



Ashland Global Holdings Inc. (NYSE: ASH) is a premier global specialty materials company serving customers in a wide range of consumer and industrial markets, including adhesives, architectural coatings, automotive, construction, energy, food and beverage, nutraceuticals, personal care and pharmaceutical. At Ashland, we are approximately 4,500 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.

In 2020 we transformed our company from functionally focused to business-centric and aligned our commercial organization into distinct business units: Life Sciences, Personal Care and Household, Performance Adhesives, Specialty Additives and Intermediates and Solvents.

Each business unit has global line-of-site visibility to their complete performance and can embrace full ownership and accountability for their strategy and performance.

Visit **ashland.com** to learn more.

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2020 highlights*

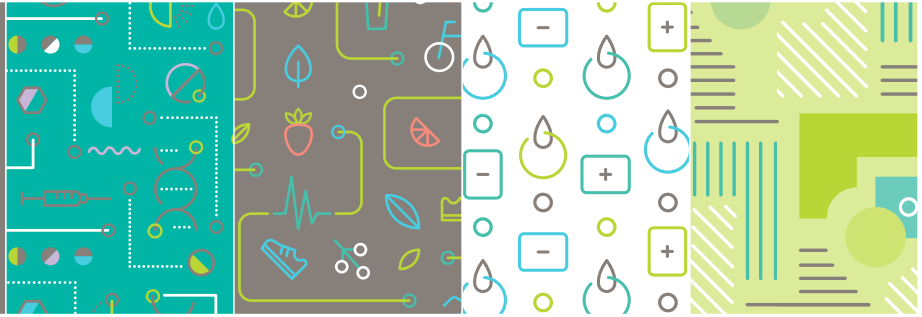
sales of \$2.3 billion, down seven percent	record year for safety performance
adjusted EBIT of \$281 million down roughly one percent	all plants maintained stable operations with no supply or operating impact to our business
adjusted EBIT margin 12.1% in FY20, up from 11.3% in FY19	changed to a business-centric operating model and restructured the company into five reportable segments
adjusted EBITDA of \$528 million, down one percent	reset our strategy and our priorities
adjusted EBITDA margins of 22.7%, up 140 bps	sold the maleic anhydride business and manufacturing plant for a purchase price of \$100 million
adjusted EPS (excluding intangible amortization) of \$3.90 up 10%	
FCF \$175 million, up 136% (including restructuring outflows)	
executed on \$100 million of cost savings	

*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. 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.

Ashland reportable segments

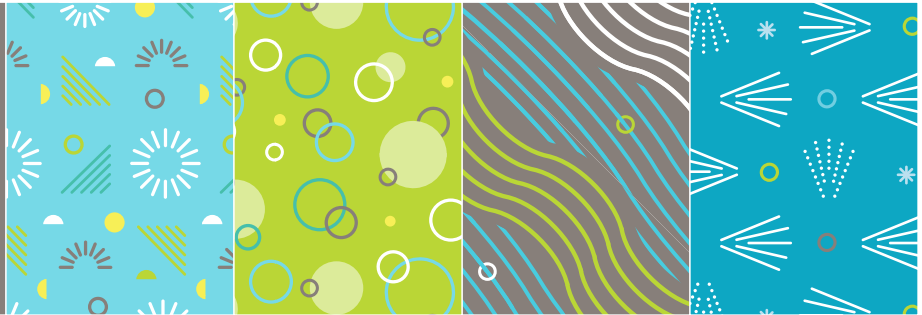
life sciences

—
pharmaceuticals
nutraceuticals & nutrition
advanced materials
agriculture



personal care & household

—
sun & skin care
hair care
oral care
home care
industrial & institutional



performance adhesives

—
pressure sensitive adhesives
structural assembly adhesives
laminating adhesives & coatings



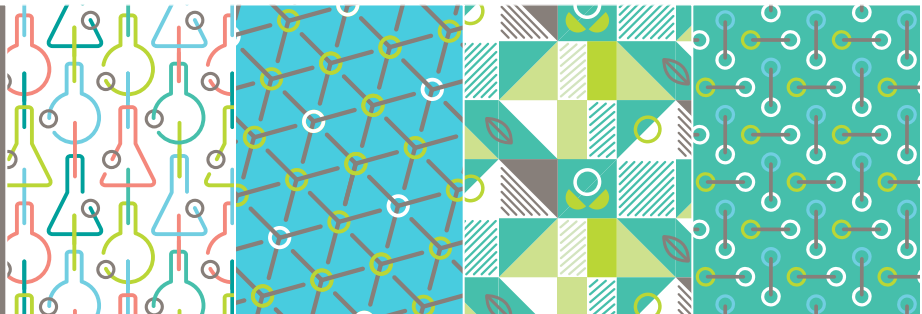
specialty additives

—
coatings
construction
performance specialties
energy and resources



intermediates & solvents

—
butanediol (BDO)
tetrahydrofuran (THF)
n-methyl-2-pyrrolidone (NMP)





Guillermo Novo,
Chairman of the Board
and Chief Executive Officer



Dear Shareholders,

This is my first Annual Report letter to our shareholders since accepting the role of CEO at Ashland and I am privileged to be leading this great company.

In 2020 we have been focused on further advancing our journey to become a premier specialty materials company. In January, we began implementing significant changes that would strengthen and transform the company and position us well for the future. Two months later, the novel coronavirus struck, and the world around us changed dramatically.

The arduous challenges amidst internal transformation came fast, broad and deep. Customers serving critical industries were concerned for supply while others dropped demand forecasts. Governments around the globe instituted regulations further challenging procurement, manufacturing, supply chain and more. Office employees adapted to effectively work from home. Cyber security monitoring heightened and communications about staying vigilant to defend against attacks increased.

Through it all, Ashland's global manufacturing sites have continued to operate safely, and our supply chain continues to receive, process and ship customers' orders for the critical specialty products that our customers and the world needs.

From the onset of the COVID-19 pandemic and continuing today, Ashland remains dedicated to the safety, health, and security of our employees, their

families, and the communities where we work and live. Ashland has Incident Management Teams (IMTs) in all regions of the globe operating under the leadership of our Global Incident Management Team. Ashland's Global Incident Management System (IMS) defines our comprehensive approach to working together seamlessly to prevent, protect against, mitigate, respond to, and recover from the effects of incidents such as COVID-19, hurricanes and more.

In addition to COVID-19, the world experienced important social and environmental movements

that have impacted us all. These events underscore our commitment to our core values, while highlighting the need to take greater actions in 2021 that further equality.

As we adjust to a new reality, and despite all the challenges that 2020 presented, Ashland stands strong.

Overall, we demonstrated the underlying resilience of our business portfolio in the face of one of the most stressed economic environments the world has seen. Our consumer business units performed particularly well driven by strong demand in our key markets, new business gains and mix improvements. Demand in our industrial businesses was clearly impacted by COVID-19, especially in our FYQ3, but we have demonstrated sequential improvement over the last four months of the year.

“As we complete our transformation, our focus is on customers, innovation and growth.”



Ashland executive council

All businesses and corporate groups demonstrated strong operating discipline and cost control to help offset the impact of lower demand and volumes.

transformation

Driving a transformation is never easy. Driving it while some of our new leaders were under lockdown in other countries and the entire company of office workers were remote, presented interesting challenges. With our team's focus and commitment, we were able to move ahead with our plans and execute all of them without delays or major complications.

Our new business units and leadership teams are in place and they have been fully operational since March. Under our operating model, business unit leaders reset their strategies and cost structures, so they have full accountability for innovation portfolios, profit and loss, and operating performance.

This year we restructured our corporate administrative costs aligning to our new size and strategic focus. We've begun the work to restructure our manufacturing and operations organization to better position us for critical execution in early FY2021.

The transformative self-help actions including right-sizing the company, reducing inventory and taking a disciplined approach to capital allocation all had an impact on our operations and financial performance.

our future

Looking to 2021 and the potential economic recovery, Ashland is lean and ready to roar. We will build on the progress we have made and the foundation we have set. Our businesses remain keenly focused on

maintaining strong operating discipline and performance.

Ashland will continue to make the safety and health of our employees and their families our first priority and we will continue to support the communities in which we operate. We are determined to execute our transformation with a focus on margin expansion and free cash flow, building growth accelerators including a focus on additives and driving our biotech capabilities and accelerating growth in Asia.

This year we will continue disciplined portfolio management and capital allocation. We will make a demonstrable increased commitment to sustainability, social responsibility and digital modernization while building a customer-focused and innovation-centric culture.

In the face of considerable change and challenges during 2020, I want to recognize and thank the Ashland team for their commitment to the company and for operating safely and maintaining the continued supply of products for customers in the critical industries that we serve. Our solvers clearly demonstrated passion and tenacity while advancing our transformation and delivering strong results during one of the most challenging years the world has seen in decades.

I am grateful and appreciative for the opportunities that lie ahead, and I look forward to executing the strategies and plans we have in place.

Guillermo Novo
Chairman and Chief Executive Officer
Ashland

life sciences

Life Sciences is comprised of pharmaceuticals, nutrition, nutraceuticals, agricultural chemicals, advanced materials and fine chemicals. We have one of the widest available product ranges for oral solid-dosage forms and five families of bioresorbable polymers for parenteral controlled-release drug delivery systems and medical devices among our many solutions.

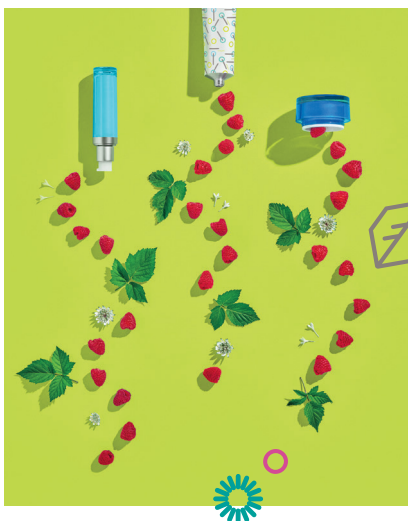


In 2020, the American Chemistry Council (ACC) recognized Ashland with a sustainability leadership award for environmental protection and circularity. Benece[™] MX modified cellulose sustainably addresses the growing popularity of plant-based foods and meat alternatives.



personal care and household

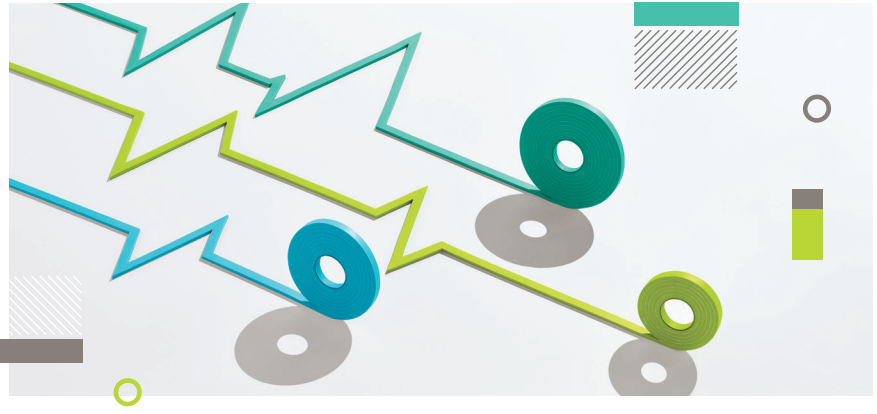
Personal Care & Household is comprised of biofunctionals, preservatives, skin care, sun care, oral care, hair care and household. Ashland is a leader in nature-derived polymers based on cellulose and guar and leverages this expertise to offer and innovate in a broad range of nature-based ingredients across functional categories.





performance adhesives

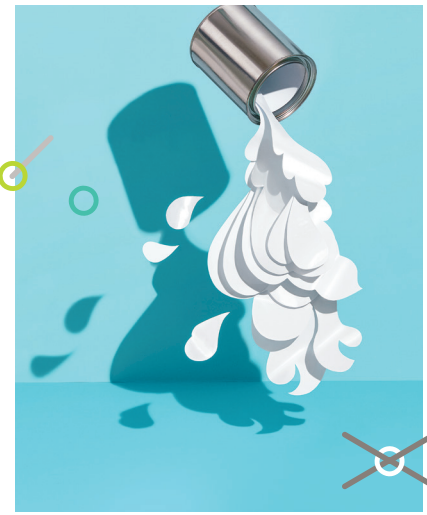
Performance Adhesives is comprised of adhesives used in packaging, converting and structural applications. Packaging adhesives has an extensive line of pressure sensitive adhesives, functional coatings and primers combined with innovative technology solutions for narrow-, mid- and wide-web applications. Structural adhesives include light weighting vehicles and eliminating VOCs in buildings.



specialty additives

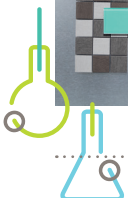
Specialty Additives is comprised of rheology- and performance-enhancing additives serving the coatings, construction, energy, automotive and various industrial markets.

Our products help improve desired functional outcomes through rheology modification and control, water retention, workability, adhesive strength, binding power, film formation, deposition and suspension and emulsification.



intermediates & solvents

Intermediates and Solvents is comprised of the production of 1,4 butanediol (BDO) and related derivatives, including n-methylpyrrolidone. Our products are used in a variety of diverse applications including pharmaceuticals, water filtration, energy and more.



ESG

Ashland's environmental, social and governance (ESG) agenda has been an evolving journey. We define and drive sustainability progress under three core dimensions – sourcing, operations and solutions. Our work includes:



measuring and monitoring the environmental, social and ethical performances of our suppliers;



maintaining a Responsible Care® management system to ensure that all operations achieve and maintain a high level of environmental, health, safety and security performance;



and rethinking chemistry to help our customers formulate more sustainably, with future generations in mind.

Our efforts continue to earn us silver Ecovadis status and we're well on our way to gold. We're committed to Rountable for Sustainable Palm Oil (RSPO) supply chain certification in 2021 and will continue disclosures in line with the Sustainability Accounting Standards Board (SASB). We're working on Forest Stewardship Council (FSC) chain of custody certification which ensures our cellulose meet the highest standards for environmental protection.

Operationally, we concentrate on renewable energy and soon, we will define more aggressive goals for carbon, water and hazardous waste.

The intensity and focus from our global team on our innovation portfolio will increase, to create more value for customers and all stakeholders. Under our new operational business model, our innovative product solutions are created and driven within each BU in closer collaboration with our scientists. These solutions will be at the forefront of future megatrends and answer global challenges for enhanced sustainability profiles.

