\$ 31</u>	<u>\$ 31</u>

Property, plant and equipment

The cost of property, plant and equipment is depreciated by the straight-line method over the estimated useful lives of the assets. Buildings are depreciated principally over 12 to 35 years and machinery and equipment principally over 2 to 25 years. Such costs are periodically reviewed for recoverability when impairment indicators are present. Such indicators include, among other factors, operating losses, unused capacity, market value declines and technological obsolescence. Recorded values of asset groups of property, plant and equipment that are not expected to be recovered through undiscounted future net cash flows are written down to current fair value, which generally is determined from estimated discounted future net cash flows (assets held for use) or net realizable value (assets held for sale).

Goodwill and other intangibles

Ashland tests goodwill and other indefinite-lived intangible assets for impairment annually as of July 1 and when events and circumstances indicate an impairment may have occurred. Ashland reviews goodwill for impairment based on its identified

NOTE A – SIGNIFICANT ACCOUNTING POLICIES (continued)

reporting units, which are defined as operating segments or groupings of businesses one level below the operating segment level. Ashland tests goodwill for impairment by comparing the carrying value to the estimated fair value of its reporting units, determined using a combination of discounted cash flow models and valuations based on earnings multiples for guideline public companies in each reporting unit's industry peer group, when externally quoted market prices are not readily available. If this comparison indicates that a reporting unit's estimated fair value is less than its carrying value, it is adjusted to its calculated fair value and the adjustment represents the impairment charge.

Ashland tests its indefinite-lived intangible assets, principally trademarks and trade names, using a "relief-from-royalty" valuation method compared to the carrying value. Significant assumptions inherent in the valuation methodologies for goodwill and other intangibles are employed and include, but are not limited to, such estimates as future projected business results, growth rates, the weighted-average cost of capital for a market participant, and royalty and discount rates. If the carrying value of an individual indefinite-lived intangible asset exceeds its fair value, such individual indefinite-lived intangible asset is written down by an amount equal to such excess.

Finite-lived intangible assets principally consist of certain trademarks and trade names, intellectual property, and customer lists. These intangible assets are amortized on a straight-line basis over their estimated useful lives. The cost of trademarks and trade names is amortized principally over 3 to 25 years, intellectual property over 5 to 25 years and customer and supplier relationships over 3 to 24 years. Ashland reviews finite-lived intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount of an asset may not be recoverable. Ashland monitors these changes and events on at least a quarterly basis. For further information on goodwill and other intangible assets, see Note H.

Derivative instruments

Ashland regularly uses derivative instruments to manage its exposure to fluctuations in foreign currencies and certain commodities. All derivative instruments are recognized as either assets or liabilities on the balance sheet and are measured at fair value. Changes in the fair value of all derivatives are recognized immediately in the Statements of Consolidated Comprehensive Income (Loss) unless the derivative qualifies as a hedge of future cash flows or a hedge of a net investment in a foreign operation. Gains and losses related to an instrument that qualifies for hedge accounting are either recognized in the Statements of Consolidated Comprehensive Income (Loss) immediately to offset the gain or loss on the hedged item, or deferred and recorded in the stockholders' equity section of the Consolidated Balance Sheets as a component of accumulated other comprehensive income and subsequently recognized in the Statements of Consolidated Comprehensive Income (Loss) when the hedged item affects net income. The ineffective portion of the change in fair value of a hedge is recognized in income immediately. For additional information on derivative instruments, see Note F.

Restricted investments

On January 13, 2015, Ashland and Hercules LLC (formerly Hercules Incorporated), an indirect wholly-owned subsidiary of Ashland that was acquired in 2009, entered into a comprehensive settlement agreement related to certain insurance coverage for asbestos bodily injury claims with Underwriters at Lloyd's, certain London companies and Chartis (AIG) member companies, along with National Indemnity Company and Resolute Management, Inc., under which Ashland and Hercules received a total of \$398 million (the January 2015 asbestos insurance settlement). During 2015, Ashland placed \$335 million of the settlement funds into a renewable annual trust restricted for the purpose of paying ongoing and future litigation defense and claim settlement costs incurred in conjunction with asbestos claims. These funds are presented primarily as noncurrent assets, with \$30 million classified within other current assets in the Consolidated Balance Sheets as of September 30, 2017 and 2016.

As of September 30, 2017, the funds within the trust were primarily invested in equity and corporate bond investments with a portion maintained in demand deposits. The funds within the trust are classified as available-for-sale securities. Available-for-sale securities are reported at fair value with unrealized gains and losses, net of related deferred income taxes, included in the stockholders' equity section of the Consolidated Balance Sheets as a component of accumulated other comprehensive income. Interest income and realized gains and losses on the available-for-sale securities are reported in the net interest and other financing expense caption in the Statements of Consolidated Comprehensive Income. See Notes F and N for additional information regarding fair value of these investments within the trust and the January 2015 asbestos insurance settlement.

Revenue recognition

Sales generally are recognized when persuasive evidence of an arrangement exists, products are received or services are provided to customers, the sales price is fixed or determinable and collectibility is reasonably assured. For consignment inventory, title and risk of loss are transferred when the products have been consumed or used in the customer's production process. The percentage of Ashland's sales recognized from consignment inventory sales was 6% during 2017 and 2016 and 5% during 2015. Ashland reports all sales net of tax assessed by qualifying governmental authorities. Certain shipping and handling costs paid by the customer are recorded in sales, while those costs paid by Ashland are recorded in cost of sales. In May 2014, the FASB

NOTE A – SIGNIFICANT ACCOUNTING POLICIES (continued)

issued accounting guidance effective on October 1, 2018 that will change Ashland's policy and disclosure requirements for revenue recognition treatment. See the new accounting pronouncements section within this Note A for further information.

Expense recognition

Cost of sales include material and production costs, as well as the costs of inbound and outbound freight, purchasing and receiving, inspection, warehousing, internal transfers and all other distribution network costs. Selling, general and administrative expense includes sales and marketing costs, advertising, customer support, environmental remediation, corporate and divisional administrative and other costs. Advertising costs (\$6 million in 2017, 2016 and 2015) and research and development costs (\$83 million in 2017, \$87 million in 2016 and \$99 million in 2015) are expensed as incurred.

Income taxes

Ashland is subject to income taxes in the United States and numerous foreign jurisdictions. Significant judgment in the forecasting of taxable income using historical and projected future operating results is required in determining Ashland's provision for income taxes and the related assets and liabilities. The provision for income taxes includes income taxes paid, currently payable or receivable, and deferred taxes. Deferred tax assets and liabilities are determined based on differences between financial reporting and tax basis of assets and liabilities, and are measured using enacted tax rates and laws that are expected to be in effect when the differences reverse. Deferred tax assets are also recognized for the estimated future effects of tax loss carryforwards. The effect on deferred taxes of changes in tax rates is recognized in the period in which the enactment date occurs. Valuation allowances are established when necessary on a jurisdictional basis to reduce deferred tax assets to the amounts expected to be realized. In the event that the actual outcome of future tax consequences differs from Ashland's estimates and assumptions due to changes or future events such as tax legislation, geographic mix of earnings, completion of tax audits or earnings repatriation plans, the resulting change to the provision for income taxes could have a material effect on the Statements of Consolidated Comprehensive Income and Consolidated Balance Sheets. For additional information on income taxes, see Note L.

A progression of activity in the tax valuation allowances is presented in the following table.

(In millions)	2017	2016	2015
Tax valuation allowances - beginning of year	\$ 136	\$ 103	\$ 139
Adjustments to income tax expense (benefit)	27	43	(20)
Reserves utilized	(41)	(10)	(7)
Other changes	—	—	(9)
Tax valuation allowances - end of year	<u>\$ 122</u>	<u>\$ 136</u>	<u>\$ 103</u>

Asbestos-related litigation

Ashland is subject to liabilities from claims alleging personal injury caused by exposure to asbestos. Such claims result from indemnification obligations undertaken in 1990 in connection with the sale of Riley Stoker Corporation (Riley) and the acquisition of Hercules in November 2008. Although Riley, a former subsidiary, was neither a producer nor a manufacturer of asbestos, its industrial boilers contained some asbestos-containing components provided by other companies. Hercules, an indirect wholly-owned subsidiary of Ashland, has liabilities from claims alleging personal injury caused by exposure to asbestos. Such claims typically arise from alleged exposure to asbestos fibers from resin encapsulated pipe and tank products sold by one of Hercules' former subsidiaries to a limited industrial market.

Ashland retained Hamilton, Rabinovitz & Associates, Inc. (HR&A) to assist in developing and annually updating independent reserve estimates for future asbestos claims and related costs given various assumptions. The methodology used by HR&A to project future asbestos costs is based largely on Ashland's recent experience, including claim-filing and settlement rates, disease mix, enacted legislation, open claims, and litigation defense. Ashland's claim experience is compared to the results of previously conducted epidemiological studies estimating the number of people likely to develop asbestos-related diseases. Those studies were undertaken in connection with national analyses of the population expected to have been exposed to asbestos. Using that information, HR&A estimates a range of the number of future claims that may be filed, as well as the related costs that may be incurred in resolving those claims. From the range of estimates, Ashland records the amount it believes to be the best estimate of future payments for litigation defense and claim settlement costs. For additional information on asbestos-related litigation, see Note N.

NOTE A – SIGNIFICANT ACCOUNTING POLICIES (continued)

Environmental remediation

Accruals for environmental remediation are recognized when it is probable a liability has been incurred and the amount of that liability can be reasonably estimated. Such costs are charged to expense if they relate to the remediation of conditions caused by past operations or are not expected to mitigate or prevent contamination from future operations. Liabilities are recorded at estimated cost values based on experience, assessments and current technology, without regard to any third-party recoveries and are regularly adjusted as environmental assessments and remediation efforts continue. For additional information on environmental remediation, see Note N.

Pension and other postretirement benefits

The funded status of Ashland's pension and other postretirement benefit plans is recognized in the Consolidated Balance Sheets. The funded status is measured as the difference between the fair value of plan assets and the benefit obligation at September 30, the measurement date. For defined benefit pension plans, the benefit obligation is the projected benefit obligation (PBO) and for the other postretirement benefit plans, the benefit obligation is the accumulated postretirement benefit obligation (APBO). The PBO represents the actuarial present value of benefits expected to be paid upon retirement based on estimated future compensation levels. The APBO represents the actuarial present value of postretirement benefits attributed to employee services already rendered. The measurement of the benefit obligation is based on Ashland's estimates and actuarial valuations. These valuations reflect the terms of the plans and use participant-specific information such as compensation, age and years of service, as well as certain key assumptions that require significant judgment, including, but not limited to, estimates of discount rates, expected return on plan assets, rate of compensation increases, interest rates and mortality rates. The fair value of plan assets represents the current market value of assets held by an irrevocable trust fund for the sole benefit of participants. For additional information regarding plan assumptions and the current financial position of the pension and other postretirement plans, see Note M.

Ashland recognizes the change in the fair value of plan assets and net actuarial gains and losses annually in the fourth quarter of each fiscal year and whenever a plan is determined to qualify for a remeasurement. The remaining components of pension and other postretirement benefits expense are recorded ratably on a quarterly basis. Pension and other postretirement benefits adjustments charged directly to cost of sales that are applicable to inactive participants are excluded from inventoriable costs. The service cost component of pension and other postretirement benefits costs is allocated to each reportable segment on a ratable basis; while the remaining components of pension and other postretirement benefits costs are recorded to Unallocated and other.

Foreign currency translation

Operations outside the United States are measured primarily using the local currency as the functional currency. Upon consolidation, the results of operations of the subsidiaries and affiliates whose functional currency is other than the U.S. dollar are translated into U.S. dollars at the average exchange rates for the year while assets and liabilities are translated at year-end exchange rates. Consistent with U.S. GAAP standards, adjustments to translate assets and liabilities into U.S. dollars are recorded in the stockholders' equity section of the Consolidated Balance Sheets as a component of accumulated other comprehensive income and are included in net earnings only upon sale or substantial liquidation of the underlying foreign subsidiary or affiliated company.

Stock incentive plans

Ashland recognizes compensation expense for stock incentive plans awarded to key employees and directors, primarily in the form of stock appreciation rights (SARs), restricted stock and restricted stock units, performance shares and other non-vested stock awards, that are generally based upon the grant-date fair value over the appropriate vesting period. Ashland utilizes several industry accepted valuation models to determine the fair value. For further information concerning stock incentive plans, see Note P.

Earnings per share

The following is the computation of basic and diluted earnings per share (EPS) from continuing operations attributable to Ashland. Earnings per share are reported under the treasury stock method. Stock options and SARs for each reported year whose grant price was greater than the market price of Ashland Common Stock at the end of each fiscal year were not included in the computation of loss from continuing operations per diluted share because the effect of these instruments would be antidilutive. The total number of these shares outstanding was 1.1 million for 2017, 1.2 million for 2016 and 0.7 million for 2015.

NOTE A – SIGNIFICANT ACCOUNTING POLICIES (continued)

(In millions except per share data)	2017	2016	2015
Numerator			
Numerator for basic and diluted EPS -			
Loss from continuing operations, net of tax	\$ (105)	\$ (283)	\$ (12)
Denominator			
Denominator for basic EPS - Weighted-average			
common shares outstanding	62	63	68
Share based awards convertible to common shares (a)	—	—	—
Denominator for diluted EPS - Adjusted weighted-			
average shares and assumed conversions	62	63	68
EPS from continuing operations attributable to Ashland			
Basic	\$ (1.69)	\$ (4.51)	\$ (0.18)
Diluted	(1.69)	(4.51)	(0.18)

(a) As a result of the loss from continuing operations for 2017, 2016 and 2015, the effect of the share-based awards convertible to common shares would be antidilutive. In accordance with U.S. GAAP, they have been excluded from the diluted EPS calculation.

New accounting pronouncements

In May 2014, the FASB issued accounting guidance outlining a single comprehensive five step model for entities to use in accounting for revenue arising from contracts with customers (ASC 606 Revenue from Contracts with Customers). The new guidance and subsequent amendments to it supersedes most current revenue recognition guidance, in an effort to converge the revenue recognition principles within U.S. GAAP. This new guidance also requires entities to disclose certain quantitative and qualitative information regarding the nature, amount, timing and uncertainty of qualifying revenue and cash flows arising from contracts with customers. Entities have the option of using a full retrospective or a modified retrospective approach to adopt the new guidance. Ashland has identified an implementation team that is currently evaluating the impact of the new standard on the Consolidated Financial Statements and the adoption method options available as well as the overall impact the new guidance will have on the organization. The assessment process consists of categorizing Ashland's revenue streams and reviewing the current internal accounting policies and practices to determine potential differences that would result from applying the requirements of the new standard to revenue contracts. Additional discussions and meetings with each revenue stream team have occurred to solicit input, identify potential impacts and appropriate changes to Ashland's business processes, systems and controls to support the revenue recognition and disclosure requirements under the new standard. Based on various preliminary assessments conducted to date, Ashland has identified agreements with distributors and customers that are subject to rebate and incentive programs that could contain elements of material rights and/or variable consideration. Ashland does not currently believe that these elements would result in a material change to how revenue would be recognized for these agreements. Ashland currently intends to adopt this standard using the modified retrospective approach and does not believe the impact will be material to the Consolidated Financial Statements but does expect there to be significant additional disclosures within the Notes to Consolidated Financial Statements. This guidance becomes effective for Ashland on October 1, 2018 and Ashland currently plans to adopt the standard at that time.

In August 2017, the FASB issued accounting guidance amending the existing hedge accounting model to simplify various hedge documentation requirements while also expanding hedging abilities for certain nonfinancial and financial risk components. This guidance will become effective for Ashland on October 1, 2019. Ashland is currently evaluating the impact this guidance may have on Ashland's Consolidated Financial Statements.

In March 2017, the FASB issued accounting guidance that will change how employers who sponsor defined benefit pension and/or postretirement benefit plans present the net periodic benefit cost in the Statement of Consolidated Comprehensive Income. This guidance requires employers to present the service cost component of net periodic benefit cost in the same caption within the Statement of Consolidated Comprehensive Income (Loss) as other employee compensation costs from services rendered during the period. All other components of the net periodic benefit cost will be presented separately outside of the operating income caption. This guidance must be applied retrospectively and will become effective for Ashland on October 1, 2018, with early adoption being optional. Ashland intends to early adopt this guidance on October 1, 2017 and will revise the presentation of the net periodic benefit cost in previous periods to conform to the current period presentation.

In January 2017, the FASB issued accounting guidance which simplifies the subsequent measurement of goodwill by eliminating the second step of the two-step impairment test under which the implied fair value of goodwill is determined as if the reporting unit were being acquired in a business combination. The guidance instead requires entities to compare the fair value of a reporting unit with its carrying amount and recognize an impairment charge for any amount by which the carrying amount exceeds

NOTE A – SIGNIFICANT ACCOUNTING POLICIES (continued)

the reporting unit's fair value. Ashland elected to early adopt this guidance in conjunction with its annual assessment of goodwill performed as of July 1, 2017.

In August 2016, the FASB issued new accounting guidance on eight specific cash flow classification issues. The amendments in this guidance will become effective retrospectively for Ashland on October 1, 2018. Early adoption is permitted in any interim or annual period. Ashland is currently evaluating the impact this guidance may have on Ashland's Consolidated Financial Statements.

In March 2016, the FASB issued new accounting guidance for certain aspects of share-based payments to employees. This guidance requires all excess tax benefits and tax deficiencies related to share-based payments to be recognized as income tax expense in the Statements of Consolidated Comprehensive Income (Loss) instead of additional paid in capital, and changes the classification of excess tax benefits from a financing activity to an operating activity within the statement of cash flows. This guidance also allows entities to make an accounting policy election to either estimate the number of awards that are expected to vest or account for forfeitures when they occur. Lastly, this guidance increases the amount an employer can withhold to cover income taxes on awards and still qualify for equity classification and requires that cash paid by an employer when directly withholding shares for tax-withholding purposes be classified as a financing activity within the statement of cash flows. The guidance will become effective for Ashland on October 1, 2017. Ashland does not expect this new accounting guidance to have a significant effect on its Consolidated Financial Statements or disclosures.

In February 2016, the FASB issued new accounting guidance related to lease transactions. The main objective of this guidance is to increase transparency and comparability among organizations by requiring lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by leases and to disclose key information about leasing arrangements. The presentation of the Statements of Consolidated Comprehensive Income (Loss) and the Statements of Consolidated Cash Flows is largely unchanged under this guidance. This guidance retains a distinction between finance leases and operating leases, and the classification criteria for distinguishing between finance leases and operating leases are substantially similar to the classification criteria for distinguishing between capital leases and operating leases in the current accounting literature. The guidance will become effective for Ashland on October 1, 2019. This new accounting guidance will have a significant effect on Ashland's Consolidated Balance Sheet and disclosures. Ashland is currently evaluating implementation options and quantifying the impact that this guidance will have within its Consolidated Balance Sheet.

In January 2016, the FASB issued accounting guidance related to the recognition and measurement of financial assets and financial liabilities. The main objective of this guidance is enhancing the reporting model for financial instruments to provide users of financial statements with more decision-useful information. The amendments in this guidance address certain aspects of recognition, measurement, presentation and disclosure of financial instruments. The guidance also eliminates the requirement for public business entities to disclose the method(s) and significant assumptions used to estimate the fair value that is required to be disclosed for financial instruments measured at amortized cost on the balance sheet and clarifies that an entity should evaluate the need for a valuation allowance on a deferred tax asset related to available-for-sale securities in combination with the entity's other deferred tax assets. The guidance will become effective for Ashland on October 1, 2018. Ashland is currently evaluating the impact this guidance may have on Ashland's Consolidated Financial Statements.

In September 2015, the FASB issued accounting guidance to simplify the accounting for measurement-period adjustments related to acquisitions. This guidance requires that an acquirer recognize adjustments to initial amounts that are identified during the measurement period in the reporting period in which the adjustment amounts are determined. The amendments require that the acquirer record, in the same period's financial statements, the effect on earnings changes in depreciation, amortization, or other income effects, if significant, as a result of the change to the initial amounts, calculated as if the accounting had been completed at the acquisition date. These effects should be presented separately on the face of the Statements of Consolidated Comprehensive Income (Loss) or disclosed in the notes the portion of the amount recorded in current-period earnings by line item that would have been recorded in previous reporting periods if the adjustment to the provisional amounts had been recognized as of the acquisition date. This guidance became effective prospectively for Ashland on October 1, 2016. In accordance with this new guidance, see Note C for disclosure of the subsequent adjustments to the initial purchase price of acquisitions.