We're committed to solutions that eliminate and upcycle waste, enabling a circular economy. Our innovations solve customers' most complex business challenges while enabling them to also achieve their sustainability goals.



ashland.com / efficacy usability culture integrity profitability™



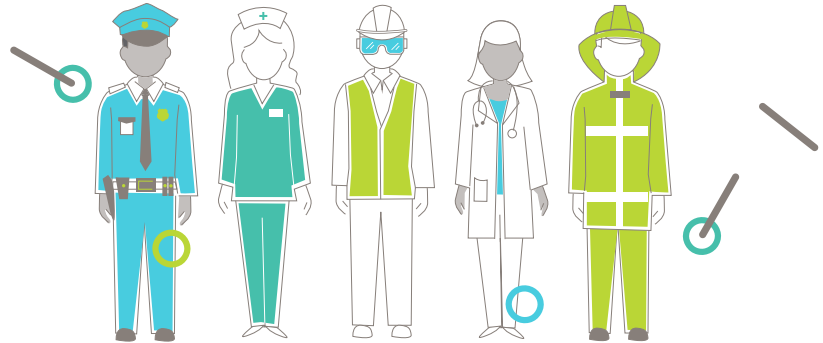
Ashland actively endorses the concept of conservation of biodiversity by operating worldwide in a manner that minimizes effects on natural habitats and biological resources. This year, Ashland will announce initiatives to demonstrate how we will significantly further our sustainability strategy. For more information about our environmental initiatives, please visit our Corporate Sustainability Report.



Regarding global social responsibility, Ashland is challenging conventional boundaries and will take an authentic, genuine and unbiased look at our internal culture to ensure we're enabling a plan for further increasing an inclusive and diverse work environment.

Through our Responsible Care Program, Ashland proactively engages with communities through transparency and two-way communications. We provide support both financially and through hands-on involvement.

In 2020 communities experienced unprecedented challenges due to COVID-19. Ashland manufactured 40,000 gallons of hand sanitizer and distributed it within the U.S. and Europe in support of the communities in which we work.



Ashland is committed to a strong ethics and compliance culture built on the core values of doing business the right way, as outlined in our Global Code of Conduct (the "Code"). The Code is the foundation of everything we do. It spells out our core values of integrity and ethical behavior that define Our Way of doing business. It also provides general guidance for employees worldwide on how to carry out our daily activities in accordance with our values and applicable laws and policies.

As Ashland moves forward, we are committed to making the world a better place through the application of specialty materials. We will continue to respect, protect and advance the people we work with, companies we serve, shareholders who invest in our future, communities we're a part of, and planet we share.

**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, 2020

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.)

8145 Blazer Drive
Wilmington, Delaware 19808
Telephone Number (302) 995-3000

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

<u>Title of each class</u>	<u>Trading Symbol</u>	<u>Name of each exchange on which registered</u>
Common Stock, par value \$.01 per share	ASH	New York Stock Exchange

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

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

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

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

Indicate by check mark whether the Registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the Registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant has filed a report on attestation to its management's assessment of the effectiveness of its internal control over financial reporting under section 404(b) of the Sarbanes-Oxley Act (15 U.S.C 7262 (b)) by the registered public accounting firm that prepared or issued its audit report. Yes No

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

Large Accelerated Filer

Accelerated Filer

Non-Accelerated Filer

Smaller Reporting Company

Emerging Growth Company

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

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

At March 31, 2020, the aggregate market value of voting stock held by non-affiliates of the Registrant was approximately \$2,854,663,000. 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, 2020, there were 60,578,546 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 headquarters and principal executive offices at 8145 Blazer Drive, Wilmington, Delaware 19808 Telephone: (302) 995-3000. 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. 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. 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 files periodic and other reports required by the Exchange Act.

Ashland is a global leader in providing specialty materials to customers in a wide range of consumer and industrial markets, including adhesives, architectural coatings, construction, energy, food and beverage, nutraceuticals, personal care and pharmaceutical. With approximately 4,500 employees worldwide, Ashland serves customers in more than 100 countries.

During 2020, Ashland changed the way it manages the business moving from a functionally led to a business led organization. This change recognizes that Ashland has a diverse portfolio of businesses with different value propositions for the markets Ashland serves. The organizational change allows Ashland to align its business models, resources and cost structure to the specific needs of each business and enables greater ownership and accountability for both short- and long-term performance. Ashland has realigned its segment reporting structure commensurate with this organizational change. As a result, Ashland’s reportable segments include the consumer specialty businesses: Life Sciences and Personal Care & Household; the industrial specialty businesses: Specialty Additives and Performance Adhesives; and Intermediates and Solvents. Unallocated and Other includes corporate governance activities and certain legacy matters.

Life Sciences is comprised of pharmaceuticals, nutrition, nutraceuticals, agricultural chemicals, advanced materials and fine chemicals. Pharmaceutical solutions include controlled release polymers, disintegrants, film coatings, solubilizers and tablet binders. Nutrition solutions include for thickeners, stabilizers, emulsifiers and additives for enhancing mouthfeel, controlling moisture migration, reducing oil uptake and controlling color. Nutraceutical solutions include products for weight management, joint comfort, stomach and intestinal health, sports nutrition and general wellness. The nutraceutical business also provides custom formulation, toll processing and particle engineering solutions. Customers include pharmaceutical, food, beverage, nutraceuticals and supplements manufacturers, hospitals and radiologists and industrial manufacturers.

Personal Care & Household is comprised of biofunctionals, preservatives, skin care, sun care, oral care, hair care and household. These businesses have a broad range of nature-based, biodegradable, and performance ingredients for customer-driven solutions to help protect, renew, moisturize and revitalize skin and hair, and provide solutions for toothpastes, mouth washes and rinses, denture cleaning and care for teeth. Household supplies nature-derived rheology ingredients, biodegradable surface wetting agents, performance encapsulates, and specialty polymers for household, industrial and institutional cleaning products. Customers include formulators at large multinational branded consumer products companies and smaller, independent boutique companies.

Specialty Additives is comprised of rheology- and performance-enhancing additives serving the coatings, construction, energy, automotive and various industrial markets. Solutions include coatings additives for architectural paints, finishes and lacquers, cement- and gypsum- based dry mortars, ready-mixed joint compounds, synthetic plasters for commercial and residential construction, and specialty materials for industrial applications. Products include rheology modifiers (cellulosic and associative thickeners), foamcontrol agents, surfactants and wetting agents, pH neutralizers, advanced ceramics used in catalytic converters, and environmental filters, ingredients that aid the manufacturing process of ceramic capacitors, plasma display panels and solar cells, ingredients for textile printing, thermoplastic metals and alloys for welding. Products help improve desired functional outcomes through rheology modification and control, water retention, workability, adhesive

strength, binding power, film formation, deposition and suspension and emulsification. Customers include global paint manufacturers, electronics and automotive manufacturers, textile mills, the construction industry and welders. In addition, Specialty Additives sells product to Life Sciences, Personal Care, and Performance Adhesives for use as a raw material.

Performance Adhesives is comprised of adhesives used in packaging, converting and structural applications. Packaging adhesives has an extensive line of pressure sensitive adhesives, functional coatings and primers combined with innovative technology solutions for narrow-, mid- and wide-web applications. Products meet stringent requirements in food and beverage safety, shipping, transportation, health and beauty, industrial, postage and security printing. Structural adhesives include light weighting vehicles and eliminating volatile organic compounds (VOCs) in buildings. Customers include converters of packaging materials, manufacturers of building materials and suppliers to transportation industry.

Intermediates and Solvents is comprised of the production of 1,4 butanediol (BDO) and related derivatives, including 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. BDO is also provided as a feedstock to Life Sciences, Personal Care, and Specialty Additives for use as a raw material.

Unallocated and Other generally includes items such as certain significant company-wide restructuring activities, corporate governance costs and legacy costs or activities 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 global code of 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 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.

CONSUMER SPECIALTY BUSINESSES

Consumer Specialties which is comprised of Life Sciences and Personal Care & Household 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, and plant and seed extract, Consumer Specialties offers comprehensive and innovative solutions for consumer and industrial applications.

Key customers include pharmaceutical companies; makers of personal care products; food and beverage manufacturers; and makers of nutraceuticals and supplements. Certain customer relationships are significant, and the loss of any one of those customers could have a material adverse effect on the Consumer Specialty business.

Consumer Specialties' areas of expertise include: organic and synthetic chemistry, polymer chemistry, surface science, rheology, structural analysis and microbiology.

Consumer Specialties' solutions provide an array of properties, including: thickening and rheology control and water retention.

Consumer Specialties 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.

Life Sciences

Life Sciences is a leading supplier of excipients and tablet coating systems to the pharmaceutical, nutrition 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. Core products include cellulose and acetylenics which are used primarily in oral solid dosage drug formulations. The portfolio also includes branded and proprietary nutraceutical ingredients and expertise in nutraceutical formulation, particle engineering and contract manufacturing. Its 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.

Life Sciences operates throughout the Americas, Europe and Asia Pacific. It has 18 manufacturing and lab facilities in five countries which serve its various end markets. It has manufacturing facilities and labs in Anaheim, California; Wilmington, Delaware; Calvert City, Kentucky; Kearny, Paterson, S. Hackensack (two facilities) and Totowa, New Jersey; Monroe, New York; Fiskeville, Rhode Island; Texas City, Texas; and Ogden, Utah; within the United States and Dusseldorf, Germany; Jaumave and Mexico City, Mexico, and Cabreuva and Sao Paolo, Brazil; and Dublin, Ireland.

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

Personal Care & Household

Personal Care & Household’s 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.

Personal Care & Household’s portfolio of hair care products includes advanced styling polymers, fixatives, conditioning polymers, emulsifiers, preservatives, rheology modifiers and biofunctional actives.

Personal Care & Household’s portfolio of ingredients and solutions for skin care, sun care, and cosmetics focuses on natural and sustainable solutions. Ashland’s Personal Care & Household business includes biofunctional actives, preservatives, and specialty polymers to provide functionality such as water resistance and rheology. Ashland’s natural ingredients include a wide range of cellulose, guar, and cassia derivatives; unique active ingredients derived from botanical sources using exclusive Ashland technologies such as Zeta Fraction and PSR technology; emollients based on natural chemistries; encapsulation technology derived from alginates; and efficacious preservative blends inspired by nature.

Personal Care & Household’s portfolio of products and technologies is used in many types of cleaning and fragrance applications, including fabric care, home care and dishwashing. Personal Care & Household’s products are used in a variety of applications for viscosity enhancement, particle suspension, rheology modification, stabilization and fragrance enhancement.

Personal Care & Household operates throughout the Americas, Europe and Asia Pacific. It has 13 manufacturing and lab facilities in five countries which serve its various end markets and participates in one joint venture. It has manufacturing facilities and labs in Freetown, Massachusetts; Chatham, New Jersey; Ossining, New York; Merry Hill, North Carolina; Columbus, Ohio; Summerville, South Carolina; Kenedy, Texas; and Menomonee Falls, Wisconsin within the United States and Sophia Antipolis, France; Hyderabad and Mumbai, India; Mexico City, Mexico and Poole, United Kingdom.

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

For fiscal 2020, the following Consumer Specialty products were 10% or greater of Ashland’s total consolidated sales:

Product	% of Consumer Specialty sales	% of Ashland total consolidated sales
Cellulose	29%	34%
Polyvinylpyrrolidones (PVP)	28%	17%

INDUSTRIAL SPECIALTY BUSINESSES

Industrial Specialties which is comprised of Specialty Additives and Performance Adhesives offers industry-leading products, technologies and resources for solving formulation and product-performance challenges. Using synthetic and semisynthetic polymers derived from polyester and polyurethane-based adhesives, and plant and seed extract, Industrial Specialties offers comprehensive and innovative solutions for industrial applications.

Key customers include manufacturers of paint, coatings and construction materials; packaging and converting companies; 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 Industrial Specialties business.

Industrial Specialties' areas of expertise include: organic and synthetic chemistry, colloid science, rheology, structural analysis and microbiology.

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

Industrial Specialties 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.

Specialty Additives

Specialty Additives 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 Specialty Additives function as performance additives that deliver high levels of end-user value in formulated products. In other areas, such as plastics and textiles, Specialty Additives' products function as a processing aid, improving the quality of end products and reducing manufacturing costs.

Specialty Additives 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 Specialty Additives market complements its rheology offering with a broad portfolio of performance foam-control agents, surfactants and wetting agents, dispersants and pH neutralizers.

Specialty Additives 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.

Specialty Additives 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. Specialty Additives offers the oil and gas industry solutions for drilling, stimulation, completion, cementing and production applications.

Specialty Additives operates throughout the Americas, Europe and Asia Pacific. It has 12 manufacturing and lab facilities in eight countries which serve its various end markets. Specialty Additives has manufacturing facilities and labs in Huntsville, Alabama; Parlin, New Jersey; and Hopewell, Virginia; within the United States and Doel-Beveren, Belgium; Nanjing and Shanghai, China; Alizay, France; Dusseldorf, Germany; Mumbai, India; Zwijndrecht, the Netherlands and Bradford and Newton Aycliffe, United Kingdom.

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

Performance Adhesives

Performance Adhesives manufactures and sells specialty coatings and adhesive solutions to the packaging and converting, building and construction, and transportation markets 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; polyurethane adhesives for structural wood bonding; rubber and butyl based adhesives for commercial roofing applications; acrylic, polyurethane and epoxy structural adhesives for bonding, thermoset and thermoplastic composites, and metals in automotive, marine, recreational and industrial applications; specialty phenolic resins and adhesives for abrasives and friction applications, as well as other industrial laminate applications. Performance Adhesives' products provide an array of functional properties including high-strength bonding, ease and speed of product assembly, heat and moisture resistance and design flexibility, while also functioning as an enabler to sustainable solutions.

Performance Adhesives operates throughout the Americas and Europe. It has 6 manufacturing and lab facilities in two countries which serve its various end markets. It has manufacturing facilities and labs in Calumet City, Illinois; Ashland, and Columbus, Ohio; White City, Oregon; and Piedmont, South Carolina; within the United States and Kidderminster, United Kingdom.

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

For fiscal 2020, the following Industrial Specialty products were 10% or greater of Ashland's total consolidated sales:

Product	% of Industrial Specialty sales	% of Ashland total consolidated sales
Cellulosics	45%	34%
Polyvinylpyrrolidones (PVP)	3%	17%

INTERMEDIATES AND SOLVENTS

Intermediates and Solvents is a leading producer of BDO and related derivatives, including 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. BDO is also provided as a feedstock to Life Sciences, Personal Care and Specialty Additives for use as a raw material. On August 30, 2019, Ashland closed the sale of its Composites segment and the Intermediates and Solvents manufacturing facility in Marl, Germany.

Key customers include Ashland's Life Sciences, Personal Care and Specialty Additives segments, general industrial manufacturers, plastics and polymers producers, pharmaceutical companies, agricultural firms and producers of electronic components and systems.

Intermediates and Solvents has a manufacturing facility in Lima, Ohio, while some derivatives are produced at Life Sciences 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, 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; 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, 2020, Ashland's reserves for environmental remediation and related environmental litigation amounted to \$200 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 \$475 million. No individual remediation location is significant, as the largest reserve for any site is 14% of the remediation reserve. Ashland regularly adjusts its reserves as environmental remediation continues. Environmental remediation expense, net of insurance receivables, amounted to \$48 million in 2020, compared to \$34 million in 2019 and \$65 million in 2018.

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 2020, 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 materials 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. To improve its competitive position, as Ashland narrows its focus on specialty materials, the company is building and more strongly leveraging the Ashland corporate brand as a differentiator to create value and better communicate the capabilities, promise 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 its business. Ashland relies 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 its products from its competitors. Ashland also uses licensed 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 2021. All of Ashland's reportable segments were impacted, to varying degrees, by the volatility of raw materials costs in fiscal 2020, and these conditions may continue in fiscal 2021.

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.

Seasonality

Ashland's business may vary due to seasonality. Ashland's business units typically experience stronger demand during warmer weather months.

Human Capital Management

As of September 30, 2020, Ashland had approximately 4,500 employees globally. Ashland believes that the quality of its employees is a competitive advantage. Therefore, the ability to attract, develop and retain the best people globally will continue to be key to Ashland's long term success. To accomplish this, Ashland offers industry competitive salary and benefits, pay-for-performance incentive plans and a diverse work environment where employees feel challenged and valued.

Ashland is committed to the safety and well-being of our employees. Preventing workplace incidents is an integral part of Ashland's business strategy. Ashland's objective is to eliminate or reduce health hazards that could impact our employees through continued investment in Ashland's zero incident culture program. For the year ended September 30, 2020, Ashland had 33 total recordable injuries across all Ashland locations.

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," "objectives," "may," "will," "should," "plans," 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.

COVID-19 Pandemic

The COVID-19 pandemic could have a material adverse effect on Ashland’s business operations, results of operations, cash flows and financial position

Ashland is closely monitoring the impact of the COVID-19 pandemic on all aspects of its business and geographies, including how the pandemic will impact customers, employees, suppliers, vendors, business partners and distribution channels. The COVID-19 pandemic has and may create significant volatility, uncertainty and economic disruption, which may materially and adversely affect Ashland’s business operations, cash flows, liquidity and financial position. The extent to which the COVID-19 pandemic continues to impact Ashland will depend on numerous evolving factors and future developments that are difficult to predict, including: the severity of the virus; the duration of the outbreak; governmental, business and other actions in response to the pandemic (which could include limitations on Ashland’s operations or mandates to provide products or services); the impact of the pandemic on Ashland’s supply chain; the impact of the pandemic on economic activity; the extent and duration of the effect on consumer confidence and spending, customer demand and buying patterns including spending on discretionary categories; the health of and the effect on Ashland’s workforce and its ability to meet staffing needs through the operations and other critical functions, particularly if employees are quarantined as a result of exposure; any impairment in value of tangible or intangible assets which could be recorded as a result of weaker economic conditions; the impact on Ashland’s business and the global economy from governmental actions related to international trade; and the potential effects on internal controls including those over financial reporting as a result of changes in working environments such as shelter-in-place and similar orders that are applicable to employees and business partners, among others. In addition, if the pandemic continues to create disruptions or turmoil in the credit or financial markets, or impacts Ashland’s credit ratings, it could adversely affect Ashland’s ability to access capital on favorable terms and continue to meet its liquidity needs, all of which are highly uncertain and cannot be predicted. In addition, Ashland cannot predict the impact that the COVID-19 pandemic will have on its customers, suppliers, vendors, and other business partners, and each of their financial conditions; however, any material effect on these parties could adversely impact Ashland. The impact of the COVID-19 pandemic may also exacerbate other risks discussed in this Item 1A any of which could have a material effect on Ashland. This situation is changing rapidly and additional impacts may arise that Ashland is not aware of currently.

Business Operations, Financial Performance and Growth

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.

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 various deductibles and 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's customers could change their products in a way that reduces the demand for Ashland's products.

Ashland produces and sells specialty materials that are used by its customers for a broad range of applications. Many of these Ashland materials become part of end products that are sold to consumers. Changes in consumer preferences and demands can lead to certain Ashland customers making changes to their products. In other instances, Ashland's customers may change their products or production techniques to take advantage of newer technologies, alternative chemistries, more effective formulations, or improved processes, or in response to various market, technical or regulatory changes.

Such changes in Ashland's customers' products or production techniques may cause these customers to reduce consumption of Ashland's products or eliminate their need entirely. Ashland may not be able to supply products that meet the customers' new requirements. Such lost sales opportunities may not be replaced by those offering equal revenue potential or margin. It is important for Ashland to continue developing new products, and new applications of existing products to replace such lost business. Otherwise Ashland faces the risk of a loss of market share, margins and cash flow if it is unable to manage a potential change in the demands of its products.

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 half of Ashland's net sales for fiscal 2021 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 new tariffs or trade quotas, or an impairment of existing trade agreements 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, in November 2018, the United States reached an agreement with Canada and Mexico on the United States-Mexico-Canada Trade Agreement (USMCA), which replaced the North American Free Trade Agreement (NAFTA) effective July 1, 2020. Among other things, USMCA includes revised country of origin rules and various labor provisions. In addition, the United Kingdom's exit from the European Union (E.U.) could disrupt European supply chains or customs regimes. Ashland's ability to do business and execute its growth strategies could be adversely affected by either of these changes or other changes to trade policy and trade relationships. Ashland could also be impacted negatively if the ongoing trade disputes between the United States and China, or those between the United States and the E.U. were to worsen. 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 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.

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 conditions 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'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.

Competition

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 materials 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. The fast change in Ashland's industry and those of its customers necessitates that Ashland continue the development of new technologies to replace older technologies whose demand or market position may be fading. Ashland's efforts to respond to changes in customer 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.

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, transport or import 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 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.

Human Capital

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. Also, a substantial portion of Ashland's U.S.-based employees will be retirement-eligible within the next several 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. Additionally, the Company's redesign and cost reduction program may result in key employees departing who may not be replaced. 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.

Intellectual Property and Cyber Threats

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 the extensive 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.

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.

Legal Risks, Regulatory Compliance and Litigation

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 materials 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.

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. There may also be situations in which certain environmental liabilities are not known to Ashland or are not probable and estimable. 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.

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, tariffs or quotas levied on Ashland products, raw materials or key components by certain countries, 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, application of executive authority beyond the legislative process, 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. Compliance with current and future regulations is further complicated by uncertainty around the reevaluation of international agreements by various countries, including the United States, and the resulting impact on regulatory regimes, customs regulations, tariffs, sanctions, and other transnational protocols.

Taxation

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. A significant portion of Ashland's revenues are generated outside the United States. As such, Ashland is subject to taxes in the United States as well as 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, regulations, administrative practices 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. The Tax Cuts and Jobs Act (the Tax Act), enacted in December 2017, made significant changes to US tax law; many other countries or organizations, including those where Ashland has significant operations, are actively considering or enacting changes to tax laws which could significantly impact our tax rate and cash flows. 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.

Other than the one-time transition tax enacted by the Tax Act, Ashland will continue to be indefinitely reinvested in our foreign earnings. As such, 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.

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.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Ashland's corporate headquarters is located in Wilmington, Delaware. Principal offices of other major operations are located in Wilmington, Delaware (Life Sciences, Specialty Additives, Intermediates and Solvents and Corporate); Bridgewater, New Jersey (Personal Care & Household and Corporate); and Dublin, Ohio (Performance Adhesives and Corporate) within the United States and Hyderabad, India; Warsaw, Poland; and Schaffhausen, Switzerland (each of which are shared service centers of Ashland's and house Corporate and direct business segment personnel). All of these locations are leased, except for the Wilmington, Delaware site which is 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. Ashland's threshold for disclosing material environmental legal proceedings involving a governmental authority where potential monetary sanctions are involved is \$1 million.

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 N 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, 2020, 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 81 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) *Lower Passaic River, New Jersey Matters* - Ashland, through two formerly owned facilities, and International Specialty Products (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 (AOOC) 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 AOOC, in June 2012 the CPG voluntarily entered into another AOOC for an interim removal action focused solely at mile 10.9 of the Passaic River. The allocations for the 2007 AOOC 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 another chemical company to conduct and pay for the remedial design. This chemical company has sued Ashland, ISP and numerous other defendants to recover past and future costs pursuant to the CERCLA. Ashland's motion to dismiss was partially granted, and the surviving claims are in the early stages of discovery. Ashland and ISP are participating in an USEPA allocation process. The release of the FFS Record of Decision, the current allocations proceedings and the lawsuit are not expected to be material to Ashland.

For additional information regarding environmental matters and reserves, see Note N 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, employment matters 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, 2020. 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, 2020.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM X. INFORMATION ABOUT OUR EXECUTIVE OFFICERS

The following is a list of Ashland's current executive officers, their ages and their positions and offices during the last five years.

GUILLERMO NOVO (age 58) is Chairman and Chief Executive Officer of Ashland Global Holdings Inc. since December 31, 2019. Mr. Novo has served as a director of Ashland's Board since May 22, 2019. Most recently, Mr. Novo served as the President and CEO of Versum Materials, Inc., a premier specialty materials company, and was a member of the board of directors. Previously, Mr. Novo served as Executive Vice President, Materials Technologies of Air Products and Chemicals, Inc. ("Air Products"), an industrial gases and related equipment company, since October 2014. He joined Air Products in September 2012 as Senior Vice President Electronics, Performance Materials, Strategy and Technology. Mr. Novo also served as a director of Bemis Company until May 2019.

J. KEVIN WILLIS (age 55) 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.

PETER J. GANZ (age 58) is Senior Vice President, General Counsel and Secretary; Chief Legal Officer 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, a role he assumed again from February 2019 to November 2020.

XIAOLAN WANG (age 56) is Senior Vice President and General Manager, Personal Care & Household of Ashland Global Holdings Inc. since February 2020. Most recently, Dr. Wang served as Senior Vice President and General Manager, Business Line Interface and Performance from January 2019 to January 2020 and Senior Vice President and General Manager, Business Line Household Care from April 2016 to December 2018 of Evonik Nutrition & Care at Evonik Industries AG. Previously, Dr. Wang served as Senior Vice President of Evonik Nutrition & Care Asia North from January 2015 to March 2016 and Senior Vice President of Evonik Consumer Specialties Asia from July 2013 to December 2014 at Evonik Industries AG.

MIN CHONG (age 49) is Senior Vice President and General Manager, Specialty Additives and Intermediates and Solvents of Ashland Global Holdings Inc. since January 2020. Most recently, Mr. Chong served as Senior Vice President and General Manager, Crosslinkers at Evonik Industries AG/ADR from January 2017 to December 2019. Previously, Mr. Chong served as Vice President and General Manager, Epoxy Curing Agents from January 2015 to December 2017 and Vice President and General Manager, Performance Materials Asia from January 2013 to December 2014 at Air Products & Chemicals, Inc.

ASHOK S. KALYANA (age 48) is Senior Vice President and General Manager, Life Sciences since January 2020. Most recently, Mr. Kalyana was Vice President Business Development and Commercial, APAC at Tate & Lyle Asia Pacific PTE LTD from August 2019 to January 2020. Previously, Mr. Kalyana was the APAC Business Director, Coatings from November 2015 to July 2019 and Global Marketing Director, Coatings from January 2014 to November 2019 at Dow Chemical Co.

OSAMA M. MUSA (age 52) is Senior Vice President and Chief Technology Officer of Ashland Global Holdings Inc. since November 2018. Previously, Dr. Musa served as Vice President, ASI Technology from November 2014 to November 2018 and Vice President, Technology and Innovation of Ashland from August 2012 until November 2014.

ERIC N. BONI (age 51) is Vice President, Finance and Principal Accounting Officer of Ashland Global Holdings Inc. since January 2020. Previously, Mr. Boni served as Vice President, Finance from January 2019 to January 2020 and Vice President, Finance and Treasurer from September 2016 to January 2019 of Ashland Global Holdings Inc. Mr. Boni served as Vice President and Treasurer of Ashland Inc. from December 2011 to September 2016.

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.

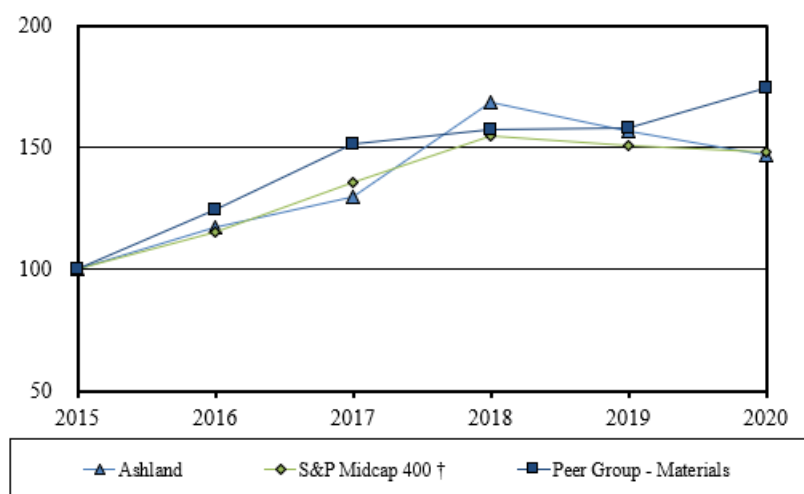
At October 31, 2020, there were approximately 9,920 holders of record of Ashland’s Common Stock. Ashland Common Stock is listed on the NYSE (ticker symbol ASH) and has trading privileges on Nasdaq.

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**



	2015	2016	2017	2018	2019	2020
Ashland	100	117	130	168	157	147
S&P MidCap 400[†]	100	115	135	155	151	148
Peer Group - Materials	100	124	151	157	158	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, 2020, this peer group consisted of 55 companies.

Purchase of Company Common Stock

Share repurchase activity during the three months ended September 30, 2020 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, 2020 to July 31, 2020	—	\$ —	—	\$ 800
August 1, 2020 to August 31, 2020:				
September 1, 2020 to September 30, 2020	—	—	—	800
Total	—		—	\$ 800

(a) During March 2018, Ashland's Board of Directors approved a new \$1 billion stock repurchase program, which replaced the previous stock repurchase program. The Company's stock 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, 2020, \$800 million remains available for repurchase under this authorization.

ITEM 6. SELECTED FINANCIAL DATA

See Five-Year Selected Financial Information on page F-65.

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-44.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

See Quantitative and Qualitative Disclosures about Market Risk on page M-44.

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, 2020, 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, 2020.

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 – There have been no changes in Ashland’s internal control over financial reporting that occurred during the quarter ended September 30, 2020 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, 2020. See also the list of Ashland’s executive officers and related information under “Information About Our Executive Officers” 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 – Delinquent Section 16(a) Reports” 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,” and “Ashland Common Stock Ownership of Directors and Executive Officers of Ashland” in Ashland’s Proxy Statement.

The following table summarizes the equity compensation plans under which Ashland Common Stock may be issued as of September 30, 2020.