In April 2015, the FASB issued accounting guidance to help entities evaluate the accounting for fees paid by a customer in a cloud computing arrangement. Cloud computing arrangements represent the delivery of hosted services over the internet which includes software, platforms, infrastructure and other hosting arrangements. Under the guidance, customers that gain access to software in a cloud computing arrangement account for the software as internal-use software only if the arrangement includes a software license. This guidance became effective prospectively for Ashland on October 1, 2016 and did not have a significant impact on Ashland's Consolidated Financial Statements.

NOTE B – VALVOLINE

Ashland Separation of Valvoline

On September 22, 2015, Ashland announced that the Board of Directors approved proceeding with a plan to separate Ashland into two independent, publicly traded companies comprising of the new Ashland (now known as Ashland Global Holdings Inc.) and Valvoline Inc. The initial step of the separation, the initial public offering (IPO) of Valvoline Inc., closed on September 28, 2016. The total net proceeds after deducting underwriters' discount and other offering expenses received from the IPO were \$712 million, which were used primarily to repay debt incurred prior to the IPO and retained for Valvoline Inc.'s cash on hand. As discussed further within the Final Separation section of this Note B, Ashland completed the distribution of its remaining shares in Valvoline Inc. on May 12, 2017. The new Ashland is a premier global leader in providing specialty chemical solutions to customers in a wide range of consumer and industrial markets. Key markets and applications include pharmaceutical, personal care, food and beverage, architectural coatings, adhesives, automotive, construction and energy.

After completing the IPO on September 28, 2016 and before the distribution of its remaining shares on May 12, 2017, Ashland owned 170 million shares of Valvoline Inc.'s common stock which represented approximately 83% of the total outstanding shares of Valvoline Inc.'s common stock. As a result, Ashland continued to consolidate Valvoline within the Consolidated Financial Statements up until the distribution of the remaining shares. The resulting outside stockholders' interests in Valvoline Inc., which was approximately 17% as of September 30, 2016, was presented separately as a noncontrolling interest within Ashland's equity in the Consolidated Balance Sheet. The amount of consolidated net income attributed to these previous minority holders is presented as a separate caption on the Statements of Consolidated Comprehensive Income.

Final Separation

Ashland completed the distribution of its remaining 170 million shares of common stock of Valvoline Inc. as a pro rata dividend on shares of Ashland common stock outstanding at the close of business on the record date of May 5, 2017. Based on the shares of Ashland common stock outstanding as of May 5, 2017, the record date for the distribution, each share of Ashland common stock received 2.745338 shares of Valvoline common stock in the distribution. The distribution was recorded at the carrying amount of Valvoline Inc.'s net assets which was a deficit of \$187 million as of May 12, 2017, as follows:

NOTE B – VALVOLINE

	May 12
(In millions)	2017
<u>ASSETS</u>	
Current assets	
Cash	179
Accounts receivable, net	385
Inventories	153
Other current assets	24
Total current assets	<u>741</u>
Noncurrent assets	
Net property, plant and equipment	357
Goodwill	329
Equity and other unconsolidated investments	31
Deferred income taxes	391
Other noncurrent assets	93
Total noncurrent assets	<u>1,201</u>
Total assets	<u>\$ 1,942</u>
<u>LIABILITIES AND EQUITY</u>	
Current liabilities	
Short-term debt	75
Current portion of long-term debt	16
Trade and other payables	353
Other current liabilities	34
Total current liabilities	<u>478</u>
Noncurrent liabilities	
Long-term debt	662
Employee benefit obligations	826
Other long-term liabilities	163
Total noncurrent liabilities	<u>1,651</u>
Total liabilities	<u>\$ 2,129</u>
Net deficit	<u>\$ (187)</u>

A Tax Matters Agreement between Ashland and Valvoline Inc. governs the rights and obligations after the spin-off regarding certain income taxes and other taxes, including certain tax liabilities and benefits, attributes, returns and contests.

Discontinued Operations Assessment

Valvoline met the criteria to qualify as a discontinued operation and accordingly, its assets, liabilities, operating results and cash flows have been classified as discontinued operations within the Consolidated Financial Statements. See Note E for more information.

In 2016 and 2015, certain indirect corporate costs included within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income (Loss) that were previously allocated to the Valvoline reportable segment do not qualify for classification within discontinued operations and continue to be reported as selling, general and administrative expense within continuing operations on a consolidated basis and within the Unallocated and other segment. These costs were \$22 million and \$23 million during 2016 and 2015, respectively.

Costs of transaction

Ashland recognized separation costs of \$95 million and \$88 million during 2017 and 2016, respectively, which are primarily related to transaction, consulting and legal fees. During 2017 and 2016, \$13 million and \$7 million, respectively, of the separation costs directly related to Valvoline were included within the discontinued operations caption of the Statements of Consolidated Comprehensive Income. Otherwise, separation costs are recorded within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income.

NOTE C – ACQUISITIONS

Pharmachem

On May 17, 2017, Ashland completed its acquisition of the stock of Pharmachem Laboratories, Inc. (Pharmachem), a leading provider of quality ingredients to the global health and wellness industries and high-value differentiated products to fragrance and flavor houses. With annual revenues of approximately \$300 million and 14 manufacturing facilities in the United States and Mexico, New Jersey-based Pharmachem develops, manufactures and supplies custom and branded nutritional and fragrance products. Ashland has included Pharmachem within the Specialty Ingredients reporting segment.

Purchase price allocation

The acquisition was recorded by Ashland using the purchase method of accounting in accordance with U.S. GAAP whereby the total purchase price was allocated to tangible and intangible assets and liabilities acquired based on respective fair values.

The all-cash purchase price of Pharmachem was \$680 million which included working capital adjustments of approximately \$20 million. Ashland incurred \$5 million of transaction costs during 2017 related to the acquisition, which was recorded within the net gain (loss) on acquisitions and divestitures caption in the Statement of Consolidated Income. The following table summarizes the values of the assets acquired and liabilities assumed at the date of acquisition.

	At May 17, 2017 As Adjusted
Preliminary purchase price allocation (in millions)	
Assets:	
Accounts receivable	52
Inventory	74
Other current assets	4
Intangible assets	330
Goodwill	287
Property, plant and equipment	97
Other noncurrent assets	20
Liabilities:	
Accounts payable	(32)
Deferred tax - net	(138)
Other noncurrent liabilities	(14)
Total purchase price	<u>\$ 680</u>

As of September 30, 2017, the purchase price allocation for the acquisition was preliminary and subject to completion. Adjustments to the current fair value estimates in the above table may still occur as the process conducted for various valuations and assessments, including certain tangible and intangible assets and tax reserves, are finalized. Goodwill was calculated as the excess of the consideration transferred over the net assets recognized and represents the estimated future economic benefits arising from other assets acquired that could not be individually identified and separately recognized. The factors contributing to the recognition of goodwill were based on strategic benefits that are expected to be realized from the acquisition. None of the goodwill is expected to be deductible for income tax purposes.

Subsequent Adjustments to Initial Purchase Price

During the September 2017 quarter, Ashland updated certain valuations and reserve estimates as part of the ongoing purchase accounting process and procedures being performed. As a result of these updates, Ashland increased the intangible assets associated with the purchase by \$18 million. The remaining updates to the Consolidated Balance Sheet during the quarter related to certain liabilities that in total, along with the intangible assets impact, adjusted goodwill by \$11 million. These adjustments did not have a significant effect on the Statement of Consolidated Comprehensive Income (Loss) during 2017.

Intangible assets identified

The purchase price allocation included \$330 million of certain definite-lived intangible assets which are being amortized over the estimated useful life in proportion to the economic benefits consumed. The determination of the useful lives is based upon various industry studies, historical acquisition experience, economic factors, and future cash flows of the combined company. In addition, Ashland reviewed certain technological trends and also considered the current Pharmachem customer base.

NOTE C – ACQUISITIONS (continued)

The following details the total intangible assets identified as of May 17, 2017.

Intangible asset type (in millions)	Value	Weighted-average amortization period (years)
Trademarks and trade names	\$ 26	15
Intellectual property	68	22
Customer and supplier relationships	236	20
Total	<u>\$ 330</u>	

Impact on operating results

The results of Pharmachem's operations have been included in Ashland's Consolidated Financial Statements since the May 17, 2017 closing date. The following table provides sales and operating income from the acquired Pharmachem operations included in Ashland's results during 2017.

Pharmachem results of operations (In millions)	2017 (a)
Sales	\$ 104
Operating income	7

(a) Amounts represent the sales and results of operations for the period May 17, 2017 through September 30, 2017, the period for which Pharmachem was owned.

The following unaudited pro forma information for 2017 and 2016 assumes the acquisition of Pharmachem occurred at the beginning of the respective periods presented.

Unaudited pro forma information (In millions)	2017	2016
Sales	\$ 3,434	\$ 3,321
Net income (loss)	31	(27)

These amounts have been calculated after applying Ashland's accounting policies and adjusting the results of Pharmachem to reflect the additional depreciation, amortization and interest expense that would have been charged assuming the fair value adjustments to tangible and intangible assets, and the related debt incurred had been applied on October 1, 2015, together with an estimate of the various tax effects.

The unaudited pro forma information presented above is for illustrative purposes only and does not purport to be indicative of the results of future operations of Ashland or the results that would have been attained had the operations been combined during the periods presented.

NOTE D – DIVESTITURES**Specialty Ingredients Joint Venture**

During September 2016, Ashland entered into a definitive sale agreement to sell its ownership interest in a Specialty Ingredients consolidated joint venture. Ashland recognized a loss of \$12 million before tax in 2016 to recognize the assets at fair value less cost to sell, using Level 2 nonrecurring fair value measurements.

During 2017, Ashland completed the transfer of its ownership interest in the joint venture and recognized an additional loss of \$4 million primarily related to a license fee and tax adjustments.

The losses in 2017 and 2016 were reported within the net loss on acquisitions and divestitures caption within the Statements of Consolidated Comprehensive Income (Loss). The net assets held for sale were not material to Ashland's Consolidated Balance Sheet as of September 30, 2016.

Ashland determined this transaction did not qualify for discontinued operations treatment since it did not represent a strategic shift that had or will have a major effect on Ashland's operations and financial results. Any additional gain or loss recognized as a result of the transaction is expected to be nominal and will be recognized in the period incurred.

NOTE D – DIVESTITURES (continued)

Industrial Biocides

During May 2015, Ashland entered into a definitive sale agreement to sell the industrial biocides assets within Specialty Ingredients, which closed on July 1, 2015. As a result of the sale, Ashland received net cash proceeds of approximately \$30 million during the fourth quarter of 2015 and recognized a nominal gain before tax and after customary closing costs within the net loss on acquisitions and divestitures caption within the Statements of Consolidated Comprehensive Income.

The sale of Specialty Ingredients' industrial biocides assets did not qualify for discontinued operations treatment since it did not represent a strategic shift that had or will have a major effect on Ashland's operations and financial results.

MAP Transaction

As part of the 2005 transfer of Ashland's 38% interest in the Marathon Ashland Petroleum LLC (MAP) joint venture and two other small businesses to Marathon Oil Corporation (Marathon) (the MAP Transaction), Marathon is entitled to the tax deductions for Ashland's future payments of certain contingent liabilities, including asbestos liabilities, related to previously owned businesses of Ashland. Marathon agreed to compensate Ashland for these tax deductions and Ashland established a discounted receivable, which represented the estimated present value of probable recoveries from Marathon for the portion of their future tax deductions. As a result of the January 2015 asbestos insurance settlement, Ashland recorded a \$7 million charge during 2015 within the net loss on acquisitions and divestitures caption of the Statements of Consolidated Comprehensive Income. The total MAP receivable remaining as of September 30, 2017 was \$4 million. See Note N for more information related to the January 2015 asbestos insurance settlement.

Elastomers

On October 9, 2014, Ashland entered into a definitive agreement to sell the Elastomers division of the Composites reportable segment, which operated a 250-person manufacturing facility in Port Neches, Texas, to Lion Copolymer Holdings, LLC. The Elastomers division, which primarily served the North American replacement tire market, accounted for approximately 5% of Ashland's 2014 sales of \$6.1 billion. The sale was completed on December 1, 2014 in a transaction valued at approximately \$120 million which was subject to working capital adjustments. The total post-closing adjusted cash proceeds received before taxes by Ashland during 2015 was \$105 million, which included working capital adjustments and transaction costs, as defined in the definitive agreement.

Elastomers' net assets as of November 30, 2014 were \$191 million which primarily included accounts receivable, inventory, property, plant and equipment, non-deductible goodwill and other intangibles and payables. Since the net proceeds received were less than book value, Ashland recorded a loss of \$86 million pre-tax, using Level 2 nonrecurring fair value measurements, within the net loss on acquisitions and divestitures caption of the Statements of Consolidated Comprehensive Income (Loss) during 2015. The related tax effect was a benefit of \$28 million included in the income tax expense (benefit) caption within the Statements of Consolidated Comprehensive Income.

Ashland determined that the sale of Elastomers did not represent a strategic shift that had or will have a major effect on Ashland's operations and financial results. As such, Elastomers' results were included in the Composites reportable segment results of operations and financial position within the Statements of Consolidated Comprehensive Income (Loss) and Consolidated Balance Sheets, respectively, until its December 1, 2014 sale. Certain indirect corporate costs of \$11 million for 2015 were included within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income (Loss) that were previously allocated to the Elastomers division.

NOTE E – DISCONTINUED OPERATIONS

In previous periods, Ashland has divested certain businesses that have qualified as discontinued operations. The operating results from these divested businesses and subsequent adjustments related to ongoing assessments and activities of certain retained liabilities and tax items have been recorded within the discontinued operations caption in the Statements of Consolidated Comprehensive Income (Loss) for all periods presented and are discussed further within this note.

As previously discussed in Notes A and B, Ashland completed the distribution of its remaining 170 million shares of common stock of Valvoline Inc. on May 12, 2017. Ashland determined that the final distribution of Valvoline qualified as a discontinued operation, in accordance with U.S. GAAP, since it represents a strategic shift for Ashland and has a major effect on Ashland's operations and financial results. Accordingly, Valvoline's assets, liabilities, operating results and cash flows for all periods presented have been classified as discontinued operations within the Consolidated Financial Statements.

Ashland is subject to liabilities from claims alleging personal injury caused by exposure to asbestos. Such claims result primarily from indemnification obligations undertaken in 1990 in connection with the sale of Riley, a former subsidiary, which qualified as a discontinued operation and from the acquisition during 2009 of Hercules, an indirect wholly-owned subsidiary of

NOTE E – DISCONTINUED OPERATIONS (continued)

Ashland. Adjustments to the recorded litigation reserves and related insurance receivables are recorded within the discontinued operations caption and continue periodically. During 2015, Ashland recorded an after-tax gain of \$120 million within discontinued operations due to the January 2015 asbestos insurance settlement. See Note N for further discussion of Ashland's asbestos-related activity.

During 2014, Ashland completed the sale of the Water Technologies business. Ashland determined that this sale qualified as a discontinued operation, in accordance with U.S. GAAP, since Ashland does not have significant continuing involvement in the Water Technologies business. Ashland has made subsequent adjustments to the discontinued operations caption related to the sale.

During 2011, Ashland completed the sale of substantially all of the assets and certain liabilities of its global distribution business, which previously comprised the Ashland Distribution (Distribution) reportable segment. Ashland determined that this sale qualified as a discontinued operation, in accordance with U.S. GAAP, since Ashland does not have significant continuing involvement in the Distribution business. Ashland has made subsequent adjustments to the discontinued operations caption related to the sale.

Due to the ongoing assessment of certain matters associated with previous divestitures, subsequent adjustments to these divestitures may continue in future periods in the discontinued operations caption in the Statements of Consolidated Comprehensive Income. Components of amounts reflected in the Statements of Consolidated Comprehensive Income (Loss) related to discontinued operations are presented in the following table for each of the years ended September 30.

(In millions)	2017	2016	2015
Income (loss) from discontinued operations			
Valvoline	\$ 240	\$ 444	\$ 320
Asbestos-related litigation	(31)	(37)	132
Water Technologies	1	7	(3)
Distribution	(5)	(2)	(3)
Gain on disposal of discontinued operations			
Water Technologies	—	—	4
Income before taxes	<u>205</u>	<u>412</u>	<u>450</u>
Income tax benefit (expense)			
Benefit (expense) related to income (loss) from discontinued operations			
Valvoline	(81)	(158)	(117)
Asbestos-related litigation	6	7	(22)
Water Technologies	1	(7)	2
Distribution	2	1	1
Benefit related to gain on disposal of discontinued operations			
Water Technologies	—	—	4
Distribution	—	—	3
Income from discontinued operations (net of taxes)	<u>\$ 133</u>	<u>\$ 255</u>	<u>\$ 321</u>

Valvoline Separation

The following table presents a reconciliation of the captions within Ashland's Statements of Consolidated Income for the income from discontinued operations attributable to Valvoline for each of the years ended September 30.

NOTE E – DISCONTINUED OPERATIONS (continued)

(In millions)	2017 (a)	2016	2015
Income from discontinued operations attributable to Valvoline			
Sales	\$ 1,237	\$ 1,929	\$ 1,967
Cost of sales	(750)	(1,168)	(1,282)
Selling, general and administrative expense	(234)	(314)	(336)
Research and development expense	(8)	(13)	(11)
Equity and other income	17	20	8
Operating income of discontinued operations	262	454	346
Net loss on acquisitions and divestitures	—	(1)	(26)
Net interest and other financing expense	(22)	(9)	—
Pretax income of discontinued operations	240	444	320
Income tax expense	(81)	(158)	(117)
Income from discontinued operations	<u>\$ 159</u>	<u>\$ 286</u>	<u>\$ 203</u>

(a) Results in 2017 reflect only 224 days of activity since Valvoline was fully distributed on May 12, 2017, as previously discussed.

The following table presents the captions of assets and liabilities of Valvoline that are presented as discontinued operations within Ashland's Consolidated Balance Sheet as of September 30, 2016.

(In millions)	2016
Cash	\$ 171
Accounts receivable, net	387
Inventories	131
Other current assets	25
Current assets of discontinued operations	<u>\$ 714</u>
Net property, plant and equipment	\$ 324
Goodwill	264
Equity and other unconsolidated investments	26
Deferred income taxes	347
Other noncurrent assets	92
Noncurrent assets of discontinued operations	<u>\$ 1,053</u>
Current portion of long-term debt	\$ 19
Trade and other payables	360
Current liabilities of discontinued operations	<u>\$ 379</u>
Long-term debt	\$ 730
Employee benefit obligations	886
Other long-term liabilities	99
Noncurrent liabilities of discontinued operations	<u>\$ 1,715</u>
Equity	
Noncontrolling interest	\$ (182)

NOTE F – FAIR VALUE MEASUREMENTS

As required by U.S. GAAP, Ashland uses applicable guidance for defining fair value, the initial recording and periodic remeasurement of certain assets and liabilities measured at fair value and related disclosures for instruments measured at fair value. Fair value accounting guidance establishes a fair value hierarchy, which prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). An instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the instrument's fair value measurement. The three levels within the fair value hierarchy are described as follows.

Level 1 – Observable inputs such as unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2 – Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. These include quoted prices for similar assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not active.

Level 3 – Unobservable inputs for the asset or liability for which there is little, if any, market activity at the measurement date. Unobservable inputs reflect Ashland's own assumptions about what market participants would use to price the asset or liability. The inputs are developed based on the best information available in the circumstances, which might include Ashland's own financial data such as internally developed pricing models, discounted cash flow methodologies, as well as instruments for which the fair value determination requires significant management judgment.

For assets that are measured using quoted prices in active markets (Level 1), the total fair value is the published market price per unit multiplied by the number of units held without consideration of transaction costs. Assets and liabilities that are measured using significant other observable inputs (Level 2) are primarily valued by reference to quoted prices of similar assets or liabilities in active markets, adjusted for any terms specific to that asset or liability. For all other assets and liabilities for which unobservable inputs are used (Level 3), fair value is derived through the use of fair value models, such as a discounted cash flow model or other standard pricing models that Ashland deems reasonable.

The following table summarizes financial instruments subject to recurring fair value measurements as of September 30, 2017. For additional information on fair value hierarchy measurements of pension plan asset holdings, see Note M.