Equity Compensation Plan Information

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	762,185 ⁽¹⁾	\$ 61.22 ⁽²⁾	6,113,647 ⁽³⁾
Equity compensation plans not approved by security holders	51,772 ⁽⁴⁾	—	1,284,866 ⁽⁵⁾
Total	813,957	\$ 61.22 ⁽²⁾	7,398,513

- (1) This figure includes 12,883 net shares that could be issued under stock-settled SARs under the 2006 Ashland Inc. Incentive Plan (“2006 Incentive Plan”), 187,497 net shares that could be issued under stock-settled SARs under the Amended and Restated 2011 Ashland Inc. Incentive Plan (“2011 Incentive Plan”), 126,739 net shares that could be issued under stock-settled SARs, 21,768 shares that could be issued under stock-settled restricted stock units under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (“2015 Incentive Plan”), 109,564 shares that could be issued under stock settled restricted stock units under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (the “2018 Omnibus Plan”), based upon the closing price of Ashland Common Stock on the NYSE as of September 30, 2020 of \$70.92. Additionally, this figure includes 78,262 performance units for the fiscal 2018-2020 performance period payable in Ashland Common Stock under the 2015 Incentive Plan, 48,109 performance units for the fiscal 2019-2021 performance period payable in Ashland Common Stock under the 2018 Omnibus Plan and 96,984 performance units for the fiscal 2020-2022 performance period payable in Ashland Common Stock under the 2018 Omnibus Plan, estimated assuming target performance is achieved. Also included in the figure are 20,364 shares to be issued under the pre-2005 Deferred Compensation Plan for Employees payable in Ashland Common Stock upon termination of employment or service with Ashland.
- (2) The weighted-average exercise price excludes shares in Ashland Common Stock which may be distributed under the deferred compensation plans and the deferred restricted stock, and performance share units and restricted stock units which may be distributed under the 2011 Incentive Plan, the 2015 Incentive Plan and the 2018 Omnibus Plan, as described in footnotes (1) and (4) in this table.
- (3) This figure includes 2,531,838 shares available for issuance under the Ashland Global Holdings Inc. 2018 Omnibus Plan, 107,034 shares available for issuance under the pre-2005 Deferred Compensation Plan for Employees (closed) and 372,701 shares available for issuance under the pre-2005 Deferred Compensation Plan for Non-Employee Directors (closed). Under the 2018 Incentive Plan, full-value awards, which include all awards other than stock options and SARs, reduce the share reserve on a 2-to-1 basis. The remaining balance of shares available for grant under the 2015 Incentive Plan are now available for grant under the 2018 Omnibus Plan and are included in the numbers of shares available for issuance under the 2018 Omnibus Plan. This figure also includes 75,132 shares available for issuance under the 2006 Incentive Plan, 2,565,652 shares available for issuance under the 2011 Incentive Plan and 461,290 shares available for issuance under the 2015 Incentive Plan; however, these plans are closed for new issuances and the only shares remaining to be issued are shares paid in lieu of dividends and for the 2015 Incentive Plan, shares to be issued for unvested performance units and restricted stock units.
- (4) This figure includes 41,635 shares to be issued under the Deferred Compensation Plan for Employees (2005), which is described in the “Non-Qualified Deferred Compensation-Ashland Employees’ Deferral Plan” section of Ashland’s proxy statement, and 10,137 shares to be issued under the Deferred Compensation Plan for Non-Employee Directors (2005), which is described in the “Compensation of Directors” section of Ashland’s proxy statement, payable in Ashland Common Stock upon termination of employment or service with Ashland. Because these plans are not equity compensation plans as defined by the rules of the NYSE, neither plan required approval by Ashland’s stockholders.
- (5) This figure includes 618,753 shares available for issuance under the Deferred Compensation Plan for Employees (2005) and 661,113 shares available for issuance under the Deferred Compensation Plan for Non-Employee Directors (2005). Because these plans are not equity compensation plans as defined by the rules of the NYSE, neither plan required approval by Ashland’s stockholders.

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.

(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).
- 2.4 – Stock and Asset Purchase Agreement, dated November 14, 2018, between Ashland Global Holdings Inc. and INEOS Enterprises Holdings Limited (pursuant to Item 601(b)(2) of Regulation S-K, exhibits, schedules and certain annexes to the Stock and Asset Purchase Agreement have been omitted; exhibits, schedules and annexes will be supplementally provided to the SEC upon request) (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on November 20, 2018 (SEC File No. 333-211719), and incorporated herein by reference.)
- 2.5 – First Amendment to Stock and Asset Purchase Agreement, dated July 1, 2019, between Ashland Global Holdings Inc. and INEOS Enterprises Holdings Limited (pursuant to Item 601(b)(2) of Regulation S-K, exhibits, schedules and certain annexes to the Stock and Asset Purchase Agreement have been omitted; exhibits, schedules and annexes will be supplementally provided to the SEC upon request) (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on July 8, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 2.6 – Second Amendment to Stock and Asset Purchase Agreement, dated July 30, 2019, between Ashland Global Holdings Inc. and INEOS Enterprises Holdings Limited (pursuant to Item 601(b)(2) of Regulation S-K, exhibits, schedules and certain annexes to the Stock and Asset Purchase Agreement have been omitted; exhibits, schedules and annexes will be supplementally provided to the SEC upon request (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on August 2, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 2.7 – Asset Purchase Agreement dated July 25, 2020, by and between Ashland LLC and AOC Materials LLC (filed as Exhibit 2.1 to Ashland’s Form 8-K filed on July 27, 2020 (SEC File No. 333-211719) 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 – 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).
- 4.3 – 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).
- 4.4 – 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).
- 4.5 – 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).
- 4.6 – 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).
- 4.7 – 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).
- 4.8 – 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).
- 4.9 – 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).
- 4.10 – 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).
- 4.11 – 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).
- 4.12 – 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).
- 4.13 – 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).
- 4.14 – Indenture dated January 23, 2020, among Ashland Services B.V., Ashland Global Holdings Inc., Ashland LLC and U.S. Bank National Association, as trustee, in respect of the Senior Euro-Denominated Notes due 2028 (filed as Exhibit 4.1 to Ashland's Form 8-K filed on January 23, 2020 (SEC File No. 333-211719) and incorporated herein by reference).
- 4.15(a) – Description of Capital Stock (filed as Exhibit 4.14(a) to Ashland's Form 10-K for the fiscal year ended September 30, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 4.15(b) – Description of 6.875% Senior Notes due 2043 (filed as Exhibit 4.14(b) to Ashland's Form 10-K for the fiscal year ended September 30, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 4.15(c) – Description of 4.750% Senior Notes due 2022 (filed as Exhibit 4.14(c) to Ashland's Form 10-K for the fiscal year ended September 30, 2019 (SEC File No. 333-211719) and incorporated herein by reference).

The following Exhibits 10.1 through 10.51 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 – 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).
- 10.8 – Ashland Global Holdings Inc. Deferred Compensation Plan for Employees (Amended and Restated Effective as of May 22, 2019) (filed as Exhibit 10.1 to Ashland’s Form 10-Q for the quarter ended June 30, 2019 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.9 – Ashland Global Holdings Inc. Deferred Compensation Plan for Non-Employee Directors (Amended and Restated as of May 22, 2019) (filed as Exhibit 10.2 to Ashland’s Form 10-Q for the quarter ended June 30, 2019 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.10 – 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).
- 10.11 – 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).
- 10.12 – 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).
- 10.13 – 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).
- 10.14 – 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).
- 10.15 – 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).
- 10.16 – 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).
- 10.17 – 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).

- 10.18 – 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).
- 10.19 – 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 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).
- 10.21 – 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).
- 10.22 – 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).
- 10.23 – Form of Restricted Stock Award Agreement under the Amended and Restated 2015 Ashland Global Holdings Inc. Incentive Plan (Double-Trigger Form) (filed as Exhibit 10.37 to Ashland’s Form 10-K for the fiscal year ended September 30, 2016 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.24 – 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).
- 10.25 – 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).
- 10.26 – 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).
- 10.27 – 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).
- 10.28 – 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).
- 10.29 – Form of Cash-Settled Performance Unit (LTIP) Award Agreement under the Amended and Restated 2015 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).
- 10.30 – 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).
- 10.31 – 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).
- 10.32 – Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on January 26, 2018 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.33 – Form of Stock-Settled Restricted Stock Unit Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on

January 26, 2018 (SEC File No. 333-211719), and incorporated herein by reference).

- 10.34 – Form of Restricted Stock Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (filed as Exhibit 10.3 to Ashland’s Form 8-K filed on January 26, 2018 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.35 – Form of Stock Appreciation Rights Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (filed as Exhibit 10.4 to Ashland’s Form 8-K filed on January 26, 2018 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.36 – Form of Performance Unit Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (filed as Exhibit 10.5 to Ashland’s Form 8-K filed on January 26, 2018 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.37 – Form of Cash-Settled Restricted Stock Unit Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (filed as Exhibit 10.6 to Ashland’s Form 8-K filed on January 26, 2018 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.38 – Ashland Global Holdings Inc. NonQualified Defined Contribution Plan (Amended and Restated as of May 22, 2019) (filed as Exhibit 10.3 to Ashland’s Form 10-Q for the quarter ended June 30, 2019 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.39 – Ashland Global Holdings Inc. Supplemental Defined Contribution Plan for Certain Employees (Amended and Restated as of May 22, 2019) (filed as Exhibit 10.39 to Ashland’s Form 10-K filed on November 25, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.40 – Form of Restricted Stock Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (with pro-rata vesting upon death, disability and retirement) (filed as Exhibit 10.5 to Ashland’s Form 10-Q for the quarter ended June 30, 2019 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.41 – Form of Stock Appreciation Rights Award Agreement (Stock Settled) under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (with pro-rata vesting upon death, disability and retirement) (filed as Exhibit 10.6 to Ashland’s Form 10-Q for the quarter ended June 30, 2019 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.42 – Form of Restricted Stock Unit Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (with pro-rata vesting upon death, disability and retirement) (filed as Exhibit 10.7 to Ashland’s Form 10-Q for the quarter ended June 30, 2019 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.43 – Form of Stock-Settled Performance Unit Award Agreement under the Ashland Global Holdings Inc. 2018 Omnibus Incentive Compensation Plan (with pro-rata vesting upon death, disability and retirement) (filed as Exhibit 10.8 to Ashland’s Form 10-Q for the quarter ended June 30, 2019 (SEC File No. 333-211719), and incorporated herein by reference).

- 10.44 – Offer Letter dated as of October 8, 2019, entered into by Guillermo Novo and Ashland Global Holdings Inc. (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on October 8, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.45 – Letter Agreement dated as of October 8, 2019, entered into by William A. Wulfsohn and Ashland Global Holdings Inc. (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on October 8, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.46 – Separation Agreement and General Release between Jack William Heitman, Jr. A and Ashland LLC, effective as of December 31, 2019 (filed as Exhibit 10.2 to Ashland’s Form 10-Q filed on January 29, 2020 (SEC File No: 333-211719) and incorporated herein by reference).
- 10.47 – Separation Agreement and General Release between William A. Wulfsohn and Ashland LLC, effective as of December 31, 2019 (filed as Exhibit 10.3 to Ashland’s Form 10-Q filed on January 29, 2020 (SEC File No: 333-211719) and incorporated herein by reference).
- 10.48 – Form of Chief Executive Officer Change in Control Agreement (filed as Exhibit 10.4 to Ashland’s Form 10-Q filed on January 29, 2020 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.49 – Amendment to Ashland’s Severance Pay Plan dated January 29, 2020 (filed as Exhibit 10.1 to Ashland’s Form 10-Q filed on May 6, 2020 (SEC File No: 333-211719) and incorporated herein by reference).
- 10.50 – Letter Agreement by and between Ashland Global Holdings Inc. and Peter J. Ganz, dated May 19, 2020 (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on May 22, 2020, (SEC File No. 333-211719) and incorporated herein by reference).
- 10.51 – Consulting Agreement by and between Ashland Global Holdings Inc. and Peter J. Ganz, dated May 19, 2020 (filed as Exhibit 10.2 to Ashland’s Form 8-K filed on May 22, 2020, (SEC File No. 333-211719) and incorporated herein by reference).
- 10.52 – 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).
- 10.53 – 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).
- 10.54 – Amendment No. 3 to the Credit Agreement dated as of May 17, 2017, dated as of May 22, 2018, among Ashland LLC, as Borrower, the Lenders from time to time party thereto, The Bank of Nova Scotia, as Administrative Agent, Swing Line Lender and an L/C Issuer, each other L/C Issuer from time to time party thereto and Citibank, N.A., as Syndication Agent, and the various other parties thereto (as amended by Amendment No. 1 to the Credit Agreement, dated as of May 19, 2017, as further amended by Amendment No. 2 to the Credit Agreement, dated as of June 14, 2017, and as further amended, restated, modified and supplemented from time to time) (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on May 23, 2018 (SEC File No. 333-211719), and incorporated herein by reference).
- 10.55 – Amendment No. 4 to the Credit Agreement dated as of May 17, 2017, dated as of June 29, 2018, among Ashland LLC, as Borrower, The Lenders from time to time party thereto, The Bank of Nova Scotia, as Administrative Agent (the “Administrative Agent”), Swing Line Lender and an L/C Issuer, each other L/C Issuer from time to time party thereto and Citibank, N.A., as Syndication Agent, and the various other parties thereto (as amended by Amendment No. 1 to the Credit Agreement, dated as of May 19, 2017, as further amended by Amendment No. 2 to the Credit Agreement, dated as of June 14, 2017 and Amendment No. 3 to the Credit Agreement, dated as of May 22, 2018, and as further amended, restated, modified and supplemented from time to time) (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on July 2, 2018 (SEC File No. 333-211719), and incorporated herein by reference).

- 10.56 – Credit Agreement dated as of January 10, 2020, among Ashland Global Holdings Inc., Ashland Chemco Inc., Ashland LLC, Ashland Services B.V., each lender from time to time party thereto, the Bank of Nova Scotia, as administrative agent, swing line lender and a letter of credit issuer, each other letter of credit issuer from time to time party thereto and Citibank, N.A., as syndication agent (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on January 10, 2020 (SEC File No. 333-211719) and incorporated herein by reference).
- 10.57 – 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).
- 10.58 – 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).
- 10.59 – 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).
- 10.60 – 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).
- 10.61 – 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).
- 10.62 – 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).
- 10.63 – 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 (filed as Exhibit 10.84 to Ashland’s Form 10-K for the fiscal year ended September 30, 2017 (SEC File No. 333-211719), and incorporated by reference herein).
- 10.64 – Agreement, dated January 22, 2019, by and amount Ashland Global Holdings Inc., Cruiser Capital Advisors, LLC, Keith M. Rosenbloom, Cruiser Capital Master Fund LP, Metamorphosis IV LLC, William H. Joyce, Metamorphosis Master Fund LP, Cruiser Capital Metamorphosis Advisors, LLC, Cruiser Capital, LLC, Cruiser Capital, Ltd., the William H. Joyce Revocable Trust and the Joyce Family Irrevocable Trust (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on January 22, 2019 (SEC File No. 333-211719), and incorporated herein by reference.)
- 10.65 – Master Confirmation – Uncollared Accelerated Share Repurchase, dated May 6, 2019, between Ashland Global Holdings Inc. and Goldman Sachs (filed as Exhibit 10.1 to Ashland’s Form 8-K filed on May 7, 2019 (SEC File No. 333-211719) and incorporated herein by reference).
- 21** – List of Subsidiaries.
- 23.1** – Consent of Ernst & Young LLP.
- 23.2** – Consent of Nathan Associates, Inc.
- 24** – Power of Attorney.
- 31.1** – Certification of Guillermo Novo, 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 Guillermo Novo, 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*	Inline XBRL Instance Document.
101.SCH*	Inline XBRL Taxonomy Extension Schema Document.
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101).

* 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, 2020, 2019 and 2018; (ii) Consolidated Balance Sheets at September 30, 2020 and 2019; (iii) Statements of Consolidated Equity at September 30, 2020, 2019 and 2018; (iv) Statements of Consolidated Cash Flows for years ended September 30, 2020, 2019 and 2018; 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.

ITEM 16. FORM 10-K SUMMARY

None.

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 23, 2020

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 23, 2020.

<u>Signatures</u>	<u>Capacity</u>
<u>/s/ Guillermo Novo</u>	Chairman of the Board, Chief Executive Officer and Director
Guillermo Novo	(Principal Executive Officer)
<u>/s/ J. Kevin Willis</u>	Senior Vice President and Chief Financial Officer
J. Kevin Willis	(Principal Financial Officer)
<u>/s/ Eric N. Boni</u>	Vice President, Finance and Principal Accounting Officer
Eric N. Boni	(Principal Accounting Officer)
*	Director
<u>Brendan M. Cummins</u>	Director
*	Director
<u>William G. Dempsey</u>	Director
*	Director
<u>Jay V. Ihlenfeld</u>	Director
*	Director
<u>Susan L. Main</u>	Director
*	Director
<u>Jerome A. Peribere</u>	Director
*	Director
<u>Craig A. Rogerson</u>	Director
*	Director
<u>Ricky C. Sandler</u>	Director
*	Director
<u>Janice J. Teal</u>	

*By: /s/ Peter J. Ganz
Peter J. Ganz
Attorney-in-Fact

Date: November 23, 2020

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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, 2020, 2019 and 2018.

BUSINESS OVERVIEW

Ashland profile

Ashland is a premier global leader in providing specialty materials to customers in a wide range of consumer and industrial markets, including adhesives, architectural coatings, construction, energy, food and beverage, nutraceuticals, personal care and pharmaceutical. With approximately 4,500 employees worldwide, Ashland serves customers in more than 100 countries.

Ashland's sales generated outside of North America were 60% in 2020, 2019 and 2018. Sales by region expressed as a percentage of total consolidated sales were as follows:

Sales by Geography	2020	2019	2018
North America (a)	40%	40%	40%
Europe	33%	33%	32%
Asia Pacific	19%	19%	19%
Latin America & other	8%	8%	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

During the second quarter of fiscal year 2020, Ashland changed the manner in which it manages the business moving from a functionally led to a business led organization. This change recognizes that Ashland has a diverse portfolio of businesses with different value propositions for the markets Ashland serves. The organizational change allows Ashland to align its business models, resources and cost structure to the specific needs of each business and enable greater ownership and accountability for both short- and long-term performance. Ashland has realigned its segment reporting structure commensurate with this organizational change. The reportable segments are consistent with how the segments report to and are managed by Ashland's Chief Executive Officer (the chief operating decision maker). As a result, Ashland's reportable segments include Life Sciences, Personal Care & Household, Specialty Additives, Performance Adhesives and Intermediates and Solvents. Unallocated and Other includes corporate governance activities and certain legacy matters. The historical segment information has been recast to conform to the current segment structure. Ashland has also provided subtotals by its consumer and industrial businesses to reflect the end markets served by each reportable segment. The contribution to sales by each reportable segment expressed as a percentage of total consolidated sales for the year ended September 30 were as follows:

Sales by Reportable Segment	2020	2019	2018
<i>Life Sciences</i>	30%	30%	28%
<i>Personal Care & Household</i>	26%	26%	27%
Consumer Specialties	56%	56%	55%
<i>Specialty Additives</i>	25%	26%	26%
<i>Performance Adhesives</i>	13%	14%	14%
Industrial Specialties	38%	40%	40%
<i>Intermediates and Solvents</i>	6%	4%	5%
	<u>100%</u>	<u>100%</u>	<u>100%</u>

KEY DEVELOPMENTS

Business Results

Ashland's net loss was \$508 million (\$491 million loss from continuing operations and \$17 million loss from discontinued operations) in 2020 compared to income of \$505 million (\$24 million income from continuing operations and \$481 million

income from discontinued operations) in 2019. Results for Ashland's continuing operations were adversely impacted by a non-cash goodwill impairment charge of \$530 million, lower industrial demand across the globe reflecting the impact of the COVID-19 pandemic, debt restructuring costs of \$67 million and inventory control measures costs of \$51 million, which includes a \$47 million charge in the fourth quarter. These costs were partially offset by improved product mix, lower raw-material costs and lower selling, general and administrative expense. Discontinued operations were primarily driven by the change in results of the Composites business and Marl facility between periods, including associated gains as a result of these businesses' dispositions. Ashland's Adjusted EBITDA is \$528 million for the current year compared to \$532 million in the prior year (see U.S. GAAP reconciliation under consolidated review). The \$4 million decrease in Adjusted EBITDA was primarily due to lower industrial demand across the globe reflecting the impact of the COVID-19 pandemic, partially offset by improved product mix, lower raw materials and lower selling, general and administrative expenses as a result of cost reduction programs.

Uncertainty relating to the COVID-19 pandemic

Ashland continues to closely monitor the impact of the COVID-19 pandemic on all aspects of its business and geographies, including how it will impact customers, employees, suppliers, vendors, business partners and distribution channels. Ashland is unable to predict the impact that the COVID-19 pandemic will have on its future financial position and operating results due to numerous uncertainties. These uncertainties include the severity of the virus, the duration of the outbreak, governmental, business or other actions, impacts on Ashland's supply chain, the effect on customer demand, or changes to Ashland's operations. The health of Ashland's workforce and its ability to meet staffing needs throughout the critical functions cannot be predicted and is vital to operations. Further, the impacts of a potential worsening of global economic conditions and the continued disruptions to, and volatility in, the credit and financial markets, consumer spending as well as other unanticipated consequences remain unknown. In addition, Ashland cannot predict the impact that the COVID-19 pandemic will have on its customers, vendors, suppliers and other business partners; however, any material effect on these parties could adversely impact Ashland.

Ashland continues to successfully navigate the uncertain environment associated with the COVID-19 pandemic. This includes the execution of shelter in place, social distancing and deep cleaning process requirements. Through the balance of fiscal year 2020, Ashland has not experienced any additional major operating surprises beyond the initial impact of the COVID-19 pandemic, maintained a robust supply chain in a challenging environment, had strong safety performance in the face of unprecedented pressures and improved operating discipline across each of its businesses. The consumer specialties businesses showed resiliency in the face of difficult economic circumstances. The industrial specialties businesses and the Intermediates and Solvents business experienced downward pressure on demand as a result of the COVID-19 pandemic's impact on those businesses end markets. However, Ashland's overall liquidity remains strong and Ashland is more than able to meet its operating cash needs and other investing and financing cash requirements at this time, including those necessary to grow the business as economic conditions improve.

The situation surrounding the COVID-19 pandemic remains fluid, and Ashland is actively managing its response in collaboration with customers, government officials, team members and business partners. For further information regarding the impact of the COVID-19 pandemic on the Company, please see Item 1A, Risk Factors in this report, which is incorporated herein by reference.

Significant items announced or executed during 2020

Operational business model changes and restructurings

As previously noted above, during the second quarter of fiscal year 2020, Ashland changed the manner in which it manages the business moving from a functionally led to a business led organization. This new business-centric operational model required redesign of core operating systems and processes leading to a realignment in both the selling, general and administrative and research and development costs (SARD) associated with each business. In addition to the realignment of SARD, a productivity review with a focus on cost of goods sold (COGS) was also initiated. Based on these initiatives, Ashland is currently targeting the following savings:

- \$50 million of incremental SARD cost savings
- \$50 million of incremental COGS productivity savings

Ashland currently expects to achieve the run-rate SARD cost savings by the end of calendar 2020 and the run-rate COGS productivity savings by the end of fiscal year 2021. Ashland has captured roughly \$41 million in annualized run-rate savings under these initiatives as of September 30, 2020.

Ashland's maleic anhydride business (Maleic business)

On September 30, 2020, Ashland completed the sale of its Maleic business to AOC Materials LLC (AOC). This business was part of the Composites and Marl facility disposal group included in discontinued operations. Proceeds from the sale were \$98 million. Ashland recognized a \$29 million after-tax gain with the Statement of Consolidated Comprehensive Income (Loss) with the income from discontinued operations caption for the twelve months ended September 30, 2020.

RESULTS OF OPERATIONS – CONSOLIDATED REVIEW

Consolidated review

Net income

Ashland's net income (loss) is primarily affected by results within operating income, net interest and other financing expense, net income (loss) on acquisitions and divestitures, income taxes, discontinued operations and other significant events or transactions that are unusual or nonrecurring.

Key financial results for 2020, 2019 and 2018 included the following:

- Ashland's net income/loss amounted to a loss of \$508 million in 2020, income of \$505 million in 2019 and \$114 million in 2018, or a loss of \$8.39, and income of \$8.03 and \$1.79 diluted earnings per share, respectively.
- Discontinued operations, which are reported net of taxes, resulted in a loss of \$17 million during 2020 and income of \$481 million and \$95 million during 2019 and 2018, respectively.
- Results from continuing operations, which excludes results from discontinued operations, amounted to a loss of \$491 million in 2020 and income of \$24 million and \$19 million in 2019 and 2018, respectively. Fiscal 2020 includes a non-cash goodwill impairment charge of \$530 million.
- The effective income tax benefit rate of 2% for 2020, income tax expense rate of 66% for 2019, and income tax benefit rate of 73% for 2018, were significantly impacted by certain tax specific key items and tax discrete items.
- Ashland incurred pretax net interest and other expense of \$119 million, \$99 million and \$102 million during 2020, 2019 and 2018, respectively. This includes charges for \$59 million and \$8 million for debt refinancing costs and accelerated debt issuance costs, respectively, during 2020, as well as gains of \$20 million, \$7 million and zero on restricted investments during 2020, 2019 and 2018, respectively.
- Other net periodic benefit income totaled \$2 million, \$5 million and \$15 million during 2020, 2019 and 2018, respectively.
- Net income/loss on divestitures totaled income of \$2 million during 2020 and a loss of \$2 million and \$4 million during 2019 and 2018, respectively.
- Operating income/loss amounted to a loss of \$388 million in 2020 compared to income of \$166 million and \$102 million in 2019 and 2018, respectively. Fiscal 2020 included a non-cash goodwill impairment charge of \$530 million.

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

Operating income/loss was a loss of \$388 million in 2020 compared to income of \$166 million and \$102 million in 2019, 2018, respectively. The current and prior years' operating income included certain key items that were excluded to arrive at Adjusted EBITDA and are quantified in the table below in the "EBITDA and Adjusted EBITDA" section. These operating key items for the applicable periods are summarized as follows:

- Goodwill impairment – During 2020, Ashland realigned its operations into five reportable segments which resulted in a reassessment of the Company's reporting units used to evaluate goodwill impairment. The impairment test under the new reporting unit structure concluded that the carrying value of the Personal Care & Household and the Specialty Additives reporting units exceeded their fair value, resulting in a \$530 million non-cash goodwill impairment charge in 2020. See note H and Critical Accounting Policies for additional information.
- Restructuring, separation and other costs - Ashland periodically implements company-wide restructuring programs related to acquisitions, divestitures and other cost reduction programs in order to enhance profitability through streamlined operations and an improved overall cost structure. Ashland often incurs severance, facility and integration costs associated with these programs. See Notes C, D and E in the Notes to Consolidated Financial Statements for further information.
- Inventory control measures – During 2020, Ashland incurred charges associated with a program to reduce overall inventory levels as part of a working capital efficiency program. While successful in managing inventory levels, these actions resulted in increased expense primarily related to abnormal production variances due to plant shutdowns.
- Environmental reserve adjustments – 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. As a result of these activities, Ashland recorded adjustments during each year to its environmental liabilities and receivables related to previously divested businesses or non-operational sites. See Note N of the Notes to Consolidated Financial Statements for more information.
- Accelerated depreciation – As a result of various restructuring activities at certain office facilities and manufacturing plants, Ashland recorded accelerated depreciation due to changes in the expected useful life of certain property, plant and equipment during 2019 and 2018. See Note G of the Notes to Consolidated Financial Statements for more information.
- Proxy costs – Ashland incurred significant consulting and other costs associated with the 2019 Annual Meeting of Stockholders and agreement with the Cruiser Group (as defined in the agreement) during 2019.
- Asset impairments – Ashland recognized impairment charges to certain assets during 2019 and 2018. The charges during 2018 primarily related to the impairment of an office facility as a result of a company-wide restructuring program. See Note E of the Notes to Consolidated Financial Statements for more information.
- Tax indemnity expense – During 2019 and 2018, Ashland recorded an adjustment to a tax indemnity receivable that was associated with the acquisition of Pharmachem.
- Unplanned plant shutdowns – During 2019, Ashland incurred costs related to temporary shutdowns for the Specialty Additives Parlin facility as a result of force majeure contract issues.
- Legal settlement/reserve – During 2018, Ashland recorded adjustments related to settlements and/or reserves for certain legal matters.

Operating income/loss for 2020, 2019 and 2018 included depreciation and amortization of \$247 million, \$289 million and \$277 million, respectively (which includes accelerated depreciation of zero, \$39 million, and \$14 million, respectively, for each year).

Non-operating key items affecting EBITDA

During the current and prior years, there were certain key items that were not included in operating income but were excluded to arrive at Adjusted EBITDA. These non-operating key items for the applicable periods are summarized as follows:

- Net loss on divestitures – Ashland recorded a loss on certain divestitures during 2019 and 2018. See Note C of the Notes to Consolidated Financial Statements for more information on these divestitures.
- Loss (gain) on pension and other postretirement plan remeasurements - Ashland recognized 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. See Note M of the Notes to Consolidated Financial Statements for more information.

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, 2020, 2019 and 2018.

(In millions)	2020	2019	2018	2020 change	2019 change
Sales	\$ 2,326	\$ 2,493	\$ 2,589	\$ (167)	\$ (96)

The following table provides a reconciliation of the change in sales between fiscal years 2020 and 2019 and between fiscal years 2019 and 2018.

(In millions)	2020 change	2019 change
Volume	\$ (116)	\$ (58)
Pricing	(24)	18
Currency exchange	(10)	(45)
Plant realignment	(17)	(11)
Change in sales	<u>\$ (167)</u>	<u>\$ (96)</u>

Sales for 2020 decreased \$167 million, or 7%, compared to 2019. Unfavorable volume, due primarily to lower industrial demand reflecting the impact of the COVID-19 pandemic, product pricing, foreign currency exchange and plant realignment decreased sales by \$116 million, \$24 million, \$10 million and \$17 million, respectively.

Sales for 2019 decreased \$96 million, or 4%, compared to 2018. Unfavorable volume, foreign currency exchange and plant realignment decreased sales by \$58 million, \$45 million and \$11 million, respectively. These decreases were partially offset by product pricing which increased sales by \$18 million.

(In millions)	2020	2019	2018	2020 change	2019 change
Cost of sales	\$ 1,619	\$ 1,726	\$ 1,726	\$ (107)	\$ —
Gross profit as a percent of sales	30.4%	30.8%	33.3%		

Fluctuations in cost of sales are driven primarily by lower industrial demand across the globe reflecting the impact of the COVID-19 pandemic, raw material prices, volume and changes in product mix, currency exchange, acquisitions and divestitures 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 2020 and 2019 and between fiscal years 2019 and 2018.