(In millions)	Carrying value	Total fair value	Quoted prices in active markets for identical assets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3
Assets					
Cash and cash equivalents	\$ 566	\$ 566	\$ 566	\$ —	\$ —
Restricted investments (a)	332	332	332	—	—
Deferred compensation investments (b)	158	158	—	158	—
Investments of captive insurance company (b)	3	3	3	—	—
Foreign currency derivatives	2	2	—	2	—
Total assets at fair value	<u>\$ 1,061</u>	<u>\$ 1,061</u>	<u>\$ 901</u>	<u>\$ 160</u>	<u>\$ —</u>
Liabilities					
Foreign currency derivatives	\$ 36	\$ 36	\$ —	\$ 36	\$ —

(a) Included in restricted investments and \$30 million within other current assets in the Consolidated Balance Sheets.

(b) Included in other noncurrent assets in the Consolidated Balance Sheets.

NOTE F – FAIR VALUE MEASUREMENTS (continued)

The following table summarizes financial instruments subject to recurring fair value measurements as of September 30, 2016.

			Quoted prices in active markets for identical assets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3
(In millions)	Carrying value	Total fair value			
Assets					
Cash and cash equivalents	\$ 1,017	\$ 1,017	\$ 1,017	\$ —	\$ —
Restricted investments (a)	322	322	322	—	—
Deferred compensation investments (b)	150	150	—	150	—
Investments of captive insurance company (b)	4	4	4	—	—
Foreign currency derivatives	3	3	—	3	—
Total assets at fair value	<u>\$ 1,496</u>	<u>\$ 1,496</u>	<u>\$ 1,343</u>	<u>\$ 153</u>	<u>\$ —</u>
Liabilities					
Foreign currency derivatives	\$ 5	\$ 5	\$ —	\$ 5	\$ —

(a) Included in restricted investments and \$30 million within other current assets in the Consolidated Balance Sheets.

(b) Included in other noncurrent assets in the Consolidated Balance Sheets.

Restricted investments

As discussed in Note A, Ashland maintains certain investments in a restricted renewable annual trust for the purpose of paying future asbestos indemnity and defense costs. The investments are designated as available-for-sale securities, classified as Level 1 measurements within the fair value hierarchy. These securities were classified primarily as noncurrent restricted investment assets, with \$30 million classified within other current assets, in the Consolidated Balance Sheets. The following table provides a summary of the activity within the available-for-sale securities portfolio as of September 30, 2017 and 2016:

(In millions)	2017	2016
Original cost	\$ 335	\$ 335
Accumulated investment income and disbursements, net	(24)	(3)
Adjusted cost (a)	311	332
Investment income (b)	9	8
Unrealized gain	35	11
Realized gain	2	—
Settlement funds	2	4
Disbursements	(27)	(33)
Fair value	<u>\$ 332</u>	<u>\$ 322</u>

(a) The adjusted cost of the demand deposit includes accumulated investment income, disbursements and settlements recorded in previous periods.

(b) Investment income relates to the demand deposit and includes interest income as well as dividend income transferred from the equity and corporate bond mutual funds.

The following table presents gross unrealized gains and losses for the available-for-sale securities as of September 30, 2017 and 2016:

NOTE F – FAIR VALUE MEASUREMENTS (continued)

(In millions)	Adjusted Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value
As of September 30, 2017				
Demand Deposit	9	—	—	9
Equity Mutual Fund	168	34	—	202
Corporate bond Mutual Fund	120	1	—	121
Fair value	<u>\$ 297</u>	<u>\$ 35</u>	<u>\$ —</u>	<u>\$ 332</u>
As of September 30, 2016				
Demand Deposit	6	—	—	6
Equity Mutual Fund	185	8	—	193
Corporate bond Mutual Fund	120	3	—	123
Fair value	<u>\$ 311</u>	<u>\$ 11</u>	<u>\$ —</u>	<u>\$ 322</u>

The unrealized gains and losses as of September 30, 2017 and 2016 were recognized within accumulated other comprehensive income (AOCI). Ashland invests in highly-rated investment grade mutual funds. No other-than-temporary impairment was recognized in AOCI during 2017 and 2016.

The following table presents the investment income, realized gains and disbursements related to the investments within the portfolio during 2017, 2016 and 2015.

(In millions)	2017	2016	2015
Investment income	\$ 9	\$ 8	\$ 3
Realized gains	2	—	—
Disbursements	(27)	(33)	(6)

Deferred compensation investments

Deferred compensation investments consist of Level 2 measurements within the fair value hierarchy which are comprised primarily of a guaranteed interest fund, a common stock index fund and an intermediate government bond fund. Gains and losses related to deferred compensation investments are immediately recognized within the Statements of Consolidated Comprehensive Income.

Derivative and hedging activities*Currency hedges*

Ashland conducts business in a variety of foreign currencies. Accordingly, Ashland regularly uses foreign currency derivative instruments to manage exposure on certain transactions denominated in foreign currencies to curtail potential earnings volatility effects of certain assets and liabilities, including short-term inter-company loans denominated in currencies other than Ashland's functional currency of an entity. These derivative contracts generally require exchange of one foreign currency for another at a fixed rate at a future date and generally have maturities of less than twelve months. All contracts are valued at fair value with net changes in fair value recorded within the selling, general and administrative expense caption. The impacts of these contracts were largely offset by gains and losses resulting from the impact of changes in exchange rates on transactions denominated in non-functional currencies. The following table summarizes the gains and losses recognized during 2017, 2016 and 2015 within the Statements of Consolidated Comprehensive Income.

(In millions)	2017	2016	2015
Foreign currency derivative gain (loss)	\$ 9	\$ 2	\$ (17)

NOTE F – FAIR VALUE MEASUREMENTS (continued)

The following table summarizes the fair values of the outstanding foreign currency derivatives as of September 30, 2017 and 2016 included in accounts receivable and accrued expenses and other liabilities of the Consolidated Balance Sheets.

(In millions)	2017	2016
Foreign currency derivative assets	\$ 2	\$ 3
Notional contract values	79	325
Foreign currency derivative liabilities	\$ 36	\$ 4
Notional contract values	1,601	528

Other financial instruments

At September 30, 2017 and 2016, Ashland's long-term debt (including current portion and excluding debt issuance cost discounts) had a carrying value of \$2,615 million and \$2,345 million, respectively, compared to a fair value of \$2,768 million and \$2,558 million, respectively. The fair values of long-term debt are based on quoted market prices or, if market prices are not available, the present values of the underlying cash flows discounted at Ashland's incremental borrowing rates, which are deemed to be Level 2 measurements within the fair value hierarchy.

NOTE G – PROPERTY, PLANT AND EQUIPMENT

The following table describes the various components of property, plant and equipment within the Consolidated Balance Sheets.

(In millions)	2017	2016
Land	\$ 150	\$ 151
Buildings	547	528
Machinery and equipment	2,840	2,667
Construction in progress	225	269
Total property, plant and equipment (gross)	3,762	3,615
Accumulated depreciation (a)	(1,792)	(1,715)
Total property, plant and equipment (net)	\$ 1,970	\$ 1,900

(a) As of September 30, 2017 and 2016, accumulated depreciation included impairment charges to buildings and machinery and equipment of \$1 million and \$9 million, respectively, related to Intermediates and Solvents. See Note H for more information.

The following table summarizes various property, plant and equipment charges included within the Statements of Consolidated Comprehensive Income.

(In millions)	2017	2016	2015
Depreciation	\$ 219	\$ 226	\$ 228
Capitalized interest	1	1	2

Accelerated Depreciation

During 2017, Ashland committed to a plan to reorganize certain operations which resulted in the closure of a manufacturing facility that was previously operational. Due to this closure, depreciation included \$13 million of accelerated depreciation for the remaining value of this facility primarily related to machinery and equipment. Also during 2017, the termination of a contract at a manufacturing facility resulted in \$1 million of accelerated depreciation for the remaining value of the related machinery and equipment. During 2016 and 2015, depreciation included \$4 million and \$6 million, respectively, of accelerated depreciation related to the restructuring plan of an existing manufacturing facility. All of these charges related to the Specialty Ingredients reportable segment and were recorded within the cost of sales caption of the Statements of Consolidated Comprehensive Income.

NOTE G – PROPERTY, PLANT AND EQUIPMENT (continued)

Additionally, during 2017 and 2016, depreciation included \$5 million and \$2 million, respectively, of accelerated depreciation within Unallocated and other and was recorded within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income.

NOTE H – GOODWILL AND OTHER INTANGIBLES

Goodwill

Ashland reviews goodwill and indefinite-lived intangible assets for impairment annually or when events and circumstances indicate an impairment may have occurred. This annual assessment is performed as of July 1 and consists of Ashland determining each reporting unit's current fair value compared to its current carrying value. Ashland determined that its reporting units for the allocation of goodwill are its three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents.

As part of the goodwill impairment assessment, Ashland compares the carrying value of each reporting unit to its respective estimated fair value. Ashland makes various estimates and assumptions in determining the estimated fair values of those units through the use of a combination of discounted cash flow models and valuations based on earnings multiples for guideline public companies in each reporting unit's industry peer group. Discounted cash flow models are highly reliant on various assumptions. Significant assumptions Ashland utilized in these models for the current year included: projected business results and future industry direction, long-term growth factors and weighted-average cost of capital. Ashland uses assumptions that it deems to be reasonable estimates of likely future events and compares the total fair values of each reporting unit to Ashland's market capitalization, and implied control premium, to determine if the fair values are reasonable compared to external market indicators. Subsequent changes in these key assumptions could affect the results of future goodwill impairment reviews. In conjunction with the July 1, 2017 annual assessment of goodwill, Ashland's valuation techniques did not indicate any impairment existed for its reporting units.

During 2016, due to the deterioration in the butanediol commodity in which Intermediates and Solvents operates, Ashland determined that the carrying value of the Intermediates and Solvents reporting unit exceeded its fair value at July 1, 2016 which resulted in the reporting unit failing the first step of the goodwill impairment test. Ashland then performed the second step of the goodwill impairment test, which involved, among other things, obtaining third-party appraisals of substantially all of Intermediates and Solvents tangible and intangible assets. Based on the results of its goodwill impairment testing as of July 1, 2016, Ashland recorded a pre-tax goodwill impairment charge of \$171 million in the fourth quarter of 2016, which in addition to a \$10 million impairment related to Intermediates and Solvents property, plant and equipment, resulted in a total \$181 million impairment charge for Intermediates and Solvents during 2016. A portion of the goodwill impairment was nondeductible for tax purposes.

Ashland's assessment of an impairment charge on any of these remaining assets currently classified as having indefinite lives, including goodwill, could result in additional impairment charges in future periods if any or all of the following events were to occur with respect to a particular reporting unit: a significant change in projected business results, a divestiture decision, increase in Ashland's weighted-average cost of capital rates, decrease in growth rates or other assumptions, economic deterioration that is more severe or of a longer duration than anticipated, or another significant economic event.

The following is a progression of goodwill by reportable segment for the years ended September 30, 2017 and 2016.

(In millions)	Specialty Ingredients	Composites	Intermediates and Solvents	Total
Balance at September 30, 2015	\$ 2,004	\$ 142	\$ 171	\$ 2,317
Divestiture (a)	(10)	—	—	(10)
Impairment	—	—	(171)	(171)
Currency translation	(3)	5	—	2
Balance at September 30, 2016	1,991	147	—	2,138
Acquisition (b)	287	—	—	287
Currency translation	37	3	—	40
Balance at September 30, 2017	<u>\$ 2,315</u>	<u>\$ 150</u>	<u>\$ —</u>	<u>\$ 2,465</u>

(a) Divestiture caption represents the amount of goodwill related to the Specialty Ingredients joint venture during 2016. See Note D for more information.

(b) Relates to the acquisition of Pharmachem during 2017. See Note C for more information.

NOTE H – GOODWILL AND OTHER INTANGIBLES (continued)*Other intangible assets*

Intangible assets principally consist of trademarks and trade names, intellectual property, and customer relationships. Intangible assets classified as finite are amortized on a straight-line basis over their estimated useful lives. The cost of trademarks and trade names is amortized principally over 3 to 25 years, intellectual property over 5 to 25 years and customer and supplier relationships over 3 to 24 years.

As of September 30, 2017 and 2016, certain intangible assets within trademarks and tradenames were classified as indefinite-lived and had a balance of \$301 million. During 2015, there was an impairment of certain IPR&D assets associated with the acquisition of International Specialty Products Inc. (ISP) of \$11 million, which was classified within the research and development expense caption of the Statements of Consolidated Comprehensive Income. This impairment represented Level 2 nonrecurring fair value measurements.

Ashland annually reviews indefinite-lived intangible assets for possible impairment or whenever events or changes in circumstances indicate that carrying amounts may not be recoverable. In conjunction with the July 1, 2017 annual assessment of indefinite-lived intangible assets, Ashland's models did not indicate any impairment for indefinite-lived intangible assets. Intangible assets were comprised of the following as of September 30, 2017 and 2016.

(In millions)	2017			2016		
	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
Definite-lived intangible assets						
Trademarks and trade names	\$ 67	\$ (22)	\$ 45	\$ 40	\$ (19)	\$ 21
Intellectual property	757	(326)	431	667	(273)	394
Customer and supplier relationships	777	(235)	542	543	(198)	345
Total definite-lived intangible assets (a)	<u>1,601</u>	<u>(583)</u>	<u>1,018</u>	<u>1,250</u>	<u>(490)</u>	<u>760</u>
Indefinite-lived intangible assets						
Trademarks and trade names	301	—	301	301	—	301
Total intangible assets	<u>\$ 1,902</u>	<u>\$ (583)</u>	<u>\$ 1,319</u>	<u>\$ 1,551</u>	<u>\$ (490)</u>	<u>\$ 1,061</u>

(a) The gross carrying amount of the definite-lived intangible assets increased significantly during 2017, primarily due to the acquisition of Pharmachem. See Note C for more information.

Amortization expense recognized on intangible assets was \$82 million for 2017, \$76 million for 2016 and \$78 million for 2015, and is primarily included in the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income. As of September 30, 2017, all of Ashland's intangible assets that had a carrying value were being amortized except for certain trademarks and trade names that have been determined to have indefinite lives. Estimated amortization expense for future periods is \$93 million in 2018, \$89 million in 2019, \$88 million in 2020, \$87 million in 2021 and \$86 million in 2022. The amortization expense for future periods is an estimate. Actual amounts may change from such estimated amounts due to fluctuations in foreign currency exchange rates, additional intangible asset acquisitions and divestitures, potential impairment, accelerated amortization, or other events.

NOTE I – DEBT

The following table summarizes Ashland's current and long-term debt at September 30, 2017 and 2016.

NOTE I – DEBT (continued)

(In millions)	2017	2016
4.750% notes, due 2022	\$ 1,082	\$ 1,121
Term Loan B, due 2024	599	—
6.875% notes, due 2043	376	376
Term Loan A, due 2022	250	—
Term Loan A, due 2020	250	—
Revolving Credit Facility	173	—
Accounts receivable securitization	56	—
6.50% junior subordinated notes, due 2029	51	140
Other international loans	—	20
Medium-term notes, due 2019, interest of 9.4% at September 30, 2016	5	5
Term Loan, due 2017	—	150
3.875% notes, due 2018	—	700
Other (a)	(23)	(17)
Total debt	2,819	2,495
Short-term debt (includes current portion of long-term debt)	(235)	(170)
Long-term debt (less current portion and debt issuance costs)	\$ 2,584	\$ 2,325

(a) Other includes \$25 million and \$20 million of debt issuance costs as of September 30, 2017 and 2016, respectively.

At September 30, 2017, Ashland's total debt had an outstanding principal balance of \$2,897 million, discounts of \$53 million and debt issuance costs of \$25 million. The scheduled aggregate maturities of long-term debt for the next five fiscal years (including the current portion and excluding debt issuance costs) are as follows: \$6 million in 2018, \$11 million in 2019, \$269 million in 2020, \$56 million in 2021 and \$1,279 million in 2022.

Credit Agreements and Refinancing*2017 Credit Agreement*

On May 17, 2017, in conjunction with the closing of the Pharmachem acquisition, Ashland entered into a secured credit agreement (the 2017 Credit Agreement) with a group of lenders. The 2017 Credit Agreement provided for (i) a \$250 million three-year term loan A facility (the Three-Year TLA Facility), (ii) a \$250 million five-year term loan A facility (the Five-Year TLA Facility and together with the Three-Year TLA Facility, the TLA Facilities) and (iii) a \$680 million five-year revolving credit facility (including a \$125 million letter of credit sublimit) (the 2017 Revolving Credit Facility). Proceeds of borrowings under the TLA Facilities were used solely to finance the acquisition of Pharmachem, while the proceeds of the 2017 Revolving Credit Facility were used to finance, in part, the acquisition of Pharmachem, to refinance the 2015 Senior Credit Agreement and for general corporate purposes. On May 19, 2017, Ashland entered into Amendment No. 1 to the 2017 Credit Agreement, which increased the aggregate commitments under the 2017 Revolving Credit Facility from \$680 million to \$800 million.

At Ashland's option, loans issued under the 2017 Credit Agreement bear interest at either LIBOR or an alternate base rate, in each case plus the applicable interest rate margin. Loans bear interest at LIBOR plus 1.75% per annum, in the case of LIBOR borrowings, or at the alternate base rate plus 0.75%, in the alternative, through and including the date of delivery of a quarterly compliance certificate and thereafter the interest rate will fluctuate between LIBOR plus 1.375% per annum and LIBOR plus 2.500% per annum (or between the alternate base rate plus 0.375% per annum and the alternate base rate plus 1.500% per annum), based upon Ashland's secured facilities ratings or the consolidated net leverage ratio (as defined in the 2017 Credit Agreement) (whichever yields a lower applicable interest rate margin) at such time. In addition, Ashland was required to pay fees of 0.25% per annum on the daily unused amount of the 2017 Revolving Credit Facility through and including the date of delivery of a compliance certificate, and thereafter the fee rate will fluctuate between 0.175% and 0.40% per annum, based upon Ashland's secured facilities rating or the consolidated net leverage ratio (whichever yields a lower applicable rate). The TLA Facilities may be prepaid at any time without premium. The Three-Year TLA Facility will not amortize and will be due on May 17, 2020. The Five-Year TLA Facility will not amortize in each of the first, second and third years and will amortize at a rate of 20% per annum in each of the fourth and fifth years (payable in equal quarterly installments), with the outstanding balance of the Five-Year TLA Facility to be paid on May 17, 2022.

On June 14, 2017, Ashland entered into Amendment No. 2 to the 2017 Credit Agreement, which provided for a new \$600 million seven-year senior secured term loan B facility (the 2017 TLB Facility). At Ashland's option, loans issued under the 2017 TLB Facility bear interest at either (x) LIBOR plus 2.00% per annum or (y) an alternate base rate plus 1.00% per annum. The

NOTE I – DEBT (continued)

2017 TLB Facility may be prepaid at any time, subject to a prepayment premium if the prepayment is made on or prior to December 14, 2017 in connection with a Repricing Transaction (as defined in the 2017 Credit Agreement). The 2017 TLB Facility amortizes at a rate of 1.00% per annum (payable in equal quarterly installments) with the outstanding balance to be paid on May 17, 2024.

Ashland incurred \$15 million of new debt issuance costs in connection with the 2017 Credit Agreement, of which \$2 million was expensed immediately during 2017 within the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income. The remaining balance is amortized using the effective interest method. Additionally, as a result of the termination of the 2015 Senior Credit Agreement, Ashland recognized a \$5 million charge for the accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income.

The credit facilities under the 2017 Credit Agreement are guaranteed by Ashland Global Holdings Inc., Ashland Chemco Inc. and Ashland LLC's existing and future subsidiaries (other than certain immaterial subsidiaries, joint ventures, special purpose financing subsidiaries, regulated subsidiaries, foreign subsidiaries and certain other subsidiaries) and are secured by a first-priority security interest in substantially all of the personal property assets of Ashland and the guarantors, including all or a portion of the equity interests of certain of Ashland's domestic subsidiaries and first-tier foreign subsidiaries and, in certain cases, a portion of the equity interests of other foreign subsidiaries. The guarantees by Ashland's subsidiaries and pledge of security interests by such guarantors may, at Ashland's option, be released upon and during the occurrence of a Collateral Release Event (as defined in the 2017 Credit Agreement).

Senior notes refinancing, 2015 Senior Credit Agreement and 2016 Amendment

During June of 2015, Ashland completed certain refinancing transactions related to the \$600 million 3.000% senior notes due in 2016 (2016 Senior Notes). Ashland commenced and completed a cash tender offer to purchase for cash any and all of its outstanding 2016 Senior Notes. At the close of the tender offer, \$550 million aggregate principal amount of the 2016 Senior Notes was tendered by note holders, representing approximately 92% of the outstanding 2016 Senior Notes, which have been purchased by Ashland. Subsequently, Ashland redeemed the remaining balance of the 2016 Senior Notes of \$50 million on July 23, 2015.

In connection with the tender offer and redemption, in June 2015, Ashland entered into a new Credit Agreement (the 2015 Senior Credit Agreement). The 2015 Senior Credit Agreement replaced the \$1.2 billion senior unsecured revolving credit facility (the 2013 Senior Credit Facility), and was comprised of a new five-year senior unsecured revolving credit facility in an aggregate amount of \$1.2 billion (the 2015 Revolving Credit Facility), which included a \$250 million letter of credit sublimit and a \$100 million swing line loan sublimit, and a five-year senior unsecured term loan facility in an aggregate principal amount of \$1.1 billion (the 2015 term loan facility). The 2015 Senior Credit Agreement was not guaranteed, was unsecured and could be prepaid at any time without premium or penalty.

At Ashland's option, borrowings under the 2015 Revolving Credit Facility bore interest at either LIBOR or an alternate base rate, in each case plus the applicable interest rate margin. The loans' interest rate fluctuated between LIBOR plus 1.375% per annum and LIBOR plus 2.50% per annum (or between the alternate base rate plus 0.375% per annum and the alternate base rate plus 1.50% per annum), based upon Ashland's corporate credit ratings or the consolidated gross leverage ratio (as defined in the 2015 Senior Credit Agreement) (whichever yields a lower applicable interest rate margin) at such time. In addition, Ashland was required to pay fees of 0.25% per annum on the daily unused amount of the 2015 Revolving Credit Facility through and including June 30, 2015, and thereafter the fee rate fluctuated between 0.175% and 0.40% per annum, based upon Ashland's corporate credit ratings or the consolidated gross leverage ratio (whichever yields a lower fee rate).

During 2015, Ashland used the proceeds from borrowings under the \$1.1 billion term loan facility along with cash on hand (i) to fund the tender offer of the 2016 Senior Notes, (ii) to prepay in full the outstanding loans under the 2013 Senior Credit Facility, (iii) to pay accrued interest, fees and expenses under the 2013 Senior Credit Facility and the 2016 Senior Notes, (iv) to contribute funds to the U.S. pension plans impacted by the pension plan settlement program, and (v) to pay fees and expenses incurred in connection with the entry into the 2015 Senior Credit Agreement. As a result of the tender offer and redemption, Ashland recognized a \$9 million charge related to early redemption premium payments, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income (Loss) in 2015.

Ashland incurred \$10 million of new debt issuance costs in connection with the 2015 Senior Credit Agreement, of which \$2 million was expensed immediately during 2015 within the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income. The remaining balance was amortized over the term of the 2015 Senior Credit Agreement using the effective interest method. Additionally, as a result of the termination of the 2013 Senior Credit Facility and the repayment of the 2016 Senior Notes, Ashland recognized a \$2 million charge during 2015 for the accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income.

NOTE I – DEBT (continued)

During July 2016, Ashland amended the 2015 Senior Credit Agreement to permit the Reorganization and the series of events relating to the separation of Valvoline Inc. Additionally, the amendment provided that if the aggregate principal amount of the Valvoline debt reaches \$750 million, Ashland would be required to use the net proceeds of such borrowings to repay the 2015 term loan facility and/or permanently reduce its existing revolving credit commitments under the 2015 Senior Credit Agreement in an aggregate amount of up to \$1 billion. As a result of the July 2016 amendment and the Valvoline debt borrowings in connection with the separation, Ashland reduced its revolving borrowing capacity to \$800 million.

The 2015 Term Loan Facility balance was repaid in full in connection with the combined Ashland and Valvoline financing activities during September 2016. In connection with these transactions, Ashland recognized a \$6 million charge for the accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other financing expense caption of the Statements of Consolidated Comprehensive Income (Loss) in 2016.

Other Financing Activities

Redemption of 3.875% notes due 2018

In connection with the 2017 TLB Facility, Ashland redeemed all of its outstanding 3.875% senior notes due 2018 (2018 Senior Notes), of which approximately \$659 million were outstanding. Proceeds of borrowings under the 2017 TLB Facility, together with cash on hand, were used to pay for the redemption. Ashland recognized a \$13 million charge related to premiums paid and accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income.

Open market repurchases of 4.750% notes due 2022 and 3.875% notes due 2018

During 2017, Ashland executed open market repurchases of its 4.750% notes due 2022 (2022 Senior Notes) and its 3.875% notes due 2018 (2018 Senior Notes). As a result of these repurchases, the carrying values of the 2022 and 2018 Senior Notes were reduced by \$39 million and \$41 million, respectively. Ashland recognized a \$3 million charge related to premiums paid in the open market repurchases and accelerated amortization of previously capitalized debt issuance costs during 2017, which is included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income. As previously discussed, the remaining outstanding amount of the 2018 Senior Notes was redeemed during 2017.

6.50% junior subordinated notes due 2029

In December 2016, Hercules, an indirect wholly-owned subsidiary of Ashland, repurchased, through a cash tender offer, \$182 million of the aggregate principal par value amount of its 6.50% junior subordinated notes due 2029 (2029 Notes) for an aggregate purchase price of \$177 million. As a result, the carrying value of the 2029 Notes was reduced by \$90 million and Ashland recognized a \$92 million charge related to accelerated accretion of the recorded debt discount (compared to the total par value) and \$5 million of a net gain related to the repayment of the debt during 2017. The charge and net gain are included in the net interest and other financing expense caption of the Statement of Consolidated Comprehensive Income.

Accounts receivable securitization

On August 31, 2012, Ashland entered into a \$350 million accounts receivable securitization facility pursuant to (i) a Sale Agreement, among Ashland and certain of its direct and indirect subsidiaries (each an Originator and collectively, the Originators) and CVG Capital III LLC, a wholly-owned “bankruptcy remote” special purpose subsidiary of the Originators (CVG) and (ii) a Transfer and Administration Agreement, among CVG, each Originator, Ashland, as Master Servicer, certain Conduit Investors, Uncommitted Investors, Letter of Credit Issuers, Managing Agents, Administrators and Committed Investors, and The Bank of Nova Scotia, as agent for various secured parties (the Agent). The Transfer and Administration Agreement had a term of three years, but was extendable at the discretion of Ashland and the Investors. During 2016, the termination date of the commitments under the Transfer and Administration Agreement was extended from December 31, 2015, the previous termination extension date, to March 22, 2017. During the March 2017 quarter, this facility was extended for an additional year with similar terms as the previous facility agreement.

Under the Sale Agreement, each Originator will transfer, on an ongoing basis, certain of its accounts receivable, certain related assets and the right to the collections on those accounts receivable to CVG. Under the terms of the Transfer and Administration Agreement, CVG could, from time to time, obtain up to \$350 million (in the form of cash or letters of credit for the benefit of Ashland and its subsidiaries) from the Conduit Investors, the Uncommitted Investors and/or the Committed Investors through the sale of an undivided interest in such accounts receivable, related assets and collections. Subsequently during 2014 and 2015, the available funding for qualifying receivables under the accounts receivable securitization facility was reduced from \$350 million to \$275 million during 2014 and from \$275 million to \$250 million during 2015 due to the divestitures that occurred during the fiscal years. The accounts receivable securitization facility was reduced from \$250 million to \$100 million when Valvoline was removed as an Originator as part of the combined Ashland and Valvoline financing activities in September 2016. Ashland accounts for the securitization facility as secured borrowings, and the receivables sold pursuant to the facility are included in the Consolidated

NOTE I – DEBT (continued)

Balance Sheets as accounts receivable. Fundings under the Transfer and Administration Agreement will be repaid as accounts receivable are collected, with new fundings being advanced (through daily reinvestments) as new accounts receivable are originated by the Originators and transferred to CVG, with settlement generally occurring monthly. Ashland continues to classify any borrowings under this facility as a short-term debt instrument within the Consolidated Balance Sheets. Once sold to CVG, the accounts receivable, related assets and rights to collection described above are separate and distinct from each Originator's own assets and are not available to its creditors should such Originator become insolvent. Substantially all of CVG's assets have been pledged to the Agent in support of its obligations under the Transfer and Administration Agreement.

At September 30, 2017 and 2016, the outstanding amount of accounts receivable transferred by Ashland to CVG was \$155 million and \$133 million, respectively. There were \$56 million of borrowings under the facility as of September 30, 2017, while Ashland had no borrowings under the facility as of September 30, 2016. The weighted-average interest rate for this instrument was 2.8% for 2017 and 1.5% for 2016.

Subsidiary senior unsecured term loan

During August 2016, a wholly owned foreign subsidiary of Ashland entered into a credit agreement which provided for an aggregate principal amount of \$150 million in a senior unsecured term loan facility that matured on February 15, 2017. This term loan was drawn in full as of September 30, 2016 and was fully repaid during 2017.

Other debt

At September 30, 2017 and 2016, Ashland held other debt totaling \$58 million and \$168 million, respectively, comprised primarily of the 6.50% notes due 2029, other short-term international loans and a medium-term note.

Remaining borrowing capacity

The borrowing capacity remaining under the 2017 Revolving Credit Facility was \$579 million due to an outstanding balance of \$173 million, as well as a reduction of \$48 million for letters of credit outstanding at September 30, 2017. Ashland's total borrowing capacity at September 30, 2017 was \$614 million, which included \$35 million of available capacity under the accounts receivable securitization facility.

Covenants related to current Ashland debt agreements

Ashland's debt contains usual and customary representations, warranties and affirmative and negative covenants, including financial covenants for leverage and interest coverage ratios, limitations on liens, additional subsidiary indebtedness, restrictions on subsidiary distributions, investments, mergers, sale of assets and restricted payments and other customary limitations. As of September 30, 2017, Ashland was in compliance with all debt agreement covenant restrictions.

The maximum consolidated net leverage ratio permitted under Ashland's most recent credit agreement (the 2017 Credit Agreement) is 4.50. The 2017 Credit Agreement defines the consolidated net leverage ratio as the ratio of consolidated indebtedness minus unrestricted cash and cash equivalents to consolidated EBITDA (Covenant Adjusted EBITDA) for any measurement period. In general, the 2017 Credit Agreement defines Covenant Adjusted EBITDA as net income plus consolidated interest charges, taxes, depreciation and amortization expense, fees and expenses related to capital market transactions and proposed or actual acquisitions and divestitures, restructuring and integration charges, noncash stock and equity compensation expense, and any other nonrecurring expenses or losses that do not represent a cash item in such period or any future period; less any noncash gains or other items increasing net income. The computation of Covenant Adjusted EBITDA differs from the calculation of EBITDA and Adjusted EBITDA, which have been reconciled on page M-7. In general, consolidated indebtedness includes debt plus all purchase money indebtedness, banker's acceptances and bank guaranties, deferred purchase price of property or services, attributable indebtedness and guarantees.

The minimum required consolidated interest coverage ratio under the 2017 Credit Agreement during is 3.0. The 2017 Credit Agreement defines the consolidated interest coverage ratio as the ratio of Covenant Adjusted EBITDA to consolidated interest charges for any measurement period.

At September 30, 2017, Ashland's calculation of the consolidated net leverage ratio was 3.8, which is below the maximum consolidated net leverage ratio permitted under the 2017 Credit Agreement of 4.50. At September 30, 2017, Ashland's calculation of the consolidated interest coverage ratio was 4.7, which exceeds the minimum required consolidated ratio of 3.0.

NOTE I – DEBT (continued)

Guarantee of Senior Notes

Ashland Global Holdings Inc. was incorporated on May 6, 2016 as a direct wholly owned subsidiary of Ashland Inc. (now Ashland LLC) to reincorporate in Delaware and to help facilitate the separation of the Valvoline business from the specialty chemical businesses. As a result of the Reorganization, Ashland Global Holdings Inc. replaced Ashland Inc. as the publicly held corporation, and Ashland Inc. was converted to a Kentucky limited liability company and is now an indirect, wholly owned subsidiary of Ashland Global Holdings Inc. Ashland Global Holdings Inc. fully and unconditionally guaranteed the 3.875% notes due 2018 (which were fully repaid during the current year), 4.750% notes due 2022 and 6.875% notes due 2043 (collectively referred to as the Senior Notes) and has no significant independent assets or operations. For periods prior to September 30, 2016, the parent entity was Ashland LLC (formerly Ashland Inc.).

On October 20, 2016, Ashland received the requisite consents with respect to its consent solicitation from the holders of the Senior Notes to certain amendments to the reporting covenants in the indentures governing the Senior Notes. Following receipt of the consents, Ashland LLC, as issuer, Ashland Global Holdings Inc. and the trustee, entered into two supplemental indentures that (1) modified the applicable reporting covenants contained in the indentures governing the Senior Notes to provide that so long as any parent entity of Ashland LLC guarantees the Senior Notes, the reports, information and other documents required to be filed and furnished to holders of the Notes pursuant to the applicable indenture may, at the option of Ashland LLC, be filed by and be those of such parent entity rather than Ashland LLC and (2) provided for the guarantee of the Senior Notes by Ashland.

Subsequent to the final distribution of Valvoline Inc. during May 2017, there were no longer any significant subsidiaries of Ashland Global Holdings Inc. other than the subsidiary issuer (Ashland LLC). As a result, Ashland is no longer required to provide condensed consolidated financial information for Ashland Global Holdings Inc., Ashland LLC and all other non-guarantor subsidiaries.

Net interest and other financing expense (income)

(In millions)	2017	2016	2015
Interest expense (a)	\$ 232	\$ 180	\$ 166
Interest income	(4)	(5)	(6)
Available-for-sale securities income (b)	(11)	(8)	(3)
Other financing costs (c)	17	6	17
	<u>\$ 234</u>	<u>\$ 173</u>	<u>\$ 174</u>

(a) Includes \$101 million, \$6 million and \$4 million of accelerated accretion and/or amortization for original issue discounts and debt issuance costs during 2017, 2016 and 2015, respectively.

(b) Represents investment income related to the restricted investments discussed in Note G.

(c) Includes costs of \$14 million related to early redemption premium payments of the 2022 and 2018 Senior Notes and a net gain of \$5 million related to the repayment of the 2029 Notes during 2017. Includes costs of \$9 million related to early redemption premium payments for the tender and redemption of the 2016 Senior Notes during 2015.

The following table details the debt issuance cost and original issue discount amortization included in interest expense during 2017, 2016 and 2015.

(In millions)	2017	2016	2015
Normal amortization	\$ 8	\$ 12	\$ 14
Accelerated amortization (a)	101	6	4
Total	<u>\$ 109</u>	<u>\$ 18</u>	<u>\$ 18</u>

(a) Fiscal year 2017 includes \$92 million of accelerated accretion of the recorded debt discount for the 2029 Notes, while the remaining amounts in each year relate to accelerated amortization of debt issuance costs.

NOTE J – OTHER NONCURRENT ASSETS AND LIABILITIES

The following table provides the components of other noncurrent assets in the Consolidated Balance Sheets as of September 30.

NOTE J – OTHER NONCURRENT ASSETS AND LIABILITIES (continued)

(In millions)	2017	2016
Deferred compensation investments	\$ 158	\$ 150
Tax and tax indemnity receivables	86	82
Manufacturing catalyst supplies	37	35
Equity and other unconsolidated investments	32	31
Defined benefit plan assets	27	36
Land use rights	16	21
Life insurance policies	15	16
Environmental insurance receivables	14	15
Notes receivable	5	20
Debt issuance costs	6	10
Other	26	21
	<u>\$ 422</u>	<u>\$ 437</u>

The following table provides the components of other noncurrent liabilities in the Consolidated Balance Sheets as of September 30.

(In millions)	2017	2016
Tax liabilities	\$ 179	\$ 104
Environmental remediation reserves	121	134
Deferred compensation	50	54
Other	50	69
	<u>\$ 400</u>	<u>\$ 361</u>

NOTE K – LEASE COMMITMENTS

Ashland and its subsidiaries are lessees of office buildings, transportation equipment, warehouses and storage facilities, other equipment, facilities and properties under leasing agreements that expire at various dates. Capitalized lease obligations are not significant and are included in long-term debt while capital lease assets are included in property, plant and equipment. Future minimum rental payments at September 30, 2017 were \$31 million in 2018, \$33 million in 2019, \$23 million in 2020, \$17 million in 2021, \$15 million in 2022 and \$99 million in 2023 and later years. Rental expense under operating leases for continuing operations was as follows:

(In millions)	2017	2016	2015
Minimum rentals (including rentals under short-term leases)	\$ 48	\$ 50	\$ 45
Contingent rentals	—	1	1
Sublease rental income	(1)	(1)	(1)
	<u>\$ 47</u>	<u>\$ 50</u>	<u>\$ 45</u>

NOTE L – INCOME TAXES

A summary of the provision for income taxes related to continuing operations follows.

NOTE L – INCOME TAXES (continued)

(In millions)	2017	2016	2015
Current			
Federal	\$ (10)	\$ (56)	\$ (125)
State	—	(8)	(16)
Foreign	46	68	52
	<u>36</u>	<u>4</u>	<u>(89)</u>
Deferred	(29)	(29)	(50)
Income tax expense (benefit)	<u>\$ 7</u>	<u>\$ (25)</u>	<u>\$ (139)</u>

Deferred income taxes are provided for income and expense items recognized in different years for tax and financial reporting purposes. As of September 30, 2017, management intends to indefinitely reinvest approximately \$1.5 billion of foreign earnings. Because these earnings are considered indefinitely reinvested, no U.S. tax provision has been accrued related to the repatriation of these earnings, and it is not practicable to estimate the amount of U.S. tax that might be payable if these earnings were ever to be remitted.

Foreign net operating loss carryforwards primarily relate to certain European and Asian Pacific operations and generally may be carried forward. U.S. state net operating loss carryforwards relate to losses within certain states and generally may be carried forward. Temporary differences that give rise to significant deferred tax assets and liabilities as of September 30 are presented in the following table.

(In millions)	2017	2016
Deferred tax assets		
Foreign net operating loss carryforwards (a)	\$ 69	\$ 75
Employee benefit obligations	47	46
Environmental, self-insurance and litigation reserves (net of receivables)	192	209
State net operating loss carryforwards (net of unrecognized tax benefits) (b)	62	44
Compensation accruals	72	67
Credit carryforwards (net of unrecognized tax benefits) (c)	26	45
Other items	47	13
Valuation allowances (d)	(122)	(136)
Total deferred tax assets	<u>393</u>	<u>363</u>
Deferred tax liabilities		
Goodwill and other intangibles (e)	432	343
Property, plant and equipment	302	295
Unremitted earnings	6	5
Total deferred tax liabilities	<u>740</u>	<u>643</u>
Net deferred tax liability	<u>\$ (347)</u>	<u>\$ (280)</u>

(a) Gross net operating loss carryforwards of \$219 million will expire in future years beyond 2019 or have no expiration.

(b) Apportioned net operating loss carryforwards generated of \$1.5 billion will expire in future years as follows: \$64 million in 2018, \$67 million in 2019 and the remaining balance in other future years.

(c) Credit carryforwards consist primarily of foreign tax credits of \$4 million expiring in future years beyond 2019, research and development credits of \$13 million expiring in future years beyond 2019 and alternative minimum tax credits of \$18 million with no expiration date.

(d) Valuation allowances primarily relate to certain state and foreign net operating loss carryforwards.

(e) The total gross amount of goodwill as of September 30, 2017 expected to be deductible for tax purposes is \$25 million.

The U.S. and foreign components of income from continuing operations before income taxes and a reconciliation of the statutory federal income tax with the provision for income taxes follow. The foreign components of income from continuing operations disclosed in the following table exclude any allocations of certain corporate expenses incurred in the U.S.