(In millions)	2020 change	2019 change
Volume	\$ (72)	\$ (38)
Plant realignment/closure costs	(67)	31
Price/mix	(68)	14
Currency exchange	(6)	(23)
Operating costs	106	16
Change in cost of sales	<u>\$ (107)</u>	<u>\$ —</u>

Cost of sales for 2020 decreased \$107 million compared to 2019. Volume, due primarily to lower industrial demand reflecting the impact of the COVID-19 pandemic, plant realignment/closure costs, price/mix and foreign currency exchange decreased cost of sales by \$72 million, \$67 million, \$68 million and \$6 million, respectively. Those decreases were partially offset by higher operating costs which increased cost of sales by \$106 million primarily as a result of inventory control measures taken during the fourth quarter of fiscal 2020.

Cost of sales for 2019 was flat compared to 2018. Volume and foreign currency exchange decreased cost of sales by \$38 million and \$23 million, respectively. Those decreases were partially offset by plant realignment/closure costs, price/mix and higher operating costs, which increased cost of sales by \$31 million, \$14 million and \$16 million, respectively.

(In millions)	2020	2019	2018	2020 change	2019 change
Selling, general and administrative expense	\$ 424	\$ 453	\$ 599	\$ (29)	\$ (146)
As a percent of sales	18.2%	18.2%	23.1%		

Selling, general and administrative expense for 2020 decreased \$29 million compared to 2019, with expenses as a percent of sales remaining constant. Key drivers of the fluctuation in selling, general and administrative expense compared to 2019 were:

- \$36 million and \$27 million in net environmental-related expenses during 2020 and 2019, respectively (see Note N for more information);
- \$58 million and \$43 million of key items for restructuring, separation and other costs during 2020 and 2019, respectively;
- \$4 million of consulting and other costs associated with the proxy contest during 2019;
- Favorable currency exchange of \$6 million; and
- Achieved cost savings during 2020 from restructuring programs initiated in 2020 and 2019, which represents a substantial portion of the 2020 decline from 2019.

Selling, general and administrative expense for 2019 decreased \$146 million compared to 2018, while expenses as a percent of sales decreased 4.9 percentage points. Key drivers of the fluctuation in selling, general and administrative expense compared to 2018 were:

- \$43 million and \$83 million of restructuring, separation and other costs during 2019 and 2018, respectively;
- \$27 million and \$60 million in net environmental-related expenses during 2019 and 2018, respectively;
- \$16 million of asset impairment charges during 2018;
- \$4 million of consulting and other costs associated with the proxy contest during 2019;
- Lower variable compensation of \$21 million during 2019; and
- Favorable currency exchange of \$9 million as well as achieved cost savings during 2019 from restructuring programs initiated in 2019 and 2018.

(In millions)	2020	2019	2018	2020 change	2019 change
Research and development expense	\$ 64	\$ 66	\$ 73	\$ (2)	\$ (7)

Research and development expense decreased \$2 million in 2020 compared to 2019 as a result of achieved cost savings and other costs compared to the prior year. In 2019, the \$7 million decreased compared to 2018 was primarily due to the overall company-wide cost reduction program.

(In millions)	2020	2019	2018	2020 change	2019 change
Intangibles amortization expense	\$ 85	\$ 86	\$ 93	\$ (1)	\$ (7)

Amortization expense remained relatively consistent in 2020 compared to 2019. Amortization expense decreased by \$7 million in 2019 compared to 2018 primarily due to the impact of fully amortized acquisition related intangible assets.

(In millions)	2020	2019	2018	2020 change	2019 change
Equity and other income					
Equity income	\$ —	\$ —	\$ —	\$ —	\$ —
Other income	8	4	4	4	—
	<u>\$ 8</u>	<u>\$ 4</u>	<u>\$ 4</u>	<u>\$ 4</u>	<u>\$ —</u>

Equity and other income increased during 2020 compared to 2019 and 2018 primarily due to a liquidation gain of \$3 million.

(In millions)	2020	2019	2018	2020 change	2019 change
Goodwill impairment	\$ 530	\$ —	\$ —	\$ 530	\$ —

Ashland recorded an impairment charge of \$530 million in 2020. See note H Goodwill and Other Intangibles for additional information.

(In millions)	2020	2019	2018	2020 change	2019 change
Net interest and other expense (income)					
Interest expense	\$ 88	\$ 114	\$ 116	\$ (26)	\$ (2)
Interest income	(1)	(2)	(4)	1	2
Loss on early retirement of debt	59	—	—	59	—
Loss (income) from restricted investments	(30)	(17)	(14)	(13)	(3)
Other financing costs	3	4	4	(1)	—
	<u>\$ 119</u>	<u>\$ 99</u>	<u>\$ 102</u>	<u>\$ 20</u>	<u>\$ (3)</u>

Net interest and other expense increased by \$20 million in 2020 compared to 2019. Interest expense decreased by \$26 million due to lower average debt levels and lower cost of debt related to the debt restructuring activity during 2020. The decreases were partially offset by \$8 million of accelerated debt issuance costs and original issuance discount costs in 2020. Ashland incurred \$59 million of debt refinancing costs during 2020. See Note I for more information on the refinancing activity. The investment securities income of \$30 million in 2020 compared to \$17 million in 2019 represents investment income related to restricted investments discussed in Note F of the Notes to the Consolidated Financial Statements.

Net interest and other expense decreased \$3 million in 2019 compared to 2018. The decrease in interest expense was primarily due to lower debt levels during 2019 compared to 2018. This decrease was partially offset by \$6 million of accelerated debt issuance costs related to the early repayments of term loans. The investment securities income of \$17 million in 2019 compared to \$14 million in 2018 represents investment income related to restricted investments discussed in Note F of the Notes to Consolidated Financial Statements. Interest income and other financing costs were relatively consistent.

(In millions)	2020	2019	2018	2020 change	2019 change
Other net periodic benefit income	\$ 2	\$ 5	\$ 15	\$ (3)	\$ (10)

Other net periodic benefit income during 2020 primarily included interest cost of \$9 million, offset by expected return on plan assets of \$11 million.

Other net periodic benefit income during 2019 primarily included an \$11 million loss on pension and other postretirement plan remeasurements, offset by a curtailment gain of \$18 million due to the settlement of a non-U.S. pension plan in 2019. Other net periodic benefit income during 2019 also included an \$12 million charge for interest cost, partially offset by a \$10 million expected return on plan assets.

Other net periodic benefit income during 2018 primarily included a gain on pension and other postretirement plan remeasurements of \$14 million and an expected return on plan assets of \$12 million, offset by interest cost of \$11 million.

(In millions)	2020	2019	2018	2020 change	2019 change
Net income (loss) on divestitures	\$ 2	\$ (2)	\$ (4)	\$ 4	\$ 2

Net income (loss) on divestitures during 2020 primarily related to the sale of corporate assets and post-closing adjustments for certain divestitures.

Net income (loss) on divestitures during 2019 primarily included a loss of \$2 million related to the impairment of an investment offset by a gain on sale of a manufacturing facility, along with post-closing adjustments related to other previous divestitures.

Net income (loss) on divestitures during 2018 primarily included a loss of \$2 million related to the sale of a manufacturing facility, along with post-closing adjustments related to other previous divestitures.

(In millions)	2020	2019	2018	2020 change	2019 change
Income tax expense (benefit)	\$ (12)	\$ 46	\$ (8)	\$ (58)	\$ 54
Effective tax rate	(2)%	66%	(73)%		

The 2020 effective tax rate was impacted by nondeductible goodwill impairment of \$527 million as well as \$15 million favorable tax discrete items primarily from the tax benefit related to the Swiss Tax Reform enacted in the first quarter.

The 2019 effective tax rate was impacted by jurisdictional income mix, restructuring activities, and the U.S. tax reform.

The 2018 effective tax rate was impacted by jurisdictional income mix and restructuring activities, while the impact of U.S. tax reform and other items netted together to have an insignificant impact.

Adjusted income tax expense (benefit)

Key items are defined as the financial effects from significant transactions that may have caused short-term fluctuations in net income and/or operating income which Ashland believes do not accurately reflect Ashland's underlying business performance and trends. Tax specific key items are defined as the financial effects from tax specific financial transactions, tax law changes or other matters that fall within the definition of key items as previously described. The effective tax rate, excluding key items, which is a non-GAAP measure, has been prepared to illustrate the ongoing tax effects of Ashland's operations. Management believes investors and analysts use this financial measure in assessing Ashland's business performance and that presenting this non-GAAP measure on a consolidated basis assists investors in better understanding Ashland's ongoing business performance and enhancing their ability to compare period-to-period financial results.

The effective tax rates during 2020, 2019 and 2018 were significantly impacted by the following tax specific key items:

- Deferred tax rate changes - Includes the impact from the remeasurement of Ashland's domestic deferred tax balances resulting from the enactment of the Tax Act as well as the impact from deferred rate changes for other jurisdictions;
- One-time transition tax - Includes the one-time transition tax resulting from the enactment of the Tax Act;
- Uncertain tax position - Includes the impact from the settlement of uncertain tax positions with various tax authorities;
- Restructuring and separation activity - Includes the impact from company-wide cost reduction programs; and
- Other tax reform - Includes the impact from other items related to the Tax Act and other tax law changes including Swiss Tax Reform. The Swiss Tax Reform benefit is an estimate based on ten-year income projections and is subject to approval by the Swiss tax authorities. Ashland will monitor this amount and make adjustments as appropriate in future periods. These adjustments also include the impact from the deductibility of compensation items and miscellaneous state tax items.

The following table is a calculation of the effective tax rate, excluding the impact of these key items:

(In millions)	2020	2019	2018
Income (loss) from continuing operations			
before income taxes	\$ (503)	\$ 70	\$ 11
Key items (pre-tax) (a)	712	112	140
Adjusted income from continuing operations			
before income taxes	<u>\$ 209</u>	<u>\$ 182</u>	<u>\$ 151</u>
Income tax expense (benefit)	(12)	46	(8)
Income tax rate adjustments:			
Tax effect of key items (b)	33	14	30
Tax specific key items: (c)			
Deferred tax rate changes	—	(2)	139
One-time transition tax	—	(28)	(128)
Uncertain tax positions	(3)	6	26
Restructuring and separation activity	—	(12)	(36)
Other tax reform related activity	20	1	(11)
Total income tax rate adjustments	50	(21)	20
Adjusted income tax expense (benefit)	<u>\$ 38</u>	<u>\$ 25</u>	<u>\$ 12</u>
Effective tax rate, excluding key items (Non-GAAP) (d)	18%	14%	8%

(a) See Adjusted EBITDA reconciliation table disclosed below in this Management, Discussion and Analysis for a summary of the key items, before tax.

(b) The tax rate specific to the jurisdiction in which the key item originates is used to calculate the tax effect of key items.

(c) For additional information on the effect that these tax specific key items had on EPS, see the Adjusted Diluted EPS table disclosed below in this Management Discussion and Analysis.

(d) Due to rounding conventions, the effective tax rate presented may not recalculate precisely based on the numbers disclosed within this table.

The following table provides a reconciliation of tax specific key items within the statutory federal income tax with the provision for income taxes summary disclosed in Note L of the Notes to Consolidated Financial Statements.

(In millions)	2020	2019	2018
Tax effect of key items computed at applicable statutory rate (a)	\$ 33	\$ 14	\$ 30
Tax reform	25	(30)	44
Uncertain tax positions	(4)	(9)	22
Deemed inclusions, foreign dividends and other restructuring	(4)	—	(10)
Foreign tax credits	—	—	(44)
Valuation allowance changes	—	1	1
State taxes	—	(3)	—
Other items	—	6	(23)
	<u>\$ 50</u>	<u>\$ (21)</u>	<u>\$ 20</u>

(a) Includes impact of \$527 million of non-deductible goodwill.

(In millions)	2020	2019	2018	2020 change	2019 change
Income (loss) from discontinued operations (net of taxes)					
Composites and Marl Facility	\$ 4	\$ 94	\$ 86	\$ (90)	\$ 8
Asbestos-related litigation	(18)	—	13	(18)	(13)
Water Technologies	—	1	3	(1)	(2)
Distribution	(8)	14	(6)	(22)	20
Valvoline	(24)	—	(1)	(24)	1
Gain on disposal of discontinued operations					
Composites/Marl facility	29	372	—	(343)	372
	<u>\$ (17)</u>	<u>\$ 481</u>	<u>\$ 95</u>	<u>\$ (498)</u>	<u>\$ 386</u>

As a result of the divestiture of the Composites segment (including the Maleic business) and Marl facility, the related operating results have been reflected as discontinued operations (net of tax) within the Statements of Consolidated Comprehensive Income (Loss). See Note C for more information on this divestiture. In 2020, the sales and pre-tax operating income included in discontinued operations were \$51 million and \$9 million, respectively. In 2019, the sales and pre-tax operating income included in discontinued operations were \$1,012 million and \$145 million, respectively. In 2018, the sales and pre-tax operating income included in discontinued operations were \$1,154 million and \$125 million, respectively. In 2020, a \$29 million gain on disposal was recorded in the fourth quarter associated with the September 30, 2020 closing of the sale of the Maleic business. In 2019, a \$372 million gain on disposal was recorded in the fourth quarter associated with the August 30, 2019 closing of the Composites business (excluding the Maleic business) and the Marl facility with INEOS.

Asbestos-related activity during 2020, 2019 and 2018 included after-tax net adjustments to the asbestos reserves and receivables of \$18 million of expense, zero and \$13 million of income, respectively, including the adjustments for the annual update.

The activity for Water Technologies and Distribution during 2019 and 2018 was related to post-closing adjustments.

The Valvoline activity within 2020 and 2018 primarily represents subsequent adjustments that were made in conjunction with the Tax Matters Agreement.

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)	2020	2019	2018	2020 change	2019 change
Other comprehensive income (loss) (net of taxes)					
Unrealized translation gain (loss)	\$ 27	\$ (80)	\$ (82)	\$ 107	\$ 2
Pension and postretirement obligation adjustment	—	(5)	—	5	(5)
Net change in investment securities	—	—	13	—	(13)
	<u>\$ 27</u>	<u>\$ (85)</u>	<u>\$ (69)</u>	<u>\$ 112</u>	<u>\$ (16)</u>

Total other comprehensive income (loss), net of tax, increased \$112 million in 2020 as compared to 2019 as a result of the following components.

- In 2020, the change in unrealized gain (loss) from foreign currency translation adjustments resulted in a gain of \$27 million, compared to a loss of \$80 million during 2019. The fluctuations in unrealized translation gains and losses were primarily due to translating foreign subsidiary financial statements from local currencies to U.S. Dollars.
- The pension and postretirement obligation adjustment was zero during 2020 compared to \$5 million during 2019. The adjustments relate to amortization of unrecognized prior services credits for pension and other postretirement benefit plans, net of tax, and were reclassified into net income.

Total other comprehensive income (loss), net of tax, decreased \$16 million in 2019 as compared to 2018 as a result of the following components.

- In 2019, the change in unrealized gain (loss) from foreign currency translation adjustments resulted in a loss of \$80 million, compared to a loss of \$82 million during 2018. 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 \$5 million during 2019 compared to zero during 2018. The adjustment during 2019 related to amortization of unrecognized prior services credits for pension and other postretirement benefit plans, net of tax, and were classified into net income.
- Due to the adoption of new accounting guidance in 2019, unrealized gains and losses on Ashland's equity securities are now recognized in net income rather than AOCI. See Notes A and F for more information. A \$13 million gain on investment securities, net of tax, related to restricted investments, were recognized within other comprehensive income (loss) during 2018.