NOTE L – INCOME TAXES (continued)

(In millions)	2017	2016	2015
Income (loss) from continuing operations before income taxes			
United States	\$ (376)	\$ (557)	\$ (424)
Foreign	278	249	273
Loss from continuing operations before income taxes	<u>\$ (98)</u>	<u>\$ (308)</u>	<u>\$ (151)</u>
Income taxes computed at U.S. statutory rate (35%)	\$ (34)	\$ (108)	\$ (53)
Increase (decrease) in amount computed resulting from			
Net gain on divestitures	—	—	10
Uncertain tax positions	12	24	22
Foreign dividends and deemed dividend inclusions	124	111	102
Foreign tax credits	(29)	(93)	(87)
Valuation allowance changes (a)	(3)	33	(27)
Research and development credits	(6)	(9)	(7)
State taxes (b)	(15)	(3)	(23)
Goodwill impairment	—	55	—
International rate differential	(63)	(57)	(61)
Other items (c)	21	22	(15)
Income tax expense (benefit)	<u>\$ 7</u>	<u>\$ (25)</u>	<u>\$ (139)</u>

(a) 2017 includes \$25 million of benefit for the release of a foreign tax credit valuation allowance and \$22 million of expense for state, foreign and domestic federal deferred tax asset valuation allowances net of a NOL write-off offset; 2016 relates to foreign tax credit carryforward and state deferred tax asset valuation allowance establishments; 2015 primarily relates to state deferred tax asset valuation allowance releases.

(b) 2017 includes \$6 million of benefit for state tax rate changes primarily related to the final distribution of Valvoline.

(c) 2017 includes \$7 million of expense related to foreign withholding taxes, \$5 million of expense for the write-off of a prepaid asset related to an intercompany transaction with a Valvoline legal entity and \$4 million of expense for non-deductible transaction costs primarily related to the Valvoline spin-off and \$6 million of benefit for certain other domestic permanent items; 2016 includes \$25 million of expense for costs associated with the separation of Valvoline; 2015 primarily includes non-recurring favorable permanent differences.

The 2017 effective tax rate was impacted by jurisdictional income mix, \$87 million of tax expense related to deemed dividend inclusions and a \$25 million tax benefit for the reversal of a valuation allowance related to the utilization of foreign tax credits.

The 2016 effective tax rate was impacted by jurisdictional income mix and net unfavorable adjustments primarily related to a nondeductible goodwill impairment for the Intermediates and Solvents division, valuation allowances for domestic attributes, accruals for unrecognized tax benefits and items related to the separation of Valvoline.

The 2015 effective tax rate was impacted by jurisdictional income mix and net favorable items predominantly due to the release of certain valuation allowances related to state deferred tax assets. These favorable adjustments were partially offset by an accrual for an unrecognized tax benefit and tax related to certain global restructuring steps.

Unrecognized tax benefits

U.S. GAAP prescribes a recognition threshold and measurement attribute for the accounting and financial statement disclosure of tax positions taken or expected to be taken in a tax return. The evaluation of a tax position is a two-step process. The first step requires Ashland to determine whether it is more likely than not that a tax position will be sustained upon examination based on the technical merits of the position. The second step requires Ashland to recognize in the financial statements each tax position that meets the more likely than not criteria, measured at the amount of benefit that has a greater than 50% likelihood of being realized. Ashland had \$194 million and \$168 million of unrecognized tax benefits at September 30, 2017 and 2016, respectively. As of September 30, 2017, the total amount of unrecognized tax benefits that, if recognized, would affect the tax rate for continuing and discontinued operations was \$171 million. The remaining unrecognized tax benefits relate to tax positions for which ultimate deductibility is highly certain but for which there is uncertainty as to the timing of such deductibility. Recognition of these tax benefits would not have an impact on the effective tax rate.

Ashland recognizes interest and penalties related to uncertain tax positions as a component of income tax expense (benefit) in the Statements of Consolidated Comprehensive Income. Such interest and penalties totaled a \$3 million expense in 2017, \$5 million expense in 2016 and \$1 million expense in 2015. Ashland had \$26 million and \$21 million in interest and penalties related to unrecognized tax benefits accrued as of September 30, 2017 and 2016, respectively.

NOTE L – INCOME TAXES (continued)

Changes in unrecognized tax benefits were as follows:

(In millions)	
Balance at September 30, 2015	\$ 144
Increases related to positions taken on items from prior years	10
Decreases related to positions taken on items from prior years	(4)
Increases related to positions taken in the current year	22
Lapse of statute of limitations	(2)
Settlement of uncertain tax positions with tax authorities	(2)
Balance at September 30, 2016	168
Increases related to positions taken on items from prior years	8
Decreases related to positions taken on items from prior years	(3)
Increases related to positions taken in the current year	14
Lapse of statute of limitations	(3)
Acquisition of Pharmachem	11
Settlement of uncertain tax positions with tax authorities	(1)
Balance at September 30, 2017 (a)	\$ 194

(a) Ashland has offsetting indemnity receivables from Valvoline and Pharmachem for \$48 million of the gross unrecognized tax benefits balance at September 30, 2017.

From a combination of statute expirations and audit settlements in the next twelve months, Ashland expects a decrease in the amount of accrual for uncertain tax positions of between \$22 million and \$32 million for continuing operations. For the remaining balance as of September 30, 2017, it is reasonably possible that there could be material changes to the amount of uncertain tax positions due to activities of the taxing authorities, settlement of audit issues, reassessment of existing uncertain tax positions or the expiration of applicable statute of limitations; however, Ashland is not able to estimate the impact of these items at this time.

Ashland or one of its subsidiaries files income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. Foreign taxing jurisdictions significant to Ashland include Brazil, Canada, China, Germany, Mexico, Netherlands, Spain, Switzerland and United Kingdom. Ashland is subject to U.S. federal income tax examinations by tax authorities for periods after September 30, 2011 and U.S. state income tax examinations by tax authorities for periods after September 30, 2003. With respect to countries outside of the United States, with certain exceptions, Ashland's foreign subsidiaries are subject to income tax audits for years after 2006.

NOTE M – EMPLOYEE BENEFIT PLANS**Plan Transfers**

During September 2016, Ashland transferred a substantial portion of its largest U.S. qualified pension and non-qualified U.S. pension plans as well as certain other postretirement obligations to Valvoline Inc. As of September 30, 2016, the net pension and other postretirement plan liabilities that transferred to Valvoline Inc. totaled \$886 million and are classified within the Noncurrent liabilities of discontinued operations caption of the Consolidated Balance Sheet.

The disclosures within this footnote exclude these amounts that were transferred and only relate to plans Ashland currently records within continuing operations, except for the net periodic benefit cost and weighted-average plan assumptions table which, in accordance with U.S. GAAP, required certain amounts of the transferred plans to be included in continuing operations.

Pension plans

Subsequent to the transfer of pension plans to Valvoline, Ashland and its subsidiaries have several contributory and noncontributory qualified defined benefit pension plans left that generally cover international employees and a small portion of certain U.S. manufacturing union employees. Pension obligations for applicable employees of non-U.S. consolidated subsidiaries are provided for in accordance with local practices and regulations of the respective countries. The majority of these foreign pension plans are closed to new participants while those that remain open relate to areas where jurisdictions require plans to operate within the applicable country.

NOTE M – EMPLOYEE BENEFIT PLANS (continued)

Benefits for those eligible for Ashland's U.S. pension plans generally are based on employees' years of service and compensation during the years immediately preceding their retirement. The remaining U.S. plans are still open for enrollment for qualifying union employees within certain manufacturing sites.

Other postretirement benefit plans

Ashland and its subsidiaries maintain limited health care for certain eligible employees in the U.S. who are retired or disabled. Ashland shares the costs of providing health care coverage with certain eligible retired employees through premiums, deductibles and coinsurance provisions. Ashland funds its share of the costs of the postretirement benefit plans as the benefits are paid. This benefit obligation was significantly reduced due to the transfer of a substantial portion to Valvoline.

Postretirement health care plans include a limit on Ashland's share of costs for recent and future retirees. The assumed pre-65 health care cost trend rate as of September 30, 2017 was 7.5% and continues to be reduced to 4.50% in 2037 and thereafter. The assumptions used to project the liability anticipate future cost-sharing changes to the written plans that are consistent with the increase in health care cost.

Change in applying discount rate to measure benefit costs

During 2016, Ashland changed the method used to estimate the service and interest cost components of net periodic benefit cost for pension and other postretirement benefits. This change compared to the previous method resulted in a decrease in the service and interest cost components for pension and other postretirement benefit costs during the quarter. Historically, Ashland estimated these service and interest cost components utilizing a single weighted-average discount rate derived from the yield curve used to measure the benefit obligation at the beginning of the period. Ashland elected during 2016 to utilize a full yield curve approach in the estimation of these components by applying the specific spot rates along the yield curve used in the determination of the benefit obligation to the relevant projected cash flows. Ashland made this change to provide a more precise measurement of service and interest costs by improving the correlation between projected benefit cash flows to the corresponding spot yield curve rates. This change did not impact the measurement of Ashland's total benefit obligations or annual net periodic benefit costs as the change in the service and interest costs will be offset in the actuarial gain or loss reported, which typically occurs during the fourth fiscal quarter. Ashland accounted for this change as a change in accounting estimate that is inseparable from a change in accounting principle and accordingly has accounted for it prospectively.

The impact of this discount rate change compared to the previous method decreased the estimated pension and other postretirement benefits service and interest cost by \$27 million for 2016. Ashland's total projected benefit obligation was not impacted by these reductions in service and interest costs as the decrease was substantially offset within the actuarial gain or loss caption when the plans were remeasured during the fiscal year.

Plan Amendments and Remeasurements

During 2017, Ashland discontinued certain post-employment health and life insurance benefits which resulted in a remeasurement gain of \$2 million within the Statements of Consolidated Comprehensive Income.

During 2016, Ashland was required to remeasure certain U.S. pension plans and postretirement benefit plans due to various plan amendments. As a result of these remeasurements, Ashland recognized a loss of \$18 million within the Statements of Consolidated Comprehensive Income.

During 2015, Ashland was required to remeasure a non-U.S. pension plan due to the exit of Water Technologies' employees from the plan. As a result of the remeasurement, Ashland recognized an actuarial loss of \$9 million within the Statements of Consolidated Comprehensive Income.

Net periodic benefit costs (income) allocation

Consistent with Ashland's historical accounting policies, service cost for continuing operations is proportionately allocated to each reportable segment, excluding the Unallocated and other segment, while all other costs for continuing operations are recorded within the Unallocated and other segment.

The following table summarizes the components of pension and other postretirement benefit costs for continuing operations and the assumptions used to determine net periodic benefit costs (income) for the plans. During 2016 and 2015, certain curtailments and actuarial adjustments related to plans that transferred to Valvoline Inc. were required, in accordance with US GAAP, to be recorded within Ashland's continuing operations within the Statements of Consolidated Comprehensive Income (Loss) and totaled \$78 million and \$145 million, respectively. As a result, comparisons between 2017 to the previous fiscal years within the components of pension and other postretirement benefit cost table, including weighted-average plan assumptions, are significantly impacted by the inclusion of these costs and plans within continuing operations during 2016 and 2015.

NOTE M – EMPLOYEE BENEFIT PLANS (continued)

(In millions)	Pension benefits			Other postretirement benefits		
	2017	2016	2015	2017	2016	2015
Net periodic benefit costs (income)						
Service cost	\$ 8	\$ 21	\$ 21	\$ 1	\$ 1	\$ 1
Interest cost	8	94	144	2	3	7
Curtailment, settlement and other	—	(64)	(5)	—	(34)	—
Expected return on plan assets	(11)	(149)	(177)	—	—	—
Amortization of prior service credit	—	(1)	(3)	—	(11)	(15)
Actuarial loss	—	208	212	6	32	1
	<u>\$ 5</u>	<u>\$ 109</u>	<u>\$ 192</u>	<u>\$ 9</u>	<u>\$ (9)</u>	<u>\$ (6)</u>
Weighted-average plan assumptions (a)						
Discount rate for service cost (b)	1.92%	3.95%	4.22%	3.93%	4.07%	3.81%
Discount rate for interest cost (b)	2.22%	3.30%	4.22%	2.86%	2.57%	3.81%
Rate of compensation increase	2.80%	3.04%	3.01%			
Expected long-term rate of return on plan assets	3.41%	6.71%	7.30%			

(a) The plan assumptions discussed are a blended weighted-average rate for Ashland's U.S. and non-U.S. plans.

(b) Weighted-average discount rates in 2017 and 2016 reflect the adoption of the full yield curve approach.

The following table shows other changes in prior service credit recognized in accumulated other comprehensive income.

(In millions)	Pension		Postretirement	
	2017	2016	2017	2016
Prior service cost (credit)	\$ —	\$ 2	\$ —	\$ (88)
Curtailment, settlement and other	—	6	—	39
Amortization of prior service credit	—	1	—	14
Total	<u>\$ —</u>	<u>\$ 9</u>	<u>\$ —</u>	<u>\$ (35)</u>
Total recognized in net periodic benefit cost (income) and accumulated other comprehensive income	\$ 5	\$ 118	\$ 9	\$ (44)

At September 30, 2017, Ashland does not expect to recognize any of the prior service credit in accumulated other comprehensive income as net periodic benefit cost (income) during the next fiscal year.

At September 30, 2017 and 2016, the amounts included in accumulated other comprehensive income are shown in the following table.

(In millions)	Pension		Postretirement	
	2017	2016	2017	2016 (a)
Prior service credit	\$ (3)	\$ (3)	\$ —	\$ (80)

(a) Entire amount related to plans that transferred to Valvoline as previously discussed within this Note M. As a result, no Ashland plans had prior service credits as of September 30, 2017.

NOTE M – EMPLOYEE BENEFIT PLANS (continued)
Obligations and funded status

Actuarial valuations are performed for the pension and other postretirement benefit plans to determine Ashland's obligation for each plan. In accordance with U.S. GAAP, Ashland recognizes the unfunded status of the plans as a liability in the Consolidated Balance Sheets. Summaries of the change in benefit obligations, plan assets, funded status of the plans, amounts recognized in the balance sheet, and assumptions used to determine the benefit obligations for 2017 and 2016 are as follows.

(In millions)	Pension plans		Other postretirement benefit plans	
	2017	2016	2017	2016
Change in benefit obligations				
Benefit obligations at October 1	\$ 448	\$ 421	\$ 59	\$ 60
Service cost	8	9	1	—
Interest cost	8	11	2	—
Participant contributions	1	1	—	—
Benefits paid	(12)	(13)	(6)	(1)
Actuarial (gain) loss	(20)	66	6	—
Foreign currency exchange rate changes	13	(32)	—	—
Other	17	(1)	—	—
Curtailment and settlement	(8)	(14)	—	—
Benefit obligations at September 30	<u>\$ 455</u>	<u>\$ 448</u>	<u>\$ 62</u>	<u>\$ 59</u>
Change in plan assets				
Value of plan assets at October 1	\$ 353	\$ 333	\$ —	\$ —
Actual return on plan assets	(9)	64	—	—
Employer contributions (a)	7	8	—	—
Participant contributions	1	1	—	—
Benefits paid	(12)	(13)	—	—
Foreign currency exchange rate changes	8	(37)	—	—
Other	7	(3)	—	—
Value of plan assets at September 30	<u>\$ 355</u>	<u>\$ 353</u>	<u>\$ —</u>	<u>\$ —</u>
Unfunded status of the plans	<u>\$ (100)</u>	<u>\$ (95)</u>	<u>\$ (62)</u>	<u>\$ (59)</u>
Amounts recognized in the balance sheet				
Noncurrent benefit assets	\$ 27	\$ 36	\$ —	\$ —
Current benefit liabilities	(3)	(4)	(4)	(4)
Noncurrent benefit liabilities	(124)	(127)	(58)	(55)
Net amount recognized	<u>\$ (100)</u>	<u>\$ (95)</u>	<u>\$ (62)</u>	<u>\$ (59)</u>
Weighted-average plan assumptions				
Discount rate	2.66%	3.39%	3.66%	3.42%
Rate of compensation increase	2.80%	3.04%		

(a) Fiscal 2016 excludes \$25 million of employer contributions related to plans transferred to Valvoline Inc. as previously discussed within this Note M.

The accumulated benefit obligation for all pension plans was \$441 million at September 30, 2017 and \$435 million at September 30, 2016. Subsequent to the transfer of plans to Valvoline Inc. on September 1, 2016, all remaining Ashland pension plans are either qualified U.S. or non-US plans. Information for pension plans with an accumulated benefit obligation in excess of plan assets follows:

NOTE M – EMPLOYEE BENEFIT PLANS (continued)

(In millions)	2017	2016
Projected benefit obligation	\$ 254	\$ 242
Accumulated benefit obligation	239	230
Fair value of plan assets	126	112

Plan assets

The expected long-term rate of return on pension plan assets was 3.41% and 6.71% for 2017 and 2016, respectively. The basis for determining the expected long-term rate of return is a combination of future return assumptions for various asset classes in Ashland's investment portfolio, historical analysis of previous returns, market indices and a projection of inflation.

The following table summarizes the various investment categories that the pension plan assets are invested in and the applicable fair value hierarchy that the financial instruments are classified within these investment categories as of September 30, 2017. For additional information and a detailed description of each level within the fair value hierarchy, see Note F.

(In millions)	Total fair value	Quoted prices in active markets for identical assets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3
Cash and cash equivalents	\$ 18	\$ 18	\$ —	\$ —
Non-U.S. Government securities	103	—	103	—
Corporate debt instruments	123	—	123	—
Corporate stocks	67	—	67	—
Insurance contracts	44	—	44	—
Total assets at fair value	<u>\$ 355</u>	<u>\$ 18</u>	<u>\$ 337</u>	<u>\$ —</u>

The following table summarizes the various investment categories that the pension plan assets are invested in and the applicable fair value hierarchy that the financial instruments are classified within these investment categories as of September 30, 2016.

(In millions)	Total fair value	Quoted prices in active markets for identical assets Level 1	Significant other observable inputs Level 2	Significant unobservable inputs Level 3
Cash and cash equivalents	\$ 103	\$ 103	\$ —	\$ —
Non-U.S. Government securities	111	—	111	—
Corporate debt instruments	99	—	99	—
Corporate stocks	29	—	29	—
Insurance contracts	11	—	11	—
Total assets at fair value	<u>\$ 353</u>	<u>\$ 103</u>	<u>\$ 250</u>	<u>\$ —</u>

Ashland's pension plan holds a variety of investments designed to diversify risk. Investments classified as a Level 1 fair value measure principally represent marketable securities priced in active markets. Cash and cash equivalents and public equity and debt securities are well diversified and invested in U.S. and international small-to-large companies across various asset managers and styles. Investments classified as a Level 2 fair value measure principally represents fixed-income securities and other investment grade corporate bonds and debt obligations.

Investments and Strategy

In developing an investment strategy for its defined benefit plans, Ashland has considered the following factors: the nature of the plans' liabilities, the allocation of liabilities between active, deferred and retired members, the funded status of the plans, the applicable investment horizon, the respective size of the plans and historical and expected capital market returns. Ashland's

NOTE M – EMPLOYEE BENEFIT PLANS (continued)

U.S. pension plan assets are managed by outside investment managers, which are monitored against investment return benchmarks and Ashland's established investment strategy. Investment managers are selected based on an analysis of, among other things, their investment process, historical investment results, frequency of management turnover, cost structure and assets under management. Assets are periodically reallocated between investment managers to maintain an appropriate asset mix and diversification of investments and to optimize returns.

The current target asset allocation for the U.S. plans is 50% fixed securities and 50% equity securities. Fixed income securities primarily includes cash and cash equivalents, long duration high grade corporate debt obligations and U.S. government debt obligations. Equity securities are comprised solely of traditional equity investments. Investment managers may employ a limited use of derivatives to gain efficient exposure to markets.

Ashland's investment strategy and management practices relative to plan assets of non-U.S. plans generally are consistent with those for U.S. plans, except in those countries where investment of plan assets is dictated by applicable regulations. Although the allocation between debt and equity securities may vary based on funding percentages and whether plans are still accruing additional liabilities, the weighted-average asset allocations for Ashland's U.S. and non-U.S. plans at September 30, 2017 and 2016 by asset category follow.

(In millions)		Actual at September 30	
	Target	2017	2016 (a)
Plan assets allocation			
Equity securities	15 - 60%	19%	8%
Fixed income securities	40 - 85%	81%	92%
		100%	100%

(a) The asset allocations were outside of the target range at September 30, 2016 as a result of all U.S. plan assets being held as cash and cash equivalents at that time while Ashland was transitioning the plan assets subsequent to the September transfer of pension plans to Valvoline.