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 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.
- Adjusted diluted earnings per share (EPS) excluding intangibles amortization expense – Adjusted earnings per share adjusted for intangibles amortization expense 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 Adjusted diluted EPS, excluding intangibles amortization expense metric enables Ashland to demonstrate the impact of non-cash intangibles amortization expense on EPS, in addition to the key items previously mentioned. Ashland's management believes this presentation is helpful to illustrate how previous acquisitions impact applicable period results.

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.

Although Ashland may provide forward-looking guidance for Adjusted EBITDA, Adjusted diluted EPS and free cash flow, 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.

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 2020 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 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.

EBITDA and Adjusted EBITDA

EBITDA totaled a loss of \$154 million, income of \$900 million and income of \$471 million for 2020, 2019 and 2018, 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 previously described. 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)	2020	2019	2018
Net income (loss)	\$ (508)	\$ 505	\$ 114
Income tax expense (benefit)	(12)	46	(8)
Net interest and other financing expense	119	99	102
Depreciation and amortization (a)	247	250	263
EBITDA	(154)	900	471
(Income) loss from discontinued operations (net of taxes)	17	(481)	(95)
Key items included in EBITDA:			
Goodwill impairment	530	—	—
Restructuring, separation and other costs (b)	58	51	77
Environmental reserve adjustments	26	15	44
Inventory control measures	51	—	—
Accelerated depreciation	—	39	14
Proxy costs	—	4	—
Asset impairments	—	—	16
Tax indemnity expense	—	6	5
Unplanned plant shutdowns	—	2	—
Legal settlement/reserve	—	—	(5)
Net loss on acquisitions and divestitures (c)	—	3	2
Gain on pension and other postretirement plan remeasurements	—	(7)	(14)
Total key items included in EBITDA	665	113	139
Adjusted EBITDA (d)	\$ 528	\$ 532	\$ 515
<hr/>			
Total key items included in EBITDA	\$ 665	\$ 113	\$ 139
Accelerated amortization of debt issuance costs	\$ 8	\$ —	\$ —
Debt refinancing costs (e)	\$ 59	6	1
Unrealized gain on securities (f)	(20)	(7)	—
Total key items, before tax	\$ 712	\$ 112	\$ 140

(a) Excludes zero, \$39 million and \$14 million of accelerated depreciation during 2020, 2019 and 2018, respectively.

(b) Includes impairments of \$8 million during 2019.

(c) Excludes expense of zero, \$3 million and \$2 million during 2020, 2019 and 2018, respectively, related to ongoing adjustments of previous divestiture transactions.

(d) Includes \$2 million, \$9 million and \$8 million during 2020, 2019 and 2018, 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.

(e) Debt refinancing costs during 2020 included \$59 million loss on early retirement of debt. Debt refinancing costs during 2019 included a \$6 million debt issuance costs amortization charge for the early repayment of term loans A and B. Debt refinancing costs during 2018 primarily included a \$1 million charge for new debt issuance costs incurred with the re-pricing of the term loan B facility. All debt refinancing costs were recorded within the net interest and other financing expense caption on the Statements of Consolidated Comprehensive Income (Loss). See Note I of the Notes to Consolidated Financial Statements for more information.

(f) Due to the adoption of new accounting guidance in 2019, the unrealized (gains) losses on certain investment securities directly impact earnings and are recorded within the net interest and other expense caption on the Statements of Consolidated Comprehensive Income (Loss). See Note A of the Notes to Consolidated Financial Statements for more information.

Diluted EPS and Adjusted Diluted EPS

The following table reflects the U.S. GAAP calculation for the income (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. Key items are defined as the financial effects from significant transactions that may have caused short-term fluctuations in net income and/or operating income which Ashland believes do not accurately reflect Ashland's underlying business performance and trends. The Adjusted Diluted EPS for the income (loss) from continuing operations and Adjusted Diluted EPS from continuing operations excluding intangibles amortization expense in the following table have been prepared to illustrate these ongoing effects on Ashland's operations. Management believes investors and analysts use this financial measure in assessing Ashland's business performance and that presenting this non-GAAP measure on a consolidated basis assists investors in better understanding Ashland's ongoing business performance and enhancing their ability to compare period-to-period financial results.

	2020	2019	2018
Diluted EPS from continuing operations (as reported)	\$ (8.10)	\$ 0.39	\$ 0.29
Key items, before tax:			
Goodwill impairment	8.75	—	—
Restructuring, separation and other costs (including accelerated depreciation)	0.95	1.42	1.43
Environmental reserve adjustments	0.42	0.24	0.68
Inventory control measures	0.83	—	—
Proxy costs	—	0.07	—
Asset impairments	—	—	0.25
Tax indemnity expense	—	0.10	0.08
Unplanned plant shutdowns	—	0.03	—
Legal settlement/reserve	—	—	(0.07)
Net loss on acquisitions and divestitures	—	0.05	0.04
Gain on pension and other postretirement plan remeasurements	—	(0.11)	(0.22)
Unrealized gain on securities	(0.33)	(0.11)	—
Accelerated amortization of debt issuance costs	0.13	—	—
Debt refinancing costs	0.97	0.09	0.02
Key items, before tax	11.72	1.78	2.21
Tax effect of key items (a)	(0.54)	(0.22)	(0.47)
Key items, after tax	11.18	1.56	1.74
Tax specific key items:			
Deferred tax rate changes	—	0.03	(2.18)
One-time transition tax	—	0.44	2.00
Uncertain tax positions	0.05	(0.09)	(0.39)
Restructuring and separation activity	—	0.19	0.56
Other tax reform related activity	(0.33)	(0.02)	0.17
Tax specific key items (b)	(0.28)	0.55	0.16
Total key items	10.90	2.11	1.90
Adjusted diluted EPS from continuing operations (non-GAAP)	\$ 2.80	\$ 2.50	\$ 2.19
Amortization expense adjustment (net of tax) (c)	1.10	1.05	1.11
Adjusted diluted EPS from continuing operations (non-GAAP) excluding intangibles amortization expense	\$ 3.90	\$ 3.55	\$ 3.30

(a) Represents the diluted EPS impact from the tax effect of the key items that are previously identified above.

(b) Represents the diluted EPS impact from tax specific financial transactions, tax law changes or other matters that fall within the definition of tax specific key items. For additional explanation of these tax specific key items, see the income tax expense (benefit) discussion within the following caption review section.

(c) Amortization expense adjustment (net of tax) tax rates were 21.0%, 23.0% and 23.5% for the years ended 2020, 2019 and 2018, respectively.

RESULTS OF OPERATIONS – REPORTABLE SEGMENT REVIEW

During the second quarter of fiscal year 2020, Ashland changed the manner in which it manages the business moving from a functionally led to a business led organization. This change recognizes that Ashland has a diverse portfolio of businesses with different value propositions for the markets Ashland serves. The organizational change allows Ashland to align its business models, resources and cost structure to the specific needs of each business and enable greater ownership and accountability for both short- and long-term performance. Ashland has realigned its segment reporting structure commensurate with this organizational change. As a result, Ashland's reportable segments include the consumer specialty businesses: Life Sciences and Personal Care & Household; the industrial specialty businesses: Specialty Additives and Performance Adhesives; and Intermediates and Solvents. Unallocated and Other includes corporate governance activities and certain legacy matters. The historical segment information has been recast to conform to the current segment structure.

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 companies. Ashland allocates all significant costs to its reportable segments except for certain significant company-wide restructuring activities, certain corporate governance costs and other costs or activities 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 within the other net periodic benefit income caption on the Statements of Consolidated Comprehensive Income (Loss). 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. This includes charges in the current fiscal year for certain corporate governance costs, which were previously allocated. These costs are now reflected in Unallocated and Other for all periods presented.

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

(In millions)	2020	2019	2018
Sales			
<i>Life Sciences</i>	\$ 708	\$ 732	\$ 731
<i>Personal Care & Household</i>	615	651	702
Consumer Specialties	1,323	1,383	1,433
<i>Specialty Additives</i>	589	654	686
<i>Performance Adhesives</i>	310	345	351
Industrial Specialties	899	999	1,037
<i>Intermediates and Solvents</i>	129	160	155
<i>Intersegment sales (a)</i>	(25)	(49)	(36)
	<u>\$ 2,326</u>	<u>\$ 2,493</u>	<u>\$ 2,589</u>
Operating income (loss)			
<i>Life Sciences</i>	\$ 123	\$ 114	\$ 117
<i>Personal Care & Household</i>	(296)	85	105
Consumer Specialties	(173)	199	222
<i>Specialty Additives</i>	(132)	18	64
<i>Performance Adhesives</i>	56	58	52
Industrial Specialties	(76)	76	116
<i>Intermediates and Solvents</i>	(10)	28	25
<i>Unallocated and other</i>	(129)	(137)	(261)
	<u>\$ (388)</u>	<u>\$ 166</u>	<u>\$ 102</u>
Depreciation expense			
<i>Life Sciences</i>	\$ 33	\$ 33	\$ 30
<i>Personal Care & Household</i>	41	42	45
Consumer Specialties	74	75	75
<i>Specialty Additives</i>	62	98	73
<i>Performance Adhesives</i>	13	13	13
Industrial Specialties	75	111	86
<i>Intermediates and Solvents</i>	13	10	11
<i>Unallocated and other</i>	—	3	11
	<u>\$ 162</u>	<u>\$ 199</u>	<u>\$ 183</u>
Amortization expense (b)			
<i>Life Sciences</i>	\$ 27	\$ 28	\$ 30
<i>Personal Care & Household</i>	36	37	39
Consumer Specialties	63	65	69
<i>Specialty Additives</i>	19	21	21
<i>Performance Adhesives</i>	2	1	1
Industrial Specialties	21	22	22
<i>Intermediates and Solvents</i>	1	3	3
<i>Unallocated and other</i>	—	—	—
	<u>\$ 85</u>	<u>\$ 90</u>	<u>\$ 94</u>

(In millions)	2020	2019	2018
EBITDA (c) (d)			
<i>Life Sciences</i>	\$ 183	\$ 175	\$ 177
<i>Personal Care & Household</i>	(219)	164	189
Consumer Specialties	(36)	339	366
<i>Specialty Additives</i>	(51)	137	158
<i>Performance Adhesives</i>	71	72	66
Industrial Specialties	20	209	224
<i>Intermediates and Solvents</i>	4	41	39
<i>Unallocated and other</i>	(129)	(134)	(250)
	<u>\$ (141)</u>	<u>\$ 455</u>	<u>\$ 379</u>

- (a) Intersegment sales from Intermediates and Solvents are accounted for at prices that approximate fair value. All other intersegment sales are accounted for at cost.
- (b) Includes amortization of zero, \$4 million and \$1 million related to land-use-rights associated with other non-current assets.
- (c) Excludes income (loss) from discontinued operations, other net periodic benefit income (expense) and net income (loss) on divestitures. See the Statement of Consolidated Comprehensive Income (Loss) for applicable amounts excluded.
- (d) Includes zero, \$39 million and \$14 million of accelerated depreciation for the years ended September 30, 2020, 2019 and 2018.

Consumer Specialties

The Consumer Specialties business is comprised of the following reportable segments:

Life Sciences

Life Sciences is comprised of pharmaceuticals, nutrition, nutraceuticals, agricultural chemicals, advanced materials and fine chemicals. Pharmaceutical solutions include controlled release polymers, disintegrants, film coatings, solubilizers, and tablet binders. Nutrition solutions include thickeners, stabilizers, emulsifiers and additives for enhancing mouthfeel, controlling moisture migration, reducing oil uptake and controlling color. Nutraceutical solutions include products for weight management, joint comfort, stomach and intestinal health, sports nutrition and general wellness, and provide custom formulation, toll processing and particle engineering solutions. Customers include pharmaceutical, food, beverage, nutraceuticals and supplements manufacturers, hospitals and radiologists and industrial manufacturers.

Personal Care & Household

Personal Care & Household is comprised of biofunctionals, preservatives, skin care, sun care, oral care, hair care and household. These businesses have a broad range of nature-based, biodegradable, and performance ingredients for customer driven solutions to help protect, renew, moisturize and revitalize skin and hair, and provide solutions for toothpastes, mouth washes and rinses, denture cleaning and care for teeth. Household supplies nature-derived rheology ingredients, biodegradable surface wetting agents, performance encapsulates, and specialty polymers for household, industrial and institutional cleaning products. Customers include formulators at large multinational branded consumer products companies and smaller, independent boutique companies.

2020 compared to 2019

Consumer Specialties' sales for the current year decreased \$60 million to \$1,323 million compared to 2019. Personal Care & Household and Life Sciences represented \$36 million and \$24 million of the decrease, respectively. Lower volume, unfavorable currency exchange, plant restructuring and lower pricing decreased sales by \$32 million, \$8 million, \$11 million and \$9 million, respectively. During 2020, the Consumer Specialties businesses showed resiliency in the face of difficult economic circumstances brought on by the COVID-19 pandemic.

Operating income/loss for the current year decreased \$372 million to a loss of \$173 million compared to 2019. Personal Care & Household recorded a \$296 million loss, mostly due to a goodwill impairment, while Life Sciences recorded \$123 million operating income, up \$9 million from the prior year. Goodwill impairments, inventory control measures, lower volume and unfavorable costs decreased operating income by \$356 million, \$24 million, \$10 million and \$16 million, respectively. Those decreases were partially offset favorable price/mix which increased operating income/loss by \$34 million.

EBITDA for the current year decreased \$375 million to a loss of \$36 million compared to 2019, a \$219 million loss in Personal Care & Household and \$183 million income in Life Sciences, while Adjusted EBITDA increased \$6 million to \$345 million, of which \$195 million and \$150 million originated from Life Sciences and Personal Care & Household, respectively. Adjusted EBITDA margin increased 1.6 percentage points in 2020 to 26.1%.

2019 compared to 2018

Consumer Specialties' sales for 2019 decreased \$50 million to \$1,383 million compared to 2018. This decrease occurred in the Personal Care & Household while Life Sciences 2019 sales were essentially flat compared to 2018. Lower volume, unfavorable currency exchange and plant restructuring decreased sales by \$30 million, \$27 million, \$8 million, respectively. Those decreases were partially offset by favorable price/mix which increased sales by \$15 million.

Operating income/loss for 2019 decreased \$23 million to income of \$199 million compared to 2018. Personal Care & Household and Life Sciences recorded \$85 million and \$114 million in operating income, respectively. Lower volume, unfavorable price/mix, unfavorable foreign exchange and unfavorable costs decreased operating income by \$11 million, \$1 million, \$13 million and \$3 million, respectively. Those decreases were partially offset plant restructuring and prior year intangible asset write-off which increased operating income by \$3 million and \$2 million, respectively.

EBITDA for 2019 decreased \$27 million to income of \$339 million compared to 2018, \$164 million income in Personal Care & Household and \$175 million income in Life Sciences, while Adjusted EBITDA decreased \$32 million to \$339 million, of which \$175 million and \$164 million originated from Life Sciences and Personal Care & Household, respectively. Adjusted EBITDA margin decreased 1.4 percentage points in 2019 to 24.5%.