Cash flows

During 2017 and 2016, Ashland contributed \$1 million and \$21 million, respectively, to its U.S. pension plans and \$6 million and \$12 million, respectively, to its non-U.S. pension plans. During 2016, all of the contributions to the U.S. pension plans and \$4 million of the contributions to the non-U.S. pension plans related to plans that transferred to Valvoline Inc. as previously discussed within this Note M. Ashland expects to contribute approximately \$1 million to its U.S. pension plans and \$7 million to its non-U.S. pension plans during 2018.

The following benefit payments, which reflect future service expectations, are projected to be paid in each of the next five years and in aggregate for five years thereafter.

(In millions)	Pension benefits	Other postretirement benefits
2018	\$ 19	\$ 5
2019	16	5
2020	17	5
2021	18	5
2022	18	5
2023 - 2027	101	24

Other plans

Ashland sponsors savings plans to assist eligible employees in providing for retirement or other future needs. Under such plans, company contributions amounted to \$26 million in 2017, \$35 million in 2016 and \$38 million in 2015. Ashland also sponsors various other employee benefit plans, some of which are required by different countries. The total noncurrent liabilities associated with these plans were \$9 million and \$13 million as of September 30, 2017 and 2016, respectively.

NOTE N – LITIGATION, CLAIMS AND CONTINGENCIES

Asbestos litigation

Ashland and Hercules have liabilities from claims alleging personal injury caused by exposure to asbestos. To assist in developing and annually updating independent reserve estimates for future asbestos claims and related costs given various assumptions, Ashland retained Hamilton, Rabinovitz & Associates, Inc. (HR&A). The methodology used by HR&A to project future asbestos costs is based largely on recent experience, including claim-filing and settlement rates, disease mix, enacted legislation, open claims and litigation defense. The claim experience of Ashland and Hercules are separately compared to the results of previously conducted third party epidemiological studies estimating the number of people likely to develop asbestos-related diseases. Those studies were undertaken in connection with national analyses of the population expected to have been exposed to asbestos. Using that information, HR&A estimates a range of the number of future claims that may be filed, as well as the related costs that may be incurred in resolving those claims. Changes in asbestos-related liabilities and receivables are recorded on an after-tax basis within the discontinued operations caption in the Statements of Consolidated Comprehensive Income.

Ashland asbestos-related litigation

The claims alleging personal injury caused by exposure to asbestos asserted against Ashland result primarily from indemnification obligations undertaken in 1990 in connection with the sale of Riley, a former subsidiary. The amount and timing of settlements and number of open claims can fluctuate from period to period. A summary of Ashland asbestos claims activity, excluding Hercules claims, follows.

(In thousands)	2017	2016	2015
Open claims - beginning of year	57	60	65
New claims filed	2	2	2
Claims settled	(1)	—	—
Claims dismissed	(4)	(5)	(7)
Open claims - end of year	<u>54</u>	<u>57</u>	<u>60</u>

Ashland asbestos-related liability

From the range of estimates, Ashland records the amount it believes to be the best estimate of future payments for litigation defense and claim settlement costs, which generally approximates the mid-point of the estimated range of exposure from model results. Ashland reviews this estimate and related assumptions quarterly and annually updates the results of a non-inflated, non-discounted approximate 50-year model developed with the assistance of HR&A.

During the most recent update completed during 2017, it was determined that the liability for Ashland asbestos-related claims should be increased by \$36 million. Total reserves for asbestos claims were \$419 million at September 30, 2017 compared to \$415 million at September 30, 2016.

A progression of activity in the asbestos reserve is presented in the following table.

(In millions)	2017	2016	2015
Asbestos reserve - beginning of year	\$ 415	\$ 409	\$ 438
Reserve adjustment	36	37	—
Amounts paid	(32)	(31)	(29)
Asbestos reserve - end of year (a)	<u>\$ 419</u>	<u>\$ 415</u>	<u>\$ 409</u>

(a) Included \$34 million classified in accrued expenses and other liabilities on the Consolidated Balance Sheets as of September 30, 2017 and 2016.

Ashland asbestos-related receivables

Ashland has insurance coverage for certain litigation defense and claim settlement costs incurred in connection with its asbestos claims, and coverage-in-place agreements exist with the insurance companies that provide substantially all of the coverage that will be accessed.

For the Ashland asbestos-related obligations, Ashland has estimated the value of probable insurance recoveries associated with its asbestos reserve based on management's interpretations and estimates surrounding the available or applicable insurance coverage, including an assumption that all solvent insurance carriers remain solvent. Substantially all of the estimated receivables from insurance companies are expected to be due from domestic insurers, all of which are solvent.

NOTE N – LITIGATION, CLAIMS AND CONTINGENCIES (continued)

In October 2012, Ashland and Hercules initiated various arbitration proceedings against Underwriters at Lloyd's, certain London companies and/or Chartist (AIG) member companies seeking to enforce these insurers' contractual obligations to provide indemnity for asbestos liabilities and defense costs under existing coverage-in-place agreements. In addition, Ashland and Hercules initiated a lawsuit in Kentucky state court against certain Berkshire Hathaway entities (National Indemnity Company and Resolute Management, Inc.) on grounds that these Berkshire Hathaway entities had wrongfully interfered with Underwriters' and Chartist' performance of their respective contractual obligations to provide asbestos coverage by directing the insurers to reduce and delay certain claim payments.

On January 13, 2015, Ashland and Hercules entered into a comprehensive settlement agreement related to certain insurance coverage for asbestos bodily injury claims with Underwriters at Lloyd's, certain London companies and Chartist (AIG) member companies, along with National Indemnity Company and Resolute Management, Inc., under which Ashland and Hercules received a total of \$398 million. In exchange, all claims were released against these entities for past, present and future coverage obligations arising out of the asbestos coverage-in-place agreements that were the subject of the pending arbitration proceedings. In addition, as part of this settlement, Ashland and Hercules released all claims against National Indemnity Company and Resolute Management, Inc. in the Kentucky state court action. As a result, the arbitration proceedings and the Kentucky state court action have been terminated.

As a result of this settlement, Ashland recorded an after-tax gain of \$120 million within the discontinued operations caption of the Statements of Consolidated Comprehensive Income (Loss) during 2015. The Ashland insurance receivable balance was also reduced as a result of this settlement by \$227 million within the Consolidated Balance Sheets.

In addition, during 2015, Ashland placed \$335 million of the settlement funds received into a renewable annual trust restricted for the purpose of paying for ongoing and future litigation defense and claim settlement costs incurred in conjunction with asbestos claims.

Ashland entered into settlement agreements totaling \$5 million and \$4 million with certain insurers during 2017 and 2016, respectively, which resulted in a reduction of the Ashland insurance receivable within the Consolidated Balance Sheets by the same amount.

At September 30, 2017, Ashland's receivable for recoveries of litigation defense and claim settlement costs from insurers amounted to \$155 million (excluding the Hercules receivable for asbestos claims). Receivables from insurers amounted to \$151 million at September 30, 2016. During 2017, the annual update of the model used for purposes of valuing the asbestos reserve and its impact on valuation of future recoveries from insurers, was completed. This model update resulted in a \$15 million increase in the receivable for probable insurance recoveries.

A progression of activity in the Ashland insurance receivable is presented in the following table.

(In millions)	2017	2016	2015
Insurance receivable - beginning of year	\$ 151	\$ 150	\$ 402
Receivable adjustment	15	16	(3)
Insurance settlement	(5)	(4)	(227)
Amounts collected	(6)	(11)	(22)
Insurance receivable - end of year (a)	<u>\$ 155</u>	<u>\$ 151</u>	<u>\$ 150</u>

(a) Included \$14 million and \$18 million classified in accounts receivable on the Consolidated Balance Sheets as of September 30, 2017 and 2016, respectively.

Hercules asbestos-related litigation

Hercules has liabilities from claims alleging personal injury caused by exposure to asbestos. Such claims typically arise from alleged exposure to asbestos fibers from resin encapsulated pipe and tank products which were sold by one of Hercules' former subsidiaries to a limited industrial market. The amount and timing of settlements and number of open claims can fluctuate from period to period. A summary of Hercules' asbestos claims activity follows.

(In thousands)	2017	2016	2015
Open claims - beginning of year	15	20	21
New claims filed	1	1	1
Claims dismissed	(4)	(6)	(2)
Open claims - end of year	<u>12</u>	<u>15</u>	<u>20</u>

NOTE N – LITIGATION, CLAIMS AND CONTINGENCIES (continued)*Hercules asbestos-related liability*

From the range of estimates, Ashland records the amount it believes to be the best estimate of future payments for litigation defense and claim settlement costs, which generally approximates the mid-point of the estimated range of exposure from model results. Ashland reviews this estimate and related assumptions quarterly and annually updates the results of a non-inflated, non-discounted approximate 50-year model developed with the assistance of HR&A. As a result of the most recent annual update of this estimate, completed during 2017, it was determined that the liability for Hercules asbestos-related claims should be increased by \$16 million. Total reserves for asbestos claims were \$323 million at September 30, 2017 compared to \$321 million at September 30, 2016.

A progression of activity in the asbestos reserve is presented in the following table.

(In millions)	2017	2016	2015
Asbestos reserve - beginning of year	\$ 321	\$ 311	\$ 329
Reserve adjustments	16	25	4
Amounts paid	(14)	(15)	(22)
Asbestos reserve - end of year (a)	<u>\$ 323</u>	<u>\$ 321</u>	<u>\$ 311</u>

(a) Included \$14 million and \$16 million classified in accrued expenses and other liabilities on the Consolidated Balance Sheets as of September 30, 2017 and 2016, respectively.

Hercules asbestos-related receivables

For the Hercules asbestos-related obligations, certain reimbursement obligations pursuant to coverage-in-place agreements with insurance carriers exist. As a result, any increases in the asbestos reserve have been partially offset by probable insurance recoveries. Ashland has estimated the value of probable insurance recoveries associated with its asbestos reserve based on management's interpretations and estimates surrounding the available or applicable insurance coverage, including an assumption that all solvent insurance carriers remain solvent. The estimated receivable consists exclusively of solvent domestic insurers.

As a result of the January 2015 asbestos insurance settlement previously described, Hercules resolved all disputes with Chartis (AIG) member companies under their existing coverage-in-place agreement for past, present and future Hercules asbestos claims. As a result, during 2015, a \$22 million reduction in the insurance receivable balance within the Consolidated Balance Sheets was recorded.

As of September 30, 2017 and 2016, the receivables from insurers amounted to \$68 million and \$63 million, respectively. During 2017, the annual update of the model used for purposes of valuing the asbestos reserve and its impact on valuation of future recoveries from insurers was completed. This model update resulted in a \$5 million increase in the receivable for probable insurance recoveries.

A progression of activity in the Hercules insurance receivable is presented in the following table.

(In millions)	2017	2016	2015
Insurance receivable - beginning of year	\$ 63	\$ 56	\$ 77
Receivable adjustment	5	7	1
Insurance settlement	—	—	(22)
Insurance receivable - end of year	<u>\$ 68</u>	<u>\$ 63</u>	<u>\$ 56</u>

Asbestos litigation cost projection

Projecting future asbestos costs is subject to numerous variables that are extremely difficult to predict. In addition to the significant uncertainties surrounding the number of claims that might be received, other variables include the type and severity of the disease alleged by each claimant, the long latency period associated with asbestos exposure, mortality rates, dismissal rates, costs of medical treatment, the impact of bankruptcies of other companies that are co-defendants in claims, uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, and the impact of potential changes in legislative or judicial standards. Furthermore, any predictions with respect to these variables are subject to even greater uncertainty as the projection period lengthens. In light of these inherent uncertainties, Ashland believes that the asbestos reserves for Ashland and Hercules represent the best estimate within a range of possible outcomes. As a part of the process to develop these estimates of future asbestos costs, a range of long-term cost models was developed. These models are based on national studies that predict the number of people likely to develop asbestos-related diseases and are heavily influenced by assumptions regarding long-term

NOTE N – LITIGATION, CLAIMS AND CONTINGENCIES (continued)

inflation rates for indemnity payments and legal defense costs, as well as other variables mentioned previously. Ashland has currently estimated in various models ranging from approximately 40 to 50 year periods that it is reasonably possible that total future litigation defense and claim settlement costs on an inflated and undiscounted basis could range as high as approximately \$660 million for the Ashland asbestos-related litigation (current reserve of \$419 million) and approximately \$510 million for the Hercules asbestos-related litigation (current reserve of \$323 million), depending on the combination of assumptions selected in the various models. If actual experience is worse than projected, relative to the number of claims filed, the severity of alleged disease associated with those claims or costs incurred to resolve those claims, or actuarial refinement or improvements to the assumptions used within these models are initiated, Ashland may need to further increase the estimates of the costs associated with asbestos claims and these increases could be material over time.

Environmental remediation and asset retirement obligations

Ashland is subject to various federal, state and local environmental laws and regulations that require environmental assessment or remediation efforts (collectively environmental remediation) at multiple locations. At September 30, 2017, such locations included 82 waste treatment or disposal sites where Ashland has been identified as a potentially responsible party under Superfund or similar state laws, 126 current and former operating facilities (including certain operating facilities conveyed as part of the MAP Transaction) and about 1,225 service station properties, of which 61 are being actively remediated.

Ashland's reserves for environmental remediation and related environmental litigation amounted to \$163 million at September 30, 2017 compared to \$177 million at September 30, 2016, of which \$121 million at September 30, 2017 and \$134 million at September 30, 2016 were classified in other noncurrent liabilities on the Consolidated Balance Sheets. The remaining reserves were classified in accrued expenses and other liabilities on the Consolidated Balance Sheets.

The following table provides a reconciliation of the changes in the environmental remediation reserves during 2017 and 2016.

(In millions)	2017	2016
Environmental remediation reserve - beginning of year	\$ 177	\$ 186
Disbursements	(32)	(44)
Revised obligation estimates and accretion	18	35
Environmental remediation reserve - end of year	<u>\$ 163</u>	<u>\$ 177</u>

The total reserves for environmental remediation reflect Ashland's estimates of the most likely costs that will be incurred over an extended period to remediate identified conditions for which the costs are reasonably estimable, without regard to any third-party recoveries. Engineering studies, probability techniques, historical experience and other factors are used to identify and evaluate remediation alternatives and their related costs in determining the estimated reserves for environmental remediation. Ashland continues to discount certain environmental sites and regularly adjusts its reserves as environmental remediation continues. Ashland has estimated the value of its probable insurance recoveries associated with its environmental reserve based on management's interpretations and estimates surrounding the available or applicable insurance coverage. At September 30, 2017 and 2016, Ashland's recorded receivable for these probable insurance recoveries was \$15 million and \$23 million, respectively, of which \$14 million and \$15 million, respectively, were classified in other noncurrent assets in the Consolidated Balance Sheets.

Components of environmental remediation expense included within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income (Loss) are presented in the following table for the years ended September 30, 2017, 2016 and 2015.

NOTE N – LITIGATION, CLAIMS AND CONTINGENCIES (continued)

(In millions)	2017	2016	2015
Environmental expense	\$ 17	\$ 33	\$ 32
Accretion	1	2	4
Legal expense	8	8	6
Total expense	26	43	42
Insurance receivable	(2)	(3)	(2)
Total expense, net of receivable activity (a)	\$ 24	\$ 40	\$ 40

(a) Net expense of \$3 million, \$2 million and \$5 million for the fiscal years ended September 30, 2017, 2016 and 2015, respectively, relates to divested businesses which qualified for treatment as discontinued operations and for which certain environmental liabilities were retained by Ashland. These amounts are classified within the income from discontinued operations caption of the Statements of Consolidated Comprehensive Income.

Environmental remediation reserves are subject to numerous inherent uncertainties that affect Ashland's ability to estimate its share of the costs. Such uncertainties involve the nature and extent of contamination at each site, the extent of required cleanup efforts under existing environmental regulations, widely varying costs of alternate cleanup methods, changes in environmental regulations, the potential effect of continuing improvements in remediation technology, and the number and financial strength of other potentially responsible parties at multiparty sites. Although it is not possible to predict with certainty the ultimate costs of environmental remediation, Ashland currently estimates that the upper end of the reasonably possible range of future costs for identified sites could be as high as approximately \$416 million. The largest reserve for any site is approximately 15% of the remediation reserve.

Other legal proceedings and claims

In addition to the matters described above, there are other various claims, lawsuits and administrative proceedings pending or threatened against Ashland and its current and former subsidiaries. Such actions are with respect to commercial matters, product liability, toxic tort liability, and other environmental matters, which seek remedies or damages, some of which are for substantial amounts. While Ashland cannot predict with certainty the outcome of such actions, it believes that adequate reserves have been recorded and losses already recognized with respect to such actions were immaterial as of September 30, 2017 and 2016. There is a reasonable possibility that a loss exceeding amounts already recognized may be incurred related to these actions; however, Ashland believes that such potential losses were immaterial as of September 30, 2017 and 2016. For additional information on legal proceedings and claims, see the Legal Proceedings section of Form 10-K (Part I, Item 3).

NOTE O – EQUITY ITEMS**Stock repurchase programs**

During 2015, Ashland's Board of Directors approved a \$1 billion share repurchase authorization (the 2015 stock repurchase program) that was set to expire on December 31, 2017. This authorization allows for common shares to be repurchased in open market transactions, privately negotiated transactions or pursuant to one or more accelerated stock repurchase programs or Rule 10b5-1 plans.

During 2017, Ashland's Board of Directors extended this \$1 billion share repurchase authorization indefinitely. As further described in this Note O, there is \$500 million currently remaining on this authorization.

Stock repurchase program agreements

In November 2015, under the 2015 stock repurchase program, Ashland announced that it entered into an accelerated share repurchase agreement (2016 ASR Agreement) with Goldman Sachs & Co. Under the 2016 ASR Agreement, Ashland paid an initial purchase price of \$500 million and received an initial delivery of approximately 3.9 million shares of common stock during November 2015. In February 2016, Goldman Sachs & Co. exercised their early termination option under the 2016 ASR Agreement and the pricing period was closed. The settlement price, which represents the weighted average price of Ashland's common stock over the pricing period less a discount, was \$99.01 per share. Based on this settlement price, the final number of shares repurchased by Ashland that were delivered by Goldman Sachs & Co. under the 2016 ASR Agreement was 5.1 million shares. Ashland received the additional 1.2 million shares during 2016 to settle the difference between the initial share delivery and the total number of shares repurchased. After the 2016 ASR Agreement, \$500 million of share repurchase authorization remains under the 2015 stock repurchase authorization.

NOTE O - EQUITY ITEMS (continued)

During 2015, Ashland announced and completed accelerated share repurchase agreements (2015 ASR Agreements) with Deutsche Bank and JPMorgan to repurchase an aggregate of \$270 million of Ashland's common stock. Under the 2015 ASR Agreements, Ashland paid an initial purchase price of \$270 million, split evenly between the financial institutions and received an initial delivery of approximately 1.9 million shares of common stock. The 2015 ASR Agreements had a variable maturity, at the financial institutions option, with a maximum pricing period termination date of July 31, 2015. During 2015, Deutsche Bank and JPMorgan exercised their early termination option under the 2015 ASR Agreements and the pricing period was closed. The settlement price, which represents the weighted average price of Ashland's common stock over the pricing period less a discount, was \$125.22 per share. Based on this settlement price, the final number of shares repurchased by Ashland that were delivered by the financial institutions under the 2015 ASR Agreements was 2.2 million shares. Ashland received the additional 0.3 million shares from the financial institutions during 2015 to settle the difference between the initial share delivery and the total number of shares repurchased.

Stockholder dividends

During May 2017, subsequent to the final distribution of Valvoline Inc.'s common stock, the Board of Directors announced a quarterly cash dividend of 22.5 cents per share to eligible shareholders at record. This amount was paid for quarterly dividends in the third and fourth quarters of fiscal 2017 and represents a reduction from the previous quarterly dividend of 39 cents per share.

In May 2015, the Board of Directors of Ashland announced a quarterly cash dividend increase to 39 cents per share to eligible shareholders of record. This amount was paid for quarterly dividends during the first and second quarters of fiscal 2017, each quarter of fiscal 2016 and the third and fourth quarters of fiscal 2015. This amount was an increase from the quarterly cash dividend of 34 cents per share paid during the first and second quarters of fiscal 2015.

Shares reserved for issuance

At September 30, 2017, 13.9 million common shares are reserved for issuance under stock incentive and deferred compensation plans.

Other comprehensive income (loss)

Components of other comprehensive income (loss) recorded in the Statements of Consolidated Comprehensive Income (Loss) are presented in the following table, before tax and net of tax effects.

NOTE O - EQUITY ITEMS (continued)

(In millions)	Before tax	Tax (expense) benefit	Net of tax
Year ended September 30, 2017			
Other comprehensive income (loss)			
Unrealized translation gain	\$ 80	\$ 1	\$ 81
Amortization of unrecognized prior service credits included in net income (a)	(7)	3	(4)
Net change in available-for-sale securities:			
Unrealized gain on available-for-sale securities	24	(8)	16
Reclassification adjustment for gains included in net income	(2)	1	(1)
Total other comprehensive income	<u>\$ 95</u>	<u>\$ (3)</u>	<u>\$ 92</u>
Year ended September 30, 2016			
Other comprehensive income (loss)			
Unrealized translation loss	\$ (15)	\$ 1	\$ (14)
Pension and postretirement obligation adjustment:			
Adjustment of unrecognized prior service cost	86	(31)	55
Amortization of unrecognized prior service credits included in net income (a)	(60)	19	(41)
Unrealized gain on available-for-sale securities	28	(11)	17
Total other comprehensive income	<u>\$ 39</u>	<u>\$ (22)</u>	<u>\$ 17</u>
Year ended September 30, 2015			
Other comprehensive income (loss)			
Unrealized translation loss	\$ (368)	\$ (1)	\$ (369)
Pension and postretirement obligation adjustment:			
Adjustment of unrecognized prior service credit	(2)	1	(1)
Amortization of unrecognized prior service credits included in net income (a)	(24)	7	(17)
Unrealized loss on available-for-sale securities	(17)	6	(11)
Total other comprehensive loss	<u>\$ (411)</u>	<u>\$ 13</u>	<u>\$ (398)</u>

(a) Amortization of unrecognized prior service credits are included in the calculation of net periodic benefit costs (income) for pension and other postretirement plans. For specific financial statement captions impacted by the amortization see the table below.

In accordance with U.S. GAAP, as disclosed in the table above, certain pension and other postretirement costs (income) are amortized from accumulated other comprehensive income and recognized in net income. The captions on the Statements of Consolidated Comprehensive Income (Loss) impacted by the amortization of unrecognized prior service credits for pension and other postretirement plans are disclosed below. During 2016, the amortization of unrecognized prior service credits includes the curtailment impact of the pension and other postretirement plan remeasurements related to plan amendments of \$40 million. See Note M for more information on curtailments, settlements and other costs.

(In millions)	2017	2016	2015
Cost of sales	\$ —	\$ (22)	\$ (7)
Selling, general and administrative expense	—	(31)	(11)
Discontinued operations	(7)	(7)	(6)
Total amortization of unrecognized prior service credits	<u>\$ (7)</u>	<u>\$ (60)</u>	<u>\$ (24)</u>

NOTE P – STOCK INCENTIVE PLANS

Ashland has stock incentive plans under which key employees or directors are granted stock appreciation rights (SARs), performance share awards or nonvested stock awards. Each program is typically a long-term incentive plan designed to link employee compensation with increased shareholder value or reward superior performance and encourage continued employment with Ashland. Ashland recognizes compensation expense for the grant date fair value of stock-based awards over the applicable vesting period.

The components of Ashland's pretax stock-based awards (net of forfeitures) and associated income tax benefits are as follows:

(In millions)	2017 (a)	2016 (b)	2015 (c)
SARs	\$ 5	\$ 9	\$ 10
Nonvested stock awards	15	17	15
Performance share awards	8	8	13
	<u>\$ 28</u>	<u>\$ 34</u>	<u>\$ 38</u>
Income tax benefit	<u>\$ 11</u>	<u>\$ 13</u>	<u>\$ 13</u>

(a) The year ended September 30, 2017 included \$5 million and \$3 million of expense related to cash-settled nonvested restricted stock awards and cash-settled performance units, respectively.

(b) The year ended September 30, 2016 included \$4 million of expense related primarily to cash-settled nonvested restricted stock awards.

(c) The year ended September 30, 2015 included a \$7 million award modification within performance shares that was designated as a cash item and \$1 million of expense related primarily to cash-settled nonvested restricted stock awards.

Conversion of Equity Awards Outstanding from Valvoline Distribution

On May 12, 2017, the date of the final distribution of Valvoline common stock, certain of Ashland's outstanding equity awards held by Valvoline Inc. employees were converted to equivalent equity awards, as applicable, with respect to Valvoline Inc.'s common stock. These modified awards otherwise retained substantially the same terms and conditions, including term and vesting provisions, as the existing Ashland equity awards had at the time of conversion. Ashland transferred all Valvoline awards and will not incur any future compensation cost related to the conversion of Ashland equity awards held by Valvoline Inc. employees and directors in connection with the final Valvoline Inc. distribution.

Additionally, in connection with this transaction, Ashland proportionately adjusted the number and exercise prices of SARs, nonvested stock awards and performance awards granted to Ashland employees and directors that were outstanding at the time of this transaction to maintain the approximate aggregate intrinsic value of such awards. To calculate the exchange ratio for all outstanding stock based compensation awards, Ashland utilized a 10-day volume weighted average stock price (VWAP), using the 10 consecutive trading days following the distribution. The ratio used to adjust these awards differs slightly from the exchange ratio that would have resulted had the ratio been calculated based on Ashland's stock price immediately following the transaction.

On the date of the final distribution, and in accordance with U.S. GAAP, Ashland reassessed all outstanding equity awards to determine if additional compensation expense had been incurred due to the transaction causing a modification to the outstanding equity awards. The additional stock compensation expense as a result of this modification and assessment performed during the current year for all outstanding equity awards was not significant.

Stock Appreciation Rights

SARs are granted to employees or directors at a price equal to the fair market value of the stock on the date of grant and typically become exercisable over periods of one to three years. Unexercised SARs lapse ten years and one month after the date of grant. Ashland estimates the fair value of SARs granted using the Black-Scholes option-pricing model. This model requires several assumptions, which Ashland has developed and updates based on historical trends and current market observations. The accuracy of these assumptions is critical to the estimate of fair value for these equity instruments. The following table illustrates the weighted-average of key assumptions used within the Black-Scholes option-pricing model. The risk-free interest rate assumption was based on the U.S. Treasury yield curve in effect at the time of the grant for the expected term of the instrument. The dividend yield reflects the assumption that the current dividend payout will continue with no anticipated increases. The volatility assumption was calculated by utilizing an unbiased standard deviation of Ashland's Common Stock closing price for the past five years. The expected life is based on historical data and is not necessarily indicative of exercise patterns that may occur.

NOTE P – STOCK INCENTIVE PLANS (continued)

(In millions except per share data)	2017	2016	2015
Weighted-average fair value per share of SARs granted (a)	\$ 21.25	\$ 26.24	\$ 30.70
Assumptions (weighted-average)			
Risk-free interest rate	1.8%	1.8%	1.7%
Expected dividend yield	1.4%	1.4%	1.2%
Expected volatility	22.8%	27.7%	31.8%
Expected life (in years)	5	5	5

(a) The weighted-average fair values per share are as of the grant date and have not been adjusted for the Valvoline separation if the SARs were granted prior to the final distribution on May 12, 2017.

A progression of activity and various other information relative to SARs and previously issued and vested stock options is presented in the following table.

	2017		2016		2015	
	Number of common shares	Weighted-average exercise price per share	Number of common shares	Weighted-average exercise price per share	Number of common shares	Weighted-average exercise price per share
(In thousands except per share data)						
Outstanding - beginning of year	1,511	\$ 83.64	1,383	\$ 73.18	1,798	\$ 62.85
Granted	422	109.15	362	111.89	277	113.65
Exercised	(330)	70.55	(196)	59.69	(584)	58.80
Forfeitures and expirations	(70)	105.98	(38)	95.65	(108)	83.00
Transfer to Valvoline Inc. (a)	(352)	94.28	—	—	—	—
Conversion adjustment (b)	1,080	—	—	—	—	—
Outstanding - end of year (c), (d)	<u>2,261</u>	47.98	<u>1,511</u>	83.64	<u>1,383</u>	73.18
Exercisable - end of year (d)	<u>1,456</u>	42.10	<u>991</u>	69.68	<u>906</u>	59.92

(a) Represents the transfer of SARs held by Valvoline Inc. employees at the time of the final Valvoline Inc. distribution.

(b) The number and exercise prices of SARs outstanding at the time of the final Valvoline Inc. distribution were proportionately adjusted to maintain the aggregate intrinsic value before and after the transaction.

(c) Exercise prices per share for SARs outstanding at September 30, 2017 ranged from \$5.04 to \$5.70 for 68 thousand shares, from \$20.02 to \$29.50 for 381 thousand shares, from \$34.47 to \$47.63 for 536 thousand shares, and from \$57.96 to \$62.33 for 1,276 thousand shares. The weighted-average remaining contractual life of outstanding SARs and stock options was 6.7 years and exercisable SARs and stock options was 5.5 years.

(d) The 2017 ending weighted-average exercise price per share has been adjusted for the final Valvoline Inc. distribution.

The total intrinsic value of SARs exercised was \$14 million in 2017, \$11 million in 2016 and \$35 million in 2015. The actual tax benefit realized from the exercised SARs was \$2 million in 2017, \$2 million in 2016 and \$6 million in 2015. The total grant date fair value of SARs that vested during 2017, 2016 and 2015 was \$8 million, \$9 million and \$13 million, respectively. As of September 30, 2017, there was \$6 million of total unrecognized compensation costs related to SARs. That cost is expected to be recognized over a weighted-average period of 1.7 years. As of September 30, 2017, the aggregate intrinsic value of outstanding SARs was \$39 million and exercisable SARs was \$34 million.

Nonvested stock awards

Nonvested stock awards are granted to employees or directors at a price equal to the fair market value of the stock on the date of grant and generally vest over a one-to-five-year period. However, such shares or units are subject to forfeiture upon termination of service before the vesting period ends. During 2016, these awards were primarily granted as stock units that will convert to shares upon vesting, while the grants in prior years were generally made in nonvested shares. Only nonvested stock awards granted in the form of shares entitle employees or directors to vote the shares. Dividends on nonvested stock awards granted are in the form of additional units or shares of nonvested stock awards, which are subject to vesting and forfeiture provisions.

NOTE P – STOCK INCENTIVE PLANS (continued)

A progression of activity and various other information relative to nonvested stock awards is presented in the following table.

	2017		2016		2015	
	Number of common shares	Weighted- average grant date fair value	Number of common shares	Weighted- average grant date fair value	Number of common shares	Weighted- average grant date fair value
(In thousands except per share data)						
Nonvested - beginning of year	293	\$ 109.12	298	\$ 106.41	221	\$ 88.81
Granted	92	105.10	107	111.76	187	114.97
Vested	(189)	99.69	(93)	104.44	(69)	77.51
Forfeitures	(24)	104.19	(19)	104.66	(41)	99.20
Transfer to Valvoline Inc. (a)	(71)	111.97	—	—	—	—
Conversion adjustment (b)	118	—	—	—	—	—
Nonvested - end of year (c)	<u>219</u>	<u>59.16</u>	<u>293</u>	<u>109.12</u>	<u>298</u>	<u>106.41</u>

(a) Represents the transfer of nonvested stock awards held by Valvoline Inc. employees at the time of the final Valvoline Inc. distribution.

(b) The number and exercise prices of nonvested stock awards outstanding at the time of the final Valvoline Inc. distribution were proportionately adjusted to maintain the aggregate intrinsic value before and after the transaction.

(c) The 2017 ending weighted-average grant date fair value per share has been adjusted for the final Valvoline Inc. distribution.

The total fair value of nonvested stock awards that vested during 2017, 2016 and 2015 was \$19 million, \$10 million and \$5 million, respectively. As of September 30, 2017, there was \$5 million of total unrecognized compensation costs related to nonvested stock awards. That cost is expected to be recognized over a weighted-average period of 2.3 years.

Executive performance incentive and retention program

During 2016, certain executives were granted 260 thousand performance-based restricted shares of Ashland in order to provide an incentive to remain employed in the period after the full separation from Valvoline. At September 30, 2017, total nonvested shares outstanding were 79 thousand shares, which include forfeitures and the cumulative value of forfeitable dividends. The expense associated with these awards was \$3 million during 2017 and was contingent upon the completion of the full separation of Valvoline, which occurred May 12, 2017. As of September 30, 2017, there was \$9 million of total unrecognized compensation costs related to these awards.

Cash-settled nonvested stock awards

Certain nonvested stock awards are granted to employees and are settled in cash upon vesting. As of September 30, 2017, 198 thousand cash-settled nonvested stock awards were outstanding. The value of these cash-settled nonvested stock awards changes in connection with changes in the fair market value of the Ashland Common Stock. These awards generally vest over a period of three years. The expense recognized related to cash-settled nonvested stock awards was \$5 million and \$4 million during 2017 and 2016, respectively.

Performance awards

Ashland sponsors a long-term incentive plan that awards performance shares/units to certain key employees that are tied to Ashland's overall financial performance relative to the financial performance of selected industry peer groups and/or internal targets. Awards are granted annually, with each award covering a three-year vesting period. Nonvested performance shares/units do not entitle employees to vote the shares or to receive any dividends thereon.

For awards granted in prior years, each performance share is convertible to one share of Ashland Common Stock. These plans are recorded as a component of stockholders' equity in the Consolidated Balance Sheets. Performance measures used to determine the actual number of performance shares issuable upon vesting include an equal weighting of Ashland's total shareholder return (TSR) performance and Ashland's return on investment (ROI) performance as compared to the internal targets. TSR relative to peers is considered a market condition while ROI is considered a performance condition in accordance with U.S. GAAP.

For awards granted in the current year, upon vesting, each performance unit will be settled in cash based on the fair market value of Ashland common stock. In accordance with U.S. GAAP, this plan is recorded within the other liabilities caption in the Consolidated Balance Sheet. For these awards, the performance measure used to determine the actual number of performance units issuable upon vesting is the financial performance of Ashland compared to award targets. The financial performance award metric is considered a performance condition under applicable U.S. GAAP. Additionally, the actual number of performance units issuable upon vesting can be potentially increased or decreased based on a TSR performance modifier relative to peers for Ashland.

The following table shows the performance shares/units granted for all plans that award Ashland Common Stock or cash.

NOTE P – STOCK INCENTIVE PLANS (continued)

(In thousands)	Vesting period	Target	Weighted-
		shares/units granted (a)	average fair value per share/unit (a)
Fiscal Year 2017	October 1, 2016 - September 30, 2019	56	\$ 103.72
Fiscal Year 2016	October 1, 2015 - September 30, 2018	73	\$ 110.03
Fiscal Year 2015	October 1, 2014 - September 30, 2017	77	\$ 121.87

(a) At the end of the performance period, the actual number of shares/units awarded can range from zero to 200% of the target shares/units granted, which is assumed to be 100%. Both the shares granted and weighted-average fair value per share/unit are as of the grant date and have not been adjusted for the Valvoline separation.

For awards granted in prior years, the fair value of the ROI portion of the performance share awards is equal to the fair market value of Ashland's Common Stock on the date of the grant discounted for the dividends forgone during the vesting period of the three-year performance cycle. For awards granted in the current year, the fair value of the performance unit awards is equal to the fair market value of Ashland's Common Stock as of the end of each reporting period. Compensation cost is recognized over the requisite service period if it is probable that the performance condition will be satisfied.

The fair values of the TSR portion of the performance share awards and TSR modifier of the performance unit awards are calculated using a Monte Carlo simulation valuation model using key assumptions included in the following table. Compensation cost is recognized over the requisite service period regardless of whether the market condition is satisfied.

	2017	2016	2015
Risk-free interest rate	1.3%-1.4%	0.5% - 1.2%	0.1% - 1.0%
Expected dividend yield	1.4%	1.2%	1.4%
Expected life (in years)	3	3	3
Expected volatility	25.1%	21.1%	24.2%

The following table shows changes in nonvested performance shares/units for all plans that award Ashland Common Stock or cash.

(In thousands except per share data)	2017		2016		2015	
	Shares/ Units	Weighted- average grant date fair value	Shares/ Units	Weighted- average grant date fair value	Shares/ Units	Weighted- average grant date fair value
Nonvested - beginning of year	199	\$ 106.91	204	\$ 93.79	368	\$ 72.20
Granted (a)	71	99.86	73	110.03	103	115.19
Vested (a)	(69)	85.86	(72)	76.26	(133)	68.18
Forfeitures (b)	(54)	75.52	(6)	114.83	(134)	74.79
Transfer to Valvoline Inc. (c)	(21)	115.68	—	—	—	—
Conversion adjustment (d)	142	—	—	—	—	—
Nonvested - end of year (e)	<u>268</u>	<u>63.00</u>	<u>199</u>	<u>106.91</u>	<u>204</u>	<u>93.79</u>

- (a) 2017 and 2015 include 15 thousand and 26 thousand additional shares from the fiscal year 2014 and 2012 plans, respectively, since a portion of the payouts for those plans was in excess of the initial 100% target.
- (b) During 2015, Ashland modified certain performance shares to provide that the instruments be paid in cash instead of stock. This change in payment designation caused Ashland to recognize \$7 million in incremental stock-based compensation expense related to 84 thousand shares modified during 2015. During 2017, Ashland determined that zero percent of the TSR portion of the fiscal year 2016 plan will be paid out upon vesting which resulted in the forfeiture of 35 thousand shares.
- (c) Represents the transfer of performance shares from the fiscal year 2016 and 2015 plans held by Valvoline Inc. employees at the time of the final Valvoline Inc. distribution.
- (d) The number and exercise prices of performance shares/units outstanding at the time of the final Valvoline Inc. distribution were proportionately adjusted to maintain the aggregate intrinsic value before and after the transaction.
- (e) The 2017 ending weighted-average grant date fair value per share has been adjusted for the final Valvoline Inc. distribution.

NOTE P – STOCK INCENTIVE PLANS (continued)

As of September 30, 2017, there was \$8 million of total unrecognized compensation costs related to nonvested performance share/unit awards. That cost is expected to be recognized over a weighted-average period of approximately 1.8 years.

NOTE Q – REPORTABLE SEGMENT INFORMATION

Ashland determines its reportable segments based on how operations are managed internally for the products and services sold to customers, including how the results are reviewed by the chief operating decision maker, which includes determining resource allocation methodologies used for reportable segments. Operating income is the primary measure on the Statements of Consolidated Comprehensive Income (Loss) that is reviewed by the chief operating decision maker in assessing each reportable segment's financial performance. Ashland does not aggregate operating segments to arrive at these reportable segments.

New Reportable Segments

Subsequent to completing the distribution of Valvoline Inc. during the current year, Ashland's operations are now managed by the chief operating decision maker within the following three reportable segments: Specialty Ingredients, Composites and Intermediates and Solvents. As a result, the financial information for the new reportable segments (Composites and Intermediates and Solvents) has been disclosed for all periods presented. In previous years, Composites and Intermediates and Solvents were reporting units included within the Ashland Performance Materials reportable segment.

Reportable segment business descriptions

Specialty Ingredients is a global leader in cellulose ethers, vinyl pyrrolidones and biofunctionals. It offers industry-leading products, technologies and resources for solving formulation and product-performance challenges. Specialty Ingredients uses natural, synthetic and semisynthetic polymers derived from cellulose ethers, vinyl pyrrolidones, acrylic polymers, polyester and polyurethane-based adhesives, and plant and seed extract. Specialty Ingredient' end markets offer comprehensive and innovative solutions for today's demanding consumer and industrial applications. Key customers include: pharmaceutical companies; makers of personal care products, food and beverages; makers of nutraceuticals and supplements; manufacturers of paint, coatings and construction materials; packaging and converting; and oilfield service companies. On May 17, 2017, Ashland completed its acquisition of the stock of Pharmachem, a leading provider of quality ingredients to the global health and wellness industries and high-value differentiated products to fragrance and flavor houses. With 14 manufacturing facilities in the United States and Mexico, New Jersey-based Pharmachem develops, manufactures and supplies custom and branded nutritional and fragrance products. See Note C for more information.

Composites is a global leader in unsaturated polyester resins, vinyl ester resins and gelcoats. The Composites business manufactures and sells a broad range of general-purpose and high-performance grades of unsaturated polyester and vinyl ester resins, gelcoats and low-profile additives for the reinforced plastics industry. The products in the Composites business provide an array of functional properties including corrosion resistance, fire retardance, ultraviolet resistance, water and chemical resistance, high mechanical strength, impact and scratch resistance and high strength-to-weight ratios. Key end markets include transportation, construction, marine and infrastructure. In addition, the business manufactures and sells molten maleic anhydride for the manufacture of a variety of products such as unsaturated polyester resins, copolymers, lubricating oil additives, alkenyl succinic anhydrides, malic acid, fumaric acid and numerous derivative chemicals. Key markets include composites, personal care, dispersants and paper sizing.

Intermediates and Solvents is a leading producer of 1,4 butanediol (BDO) and related derivatives, including tetrahydrofuran and n-methylpyrrolidone. These products are used as chemical intermediates in the production of engineering polymers and polyurethanes, and as specialty process solvents in a wide array of applications including electronics, pharmaceuticals, water filtration membranes and more. Butanediol is also supplied to Ashland's Specialty Ingredients business for use as a raw material.

Unallocated and Other generally includes items such as components of pension and other postretirement benefit plan expenses (excluding service costs, which are allocated to the reportable segments), certain significant company-wide restructuring activities, including internal separation costs, and legacy costs or adjustments that relate to divested businesses that are no longer operated by Ashland.

International data

Information about Ashland's domestic and international operations follows. Ashland has no operations in any individual international country or single customer that represented more than 10% of sales in 2017, 2016 or 2015.

NOTE Q – REPORTABLE SEGMENT INFORMATION (continued)

(In millions)	Sales to external customers			Net assets (liabilities)		Property, plant and equipment - net	
	2017	2016	2015	2017	2016	2017	2016
United States	\$ 1,248	\$ 1,165	\$ 1,330	\$ 674	\$ 41	\$ 1,417	\$ 1,341
International	2,012	1,854	2,090	2,732	3,124	553	559
	<u>\$ 3,260</u>	<u>\$ 3,019</u>	<u>\$ 3,420</u>	<u>\$ 3,406</u>	<u>\$ 3,165</u>	<u>\$ 1,970</u>	<u>\$ 1,900</u>

Reportable segment results

The following tables present various financial information for each reportable segment for the years ended September 30, 2017, 2016 and 2015 and as of September 30, 2017, 2016 and 2015. Results of Ashland's reportable segments are presented based on its management and internal accounting structure. The structure is specific to Ashland; therefore, the financial results of Ashland's reportable segments are not necessarily comparable with similar information for other comparable companies. Ashland allocates all costs to its reportable segments except for certain significant company-wide restructuring activities and other costs or adjustments that relate to former businesses that Ashland no longer operates. The service cost component of pension and other postretirement benefits costs is allocated to each reportable segment on a ratable basis; while the remaining components of pension and other postretirement benefits costs are recorded to Unallocated and other. Ashland refines its expense allocation methodologies to the reportable segments from time to time as internal accounting practices are improved, more refined information becomes available and the industry or market changes. Significant revisions to Ashland's methodologies are adjusted for all segments on a retrospective basis.

Ashland determined that disclosing sales by specific product was impracticable due to the highly customized and extensive portfolio of products offered to customers and since no one product or a small group of products could be aggregated together to represent a majority of revenue within a reportable segment. As such, the following table provides a summary of 2017 sales by product category for each reportable segment:

Sales by product category for 2017					
Specialty Ingredients		Composites		Intermediates and Solvents	
Cellulosics	36%	UPR/VER (a)	83%	Derivatives	61%
Poly vinyl pyrrolidones	18%	Gelcoats and other	17%	Butanediol	39%
Adhesives	15%		<u>100%</u>		<u>100%</u>
Actives	6%				
Vinyl ethers	6%				
Pharmachem	5%				
Other	14%				
	<u>100%</u>				

(a) UPR stands for unsaturated polyester resins and VER stands for vinyl ester resins.

The following table presents various financial information for each reportable segment. The operating results of divested divisions and assets during 2017, 2016 and 2015 that did not qualify for discontinued operations accounting treatment are included in the financial information until the date of sale.

NOTE Q – REPORTABLE SEGMENT INFORMATION (continued)

Ashland Global Holdings Inc. and Consolidated Subsidiaries

Reportable Segment Information

Years Ended September 30

(In millions)	2017	2016	2015
Sales			
Specialty Ingredients	\$ 2,216	\$ 2,089	\$ 2,263
Composites (a)	779	669	834
Intermediates and Solvents	265	261	323
	<u>\$ 3,260</u>	<u>\$ 3,019</u>	<u>\$ 3,420</u>
Equity income			
Specialty Ingredients	\$ —	\$ —	\$ 1
Composites	—	1	2
Intermediates and Solvents	—	—	—
Unallocated and other	—	—	—
	<u>—</u>	<u>1</u>	<u>3</u>
Other income (expense)			
Specialty Ingredients	(2)	(1)	(1)
Composites	4	5	5
Intermediates and Solvents	—	—	—
Unallocated and other	5	3	8
	<u>7</u>	<u>7</u>	<u>12</u>
	<u>\$ 7</u>	<u>\$ 8</u>	<u>\$ 15</u>
Operating income (loss)			
Specialty Ingredients	\$ 233	\$ 237	\$ 239
Composites	67	63	61
Intermediates and Solvents	(12)	(181)	26
Unallocated and other	(146)	(246)	(214)
	<u>\$ 142</u>	<u>\$ (127)</u>	<u>\$ 112</u>
Assets			
Specialty Ingredients	\$ 6,050	\$ 5,235	\$ 5,365
Composites	586	520	711
Intermediates and Solvents	292	311	368
Unallocated and other	1,690	3,934	3,622
	<u>\$ 8,618</u>	<u>\$ 10,000</u>	<u>\$ 10,066</u>

(a) Fiscal 2015 includes \$40 million of sales from the divested Elastomers division for the period October 1, 2014 through the completion of the sale on December 1, 2014. See Note D for more information.

NOTE Q – REPORTABLE SEGMENT INFORMATION (continued)

Ashland Global Holdings Inc. and Consolidated Subsidiaries

Reportable Segment Information (continued)

Years Ended September 30

(In millions)	2017	2016	2015
Depreciation and amortization			
Specialty Ingredients	\$ 243	\$ 243	\$ 244
Composites	22	22	27
Intermediates and Solvents	31	31	32
Unallocated and other	5	6	3
	<u>\$ 301</u>	<u>\$ 302</u>	<u>\$ 306</u>
Property, plant and equipment - net			
Specialty Ingredients	\$ 1,470	\$ 1,388	\$ 1,383
Composites	189	175	174
Intermediates and Solvents	146	160	184
Unallocated and other	165	177	188
	<u>\$ 1,970</u>	<u>\$ 1,900</u>	<u>\$ 1,929</u>
Additions to property, plant and equipment			
Specialty Ingredients	\$ 148	\$ 179	\$ 171
Composites	26	23	23
Intermediates and Solvents	10	13	10
Unallocated and other	15	16	16
	<u>\$ 199</u>	<u>\$ 231</u>	<u>\$ 220</u>

QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

The following table presents quarterly financial information and per share data relative to Ashland's Common Stock.

Quarters ended	December 31		March 31		June 30		September 30	
(In millions except per share data)	2016	2015	2017	2016	2017	2016	2017 (a)	2016 (b)
Sales	\$ 704	\$ 706	\$ 806	\$ 768	\$ 870	\$ 790	\$ 880	\$ 754
Cost of sales	514	491	577	536	635	554	646	572
Gross profit as a percentage of sales	27.0%	30.5%	28.4%	30.2%	27.0%	29.9%	26.6%	24.1%
Operating income (loss)	17	50	53	37	37	57	34	(272)
Income (loss) from continuing operations	(65)	21	29	16	(16)	24	(53)	(344)
Net income (loss)	10	89	105	87	(30)	71	(58)	(275)
Basic earnings per share								
Continuing operations	\$ (1.05)	\$ 0.33	\$ 0.46	\$ 0.25	\$ (0.26)	\$ 0.39	\$ (0.84)	\$ (5.56)
Net income (loss) attributable to Ashland	(0.01)	1.37	1.48	1.39	(0.54)	1.15	(0.92)	(4.46)
Diluted earnings per share								
Continuing operations	\$ (1.05)	\$ 0.33	\$ 0.46	\$ 0.25	\$ (0.26)	\$ 0.38	\$ (0.84)	\$ (5.56)
Net income (loss) attributable to Ashland	(0.01)	1.35	1.47	1.38	(0.54)	1.13	(0.92)	(4.46)
Regular cash dividends per share	\$ 0.390	\$ 0.390	\$ 0.390	\$ 0.390	\$ 0.225	\$ 0.390	\$ 0.225	\$ 0.390
Market price per common share (c)								
High	\$ 58.23	\$ 55.75	\$ 61.10	\$ 54.30	\$ 67.90	\$ 57.99	\$ 67.33	\$ 61.15
Low	51.61	48.42	52.91	43.20	58.99	53.00	59.80	54.26

- (a) Fourth quarter results for 2017 included pre-tax key items of \$23 million related to separation and restructuring costs, \$13 million for charges related to unplanned plant shutdowns, \$8 million related to the loss on pension and postretirement benefit plan remeasurement and a \$6 million charge for the fair value adjustment of inventory acquired from Pharmachem. Income tax expense for the fourth quarter included \$71 million of discrete tax expense items.
- (b) Fourth quarter results for 2016 included pre-tax key items of \$181 million related to the impairment of Intermediates and Solvents, \$124 million related to the loss on pension and postretirement benefit plan remeasurement (\$42 million in cost of sales and \$82 million in selling, general and administrative expenses), \$36 million for separation costs, \$12 million for the loss on the Specialty Ingredients joint venture and \$6 million of debt refinancing costs. Income tax expense for the fourth quarter included \$83 million of discrete tax expense items.
- (c) The market price per common share for the quarters prior to the final Valvoline Inc. distribution on May 12, 2017 have been adjusted by a conversion ratio in order to consistently reflect the price of Ashland's stock. The quarterly prices reflect the intraday highs and lows during the applicable quarter.

Ashland Global Holdings Inc. and Consolidated Subsidiaries

Five-Year Selected Financial Information

Years Ended September 30

(In millions except per share data) (a)	2017	2016	2015	2014	2013
Summary of operations					
Sales	\$ 3,260	\$ 3,019	\$ 3,420	\$ 4,080	\$ 4,095
Cost of sales	<u>2,372</u>	<u>2,153</u>	<u>2,532</u>	<u>3,196</u>	<u>2,966</u>
Gross profit	888	866	888	884	1,129
Selling, general and administrative expense	670	914	692	1,002	400
Research and development expense	83	87	99	103	131
Equity and other income (loss)	<u>7</u>	<u>8</u>	<u>15</u>	<u>(28)</u>	<u>40</u>
Operating income (loss)	142	(127)	112	(249)	638
Net interest and other financing expense (income)	234	173	174	166	(282)
Net gain (loss) on divestitures	<u>(6)</u>	<u>(8)</u>	<u>(89)</u>	<u>4</u>	<u>(7)</u>
Income (loss) from continuing operations before income taxes	(98)	(308)	(151)	(411)	349
Income tax expense (benefit)	<u>7</u>	<u>(25)</u>	<u>(139)</u>	<u>(290)</u>	<u>48</u>
Income (loss) from continuing operations	(105)	(283)	(12)	(121)	301
Income from discontinued operations	<u>133</u>	<u>255</u>	<u>321</u>	<u>354</u>	<u>382</u>
Net income (loss)	28	(28)	309	233	683
Net income attributable to noncontrolling interest	<u>27</u>	<u>1</u>	<u>—</u>	<u>—</u>	<u>—</u>
Net income (loss) attributable to Ashland	<u>\$ 1</u>	<u>\$ (29)</u>	<u>\$ 309</u>	<u>\$ 233</u>	<u>\$ 683</u>
Balance sheet information (as of September 30)					
Current assets	\$ 1,903	\$ 2,888	\$ 3,093	\$ 3,443	\$ 2,766
Current liabilities	<u>968</u>	<u>1,238</u>	<u>1,442</u>	<u>1,679</u>	<u>1,723</u>
Working capital	<u>\$ 935</u>	<u>\$ 1,650</u>	<u>\$ 1,651</u>	<u>\$ 1,764</u>	<u>\$ 1,043</u>
Total assets	\$ 8,618	\$ 10,000	\$ 10,066	\$ 10,916	\$ 10,908
Short-term debt	\$ 235	\$ 170	\$ 381	\$ 338	\$ 320
Long-term debt	2,584	2,325	3,348	2,911	2,947
Equity	3,406	3,165	3,037	3,583	4,553
Cash flow information					
Cash flows provided (used) by operating activities from continuing operations	\$ 255	\$ 372	\$ (256)	\$ 394	\$ 368
Additions to property, plant and equipment	199	231	220	212	223
Cash dividends	77	97	98	103	88
Common stock information					
Basic earnings per share					
Income (loss) from continuing operations	\$ (1.69)	\$ (4.51)	\$ (0.18)	\$ (1.57)	\$ 3.84
Net income (loss) attributable to Ashland	0.01	(0.47)	4.54	3.04	8.71
Diluted earnings per share					
Income (loss) from continuing operations	(1.69)	(4.51)	(0.18)	(1.57)	3.78
Net income (loss) attributable to Ashland	0.01	(0.47)	4.54	3.04	8.57
Dividends	1.23	1.56	1.46	1.36	1.13

(a) As a result of the final Valvoline Inc. distribution on May 12, 2017, Valvoline's assets, liabilities, operating results and cash flows for all periods presented have been classified as discontinued operations within the Consolidated Financial Statements. See Note B within the Notes to Consolidated Financial Statements for more information.

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Board of Directors

Brendan M. Cummins ^(1, 3^a)
Former Chief Executive Officer,
Ciba Specialty Chemicals

William G. Dempsey ^(1, 2, 3)
Former Executive Vice President,
Global Pharmaceuticals,
Abbott Laboratories

Jay V. Ihlenfeld ^(2, 4)
Former Sr. Vice President,
3M Company

Susan L. Main ^(1, 3)
Sr. Vice President and
Chief Financial Officer,
Teledyne Technologies
Incorporated

Barry W. Perry ^(3, 4^a, c)
Former Chairman and Chief
Executive Officer, Engelhard Corp.

Mark C. Rohr ^(1, 2)
Chairman and Chief Executive
Officer, Celanese Corp.

George A. Schaefer Jr. ^(1^a, 4)
Former Chairman and Chief
Executive Officer, Fifth Third Bancorp

Janice J. Teal, Ph.D. ^(2^a, 4)
Former Group Vice President
and Chief Scientific Officer,
Avon Products Inc.

Michael J. Ward ^(3, 4)
Retired Chairman and Chief
Executive Officer, CSX Corp.

Kathleen Wilson-Thompson ^(2, 4)
Executive Vice President and Global
Chief Human Resources Officer,
Walgreens Boots Alliance Inc.

William A. Wulfsohn^b
Chairman and Chief Executive Officer,
Ashland

Committees

- (1) Audit
- (2) Environmental, Health, Safety
and Quality
- (3) Governance and Nominating
- (4) Compensation
 - ^a Committee chair
 - ^b Officer/Director
 - ^c Lead Independent Director

Executive Officers

William A. Wulfsohn
Chairman and
Chief Executive Officer

Peter J. Ganz
Sr. Vice President, General
Counsel and Secretary

Anne T. Schumann
Sr. Vice President, Chief Human
Resources and Information
Technology Officer

J. Kevin Willis
Sr. Vice President and
Chief Financial Officer

J. William Heitman
Vice President and Controller

Keith C. Silverman, PhD
Vice President, Global Operations,
Quality, and Environmental,
Health and Safety

Corporate Officers

Eric N. Boni
Vice President and Treasurer

John P. Goswell
Vice President, Internal Audit

Scott A. Gregg
Vice President, Tax

John W. Joy
Vice President, Corporate
Development

Michael S. Roe
Chief Compliance Officer,
Associate General Counsel
and Assistant Secretary

Corporate Governance

Ashland is governed by an 11-member board of directors, 10 of whom are independent directors under New York Stock Exchange (NYSE) guidelines. The board conducted eight meetings in fiscal 2017. During fiscal 2017, the board operated the following committees, all of which consisted entirely of outside directors: Audit; Environmental, Health, Safety and Quality; Governance and Nominating; and Compensation. These four committees met a total of 23 times. This included quarterly meetings of the Audit Committee to review Ashland's quarterly financial performance, associated news releases, and Form 10-Q and Form 10-K filings with the U.S. Securities and Exchange Commission. Ashland's Chief Executive Officer (CEO) and Chief Financial Officer have each submitted certifications concerning the accuracy of financial and other information in Ashland's annual report on Form 10-K, as required by Section 302(a) of the Sarbanes-Oxley Act of 2002. The certifications are filed as exhibits to Ashland's 2017 annual report on Form 10-K. In addition, the NYSE requires that the CEO of listed companies annually certify that he or she is not aware of any violation by the company of NYSE corporate governance listing standards. Ashland's Chairman and CEO, William A. Wulfsohn, certified Ashland's compliance with the NYSE corporate governance listing standards on February 17, 2017.

*This Annual Report includes certain non-GAAP measures. Such measurements are not prepared in accordance with U.S. GAAP and should not be construed as an alternative to reported results determined in accordance with U.S. GAAP. Management believes the use of such non-GAAP measures assists investors in understanding the ongoing operating performance of the company and its segments. The non-GAAP information provided may not be consistent with the methodologies used by other companies. All non-GAAP amounts have been reconciled with reported U.S. GAAP results, which are included in the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of this Annual Report. Although Ashland provides forward-looking guidance for adjusted EBITDA, free cash flow and adjusted earnings per share, Ashland is not reaffirming or providing forward-looking guidance for U.S. GAAP-reported financial measures or a reconciliation of forward-looking non-GAAP financial measures to the most directly comparable U.S. GAAP measure because it is unable to predict with reasonable certainty the ultimate outcome of certain significant items that affect these metrics such as domestic and international economic, political, legislative, regulatory and legal actions. In addition, certain economic conditions, such as recessionary trends, inflation, interest and monetary exchange rates, government fiscal policies and changes in the prices of certain key raw materials, can have a significant effect on operations and are difficult to predict with certainty.

Forward-Looking Statements: This Annual Report includes forward-looking statements, as described in the enclosed Form 10-K.

Shareholder information

CORPORATE HEADQUARTERS

Ashland Global Holdings Inc.
50 East RiverCenter Boulevard
Covington, KY 41011
Tel +1 859 815 3333

FINANCIAL INFORMATION

Ashland's annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports, as well as any beneficial ownership reports of officers and directors filed electronically on Forms 3, 4 and 5, are available at ashland.com.

Paper copies also are available upon request and at no charge. Requests for these and other stockholder and security analyst inquiries should be directed to:

Seth A. Mrozek
Director, Investor Relations
Ashland
Covington, KY 41011
Tel +1 859 815 3527
E: samrozek@ashland.com

TICKER SYMBOL: ASH

Fiscal 2017 closing stock prices per common share:

High:	\$67.45	06/02/17
Low:	\$52.61	11/11/16
Year-end:	\$65.39	09/30/17

ANNUAL MEETING

Notice of the annual meeting and availability of proxy materials is mailed to shareholders in December, along with instructions for viewing proxy materials online. Stockholders may also request printed copies of the proxy statement and annual report by following the instructions included in the Notice.

STOCK INFORMATION

Ashland Global Holdings Inc. is incorporated under the laws of Delaware. Ashland common stock is listed on the New York Stock Exchange and also has trading privileges on NASDAQ.

Questions regarding shareholder accounts, dividends or the dividend reinvestment plan should be directed to Ashland's transfer agent and registrar:

Wells Fargo Shareowner Services
1110 Centre Point Curve, Suite 101
Mendota Heights, MN 55120

Mailing Address:
Wells Fargo Shareowner Services
P.O. Box 64874
St. Paul, MN 55164
Tel +1 855 598 5486 toll-free (U.S.)
+1 651 450 4064 (non-U.S.)
www.shareowneronline.com

DIVIDENDS

Ashland's current quarterly cash dividend is 22.5 cents per share. Ashland's historical practice has been to pay dividends on the 15th day of March, June, September and December if declared by the board of directors. Ashland's board of directors has declared a dividend every quarter since December 1936.

Ashland offers electronic deposit of dividend checks. For more information, please contact Wells Fargo Shareowner Services at +1 855 598 5486
+1 651 450 4064 (outside the U.S.)

INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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