EBITDA and Adjusted EBITDA reconciliation

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 EBITDA presentation for the years ended September 30, 2020, 2019 and 2018 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 Consumer Specialties.

The key items during year ended September 30, 2020 related to a goodwill impairment of \$356 million for Personal Care & Household, \$1 million in restructuring costs for Life Sciences and \$11 million and \$13 million in inventory control measures for Life Sciences and Personal Care & Household, respectively.

The key items during year ended September 30, 2018 related to \$3 million of costs related to restructuring activity at certain manufacturing plants and \$2 million of asset impairment charges.

(In millions)	Life Sciences			Personal Care & Household			Consumer Specialties		
	2020	2019	2018	2020	2019	2018	2020	2019	2018
Operating income	\$ 123	\$ 114	\$ 117	\$ (296)	\$ 85	\$ 105	\$ (173)	\$ 199	\$ 222
Depreciation and amortization	60	61	60	77	79	84	137	140	144
EBITDA	183	175	177	(219)	164	189	(36)	339	366
Restructuring and other costs	1	—	2	—	—	1	1	—	3
Goodwill impairment	—	—	—	356	—	—	356	—	—
Inventory control measures	11	—	—	13	—	—	24	—	—
Asset impairment	—	—	1	—	—	1	—	—	2
Adjusted EBITDA	\$ 195	\$ 175	\$ 180	\$ 150	\$ 164	\$ 191	\$ 345	\$ 339	\$ 371

Industrial Specialties

The Industrial Specialties business is comprised of the following reportable segments:

Specialty Additives

Specialty Additives is comprised of rheology- and performance-enhancing additives serving the coatings, construction, energy, automotive and various industrial markets. Solutions include coatings additives for architectural paints, finishes and lacquers, cement- and gypsum- based dry mortars, ready-mixed joint compounds, synthetic plasters for commercial and residential construction, and specialty materials for industrial applications. Products include rheology modifiers (cellulosic and associative thickeners), foamcontrol agents, surfactants and wetting agents, pH neutralizers, advanced ceramics used in catalytic converters, and environmental filters, ingredients that aid the manufacturing process of ceramic capacitors, plasma display panels and solar cells, ingredients for textile printing, thermoplastic metals and alloys for welding. Products help improve desired functional outcomes through rheology modification and control, water retention, workability, adhesive

strength, binding power, film formation, deposition and suspension and emulsification. Customers include global paint manufacturers, electronics and automotive manufacturers, textile mills, the construction industry, and welders.

Performance Adhesives

Performance Adhesives is comprised of adhesives used in packaging, converting and structural applications. Packaging adhesives has an extensive line of pressure sensitive adhesives, functional coatings and primers combined with innovative technology solutions for narrow-, mid- and wide-web applications. Products meet stringent requirements in food and beverage safety, shipping, transportation, health and beauty, industrial, postage and security printing. Structural adhesives include light weighting vehicles and eliminating VOCs in buildings. Customers include converters of packaging materials, manufacturers of building materials and tier one suppliers to transportation industry.

2020 compared to 2019

Industrial Specialties' sales for the current year decreased \$100 million to \$899 million compared to 2019. Specialty Additives and Performance Adhesives represented \$65 million and \$35 million of the decrease, respectively. Lower volume, due primarily to lower industrial demand reflecting the impact of the COVID-19 pandemic, unfavorable currency exchange, plant restructuring and lower pricing decreased sales by \$83 million, \$2 million, \$6 million and \$9 million, respectively.

Operating income/loss for the current year decreased \$152 million to a loss of \$76 million compared to 2019. Specialty Additives recorded a \$132 million loss, mostly due to a goodwill impairment, while Performance Adhesives recorded \$56 million operating income, down \$2 million from the prior year period. Goodwill impairment, inventory control measures, lower volume and increased production costs decreased operating income by \$174 million, \$18 million, \$25 million and \$5 million, respectively. Those decreases were partially offset by prior year plant restructuring/shutdown costs and favorable price/mix of \$50 million and \$20 million, respectively.

EBITDA for the current year decreased \$151 to income of \$20 million compared to 2019, a \$51 million loss in Specialty Additives and \$71 million income in Performance Adhesives, while Adjusted EBITDA decreased \$8 million to \$214 million, of which \$143 million and \$71 million originated from Specialty Additives and Performance Adhesives, respectively. Adjusted EBITDA margin increased 1.6 percentage points in 2020 to 23.8%.

2019 compared to 2018

Industrial Specialties' sales for 2019 decreased \$38 million to \$999 million compared to 2018. Specialty Additives and Performance Adhesives represented \$32 million and \$6 million of the decrease, respectively. Lower volume, unfavorable currency exchange and plant restructuring decreased sales by \$19 million, \$17 million and \$3 million, respectively. Those decreases were partially offset by favorable price/mix of \$1 million.

Operating income/loss for 2019 decreased \$40 million to income of \$76 million compared to 2018. Specialty Additives and Performance Adhesives recorded \$18 million and \$58 million operating income, respectively. Lower volume, unfavorable price/mix and restructuring costs decreased operating income by \$5 million, \$6 million and \$43 million, respectively. Those decreases were partially offset by lower costs which increased operating income by \$14 million.

EBITDA for 2019 decreased \$47 million to income of \$171 million compared to 2018, \$99 million income in Specialty Additives and \$72 million income in Performance Adhesives, while Adjusted EBITDA decreased \$4 million to \$222 million, of which \$150 million and \$72 million originated from Specialty Additives and Performance Adhesives, respectively. Adjusted EBITDA margin increased 0.4 percentage points in 2019 to 22.2%.

EBITDA and adjusted EBITDA reconciliation

The following EBITDA and Adjusted EBITDA presentation (as defined and described in the section above) for the years ended September 30, 2020, 2019 and 2018 below 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 Industrial Specialties. Adjusted EBITDA results have been prepared to illustrate the ongoing effects of Ashland's operations, which exclude certain key items.

The key items during 2020 included \$174 million related to Goodwill impairment, \$18 million for inventory control measures and \$2 million of environmental reserve adjustments for Specialty Additives.

The key items during 2019 included \$38 million of accelerated depreciation related to a planned facility closure, \$10 million of costs related to restructuring activity at certain manufacturing plants, \$2 million for an unplanned plant shutdown and \$1 million of environmental reserve adjustments for Specialty Additives.

The key items during 2018 included \$6 million of accelerated depreciation related to the termination of a contract at a manufacturing facility, \$2 million of restructuring charges and \$1 million of environmental reserve adjustments for Specialty Additives.

(In millions)	Specialty Additives			Performance Adhesives			Industrial Specialties		
	2020	2019	2018	2020	2019	2018	2020	2019	2018
Operating income	\$ (132)	\$ 18	\$ 64	\$ 56	\$ 58	\$ 52	\$ (76)	\$ 76	\$ 116
Depreciation and amortization	81	81	88	15	14	14	96	95	102
EBITDA	(51)	99	152	71	72	66	20	171	218
Restructuring and other costs	—	10	1	—	—	—	—	10	1
Goodwill impairment	174	—	—	—	—	—	174	—	—
Inventory control measures	18	—	—	—	—	—	18	—	—
Accelerated depreciation	—	38	6	—	—	—	—	38	6
Environmental reserve adjustments	2	1	1	—	—	—	2	1	1
Unplanned plant shutdown	—	2	—	—	—	—	—	2	—
Adjusted EBITDA	\$ 143	\$ 150	\$ 160	\$ 71	\$ 72	\$ 66	\$ 214	\$ 222	\$ 226

(a) Depreciation and amortization excludes accelerated depreciation of \$38 million and \$6 million for the years ended September 30, 2019 and 2018, respectively.

Intermediates and Solvents

Intermediates and Solvents is comprised of the production of 1,4 butanediol (BDO) and related derivatives, including 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 Life Sciences, Personal Care, and Specialty Additives for use as a raw material.

2020 compared to 2019

Intermediates and Solvents' sales for 2020 decreased \$31 million to \$129 million compared to 2019. Lower volume and lower pricing decreased sales by \$19 million and \$12 million, respectively.

Operating income/loss for 2020 decreased \$38 million to a loss of \$10 million compared to 2019. Inventory control measures, lower volume and unfavorable costs decreased operating income by \$9 million, \$10 million and \$19 million, respectively.

EBITDA for 2020 decreased \$37 million to \$4 million compared to 2019, while Adjusted EBITDA decreased \$28 million to \$13 million. Adjusted EBITDA margin decreased 15.5 percentage points in 2020 to 10.1%.

2019 compared to 2018

Intermediates and Solvents sales for 2019 increased \$5 million to \$160 million compared to 2018. Higher volume increased sales by \$6 million. This increase was partially offset by unfavorable foreign currency exchange which decreased sales by \$1 million.

Operating income 2019 increased \$3 million to \$28 million compared to 2018. Higher volume and price/mix increased operating income by \$1 million and \$5 million, respectively. Those increases were partially offset by unfavorable foreign currency exchange and higher costs which decreased operating income by \$1 million and \$2 million, respectively.

EBITDA increased \$2 million to \$41 million in 2019. EBITDA margin increased 0.4 percentage points in 2019 to 25.6%.

EBITDA and Adjusted EBITDA reconciliation

The following EBITDA presentation (as defined and described in the section above) for the years ended September 30, 2020, 2019 and 2018 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.

Key items for 2020 included inventory control measures of \$9 million. There were no unusual or key items that affected comparability for EBITDA during 2019 or 2018.

(In millions)	Intermediates & Solvents		
	2020	2019	2018
Operating income	\$ (10)	\$ 28	\$ 25
Depreciation and amortization	14	13	14
EBITDA	4	41	39
Inventory control measures	9	—	—
Adjusted EBITDA	\$ 13	\$ 41	\$ 39

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)	Unallocated and other		
	2020	2019	2018
Restructuring activities	\$ (58)	\$ (87)	\$ (139)
Environmental expenses	(33)	(25)	(58)
Asset impairment charges	—	—	(14)
Legal settlement/reserve	(2)	—	5
Tax indemnity expense	—	(6)	(5)
Proxy costs	—	(4)	—
Other expenses (primarily governance and legacy expenses)	(36)	(15)	(50)
Total expense	\$ (129)	\$ (137)	\$ (261)

Unallocated and other recorded expense of \$129 million, \$137 million and \$261 million for 2020, 2019, and 2018, respectively. The charges for restructuring activities of \$58 million, \$87 million and \$139 million during 2020, 2019 and 2018, respectively, were primarily comprised of the following items:

- \$58 million, \$42 million and \$49 million of severance, lease abandonment and other restructuring costs related to company-wide cost reduction programs during 2020, 2019 and 2018, respectively;
- \$4 million of impairment related to the planned sale of an office building during 2019;
- \$41 million and \$59 million of stranded divestiture costs during 2019 and 2018, respectively;
- \$10 million of costs related to the separation of Valvoline during 2018;
- \$14 million of accelerated depreciation related to the closure of an office building during 2018; and
- \$7 million of integration costs related to the acquisition of Pharmachem during 2018.

The remaining items in 2020 also included \$33 million for environmental expenses and \$2 million for legal settlement reserves.

The remaining items in 2019 primarily included \$25 million for environmental expenses, \$6 million for tax indemnity costs and \$4 million in proxy defense costs.

The remaining items in 2018 primarily included \$58 million for environmental expenses, \$50 million in governance and legacy costs, \$14 million in asset impairment charges, \$5 million income related to legal settlements and \$5 million for tax indemnity costs.

FINANCIAL POSITION

Liquidity

Ashland had \$454 million in cash and cash equivalents as of September 30, 2020, of which \$315 million was held by foreign subsidiaries and had no significant limitations that would prohibit remitting the funds to satisfy corporate obligations. In certain circumstances, if such amounts were repatriated to the United States, additional taxes might 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 taxes would need to be accrued. However, due to the Tax Act enacted in 2018, Ashland may reassess this position as it pertains to future earnings.

Ashland has taken actions and may continue to take actions intended to increase its cash position and preserve financial flexibility in light of current uncertainty in global markets. In January 2020, Ashland renewed and extended its Revolving Credit Agreement through 2025 and issued new 2.00% senior notes in Europe for €500 million which mature in 2028. During the fiscal 2020, Ashland elected to access \$80 million on its Revolving Credit Facility, with these amounts on deposit as cash and cash equivalents. As of September 30, 2020, Ashland has total remaining borrowing capacity of \$500 million, comprised of amounts remaining available under the Revolving Credit Facility. Ashland has no significant maturities related to our term loans, revolving credit facilities or bonds until August 2022.

Ashland believes that cash flow from operations, availability under existing credit facilities and arrangements, current cash and investment balances and the ability to obtain other financing, if necessary, will provide adequate cash funds for Ashland's foreseeable working capital needs, capital expenditures at existing facilities, dividend payments and debt service obligations. Ashland's cash requirements are subject to change as business conditions warrant and opportunities arise. The timing and size of any new business ventures or acquisitions that the Company may complete may also impact its cash requirements. For information regarding the impact of COVID-19 on the Company, including its liquidity and capital resources, please see Item 1A. Risk Factors in this report.

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)	2020	2019	2018
Cash provided (used) by:			
Operating activities from continuing operations	\$ 313	\$ 228	\$ 241
Investing activities from continuing operations	(90)	(118)	(174)
Financing activities from continuing operations	9	(1,149)	(368)
Discontinued operations	(12)	980	28
Effect of currency exchange rate changes on cash and cash equivalents	2	(3)	1
Net increase (decrease) in cash and cash equivalents	\$ 222	\$ (62)	\$ (272)

Ashland paid income taxes of \$91 million during 2020 compared to \$67 million in 2019 and \$77 million in 2018. Cash receipts for interest income were \$1 million in 2020, \$3 million in 2019 and \$4 million in 2018, while cash payments for interest expense amounted to \$77 million in 2020, \$124 million in 2019 and \$126 million in 2018.

Operating activities

The following discloses the cash flows associated with Ashland's operating activities for 2020, 2019 and 2018, respectively.

(In millions)	2020	2019	2018
Cash flows provided (used) by operating activities from continuing operations			
Net income (loss)	\$ (508)	\$ 505	\$ 114
(Income) loss from discontinued operations (net of tax)	17	(481)	(95)
Adjustments to reconcile income from continuing operations to cash flows from operating activities			
Depreciation and amortization	247	289	277
Original issue discount and debt issuance cost amortization	15	13	8
Deferred income taxes	(43)	20	(100)
Distributions from equity affiliates	1	—	1
Stock based compensation expense - Note P	14	21	27
Excess tax benefits on stock based compensation	1	11	4
Loss on early retirement of debt	59	—	—
Income from restricted investments	(30)	(17)	(14)
(Income) loss on acquisitions and divestitures - Notes B and C	(3)	—	1
Impairments	530	8	16
Pension contributions	(6)	(5)	(9)
Loss on pension and other postretirement plan remeasurements	—	(7)	(14)
Change in operating assets and liabilities (a)	19	(129)	25
Total cash flows provided by operating activities from continuing operations	<u>\$ 313</u>	<u>\$ 228</u>	<u>\$ 241</u>

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

Cash flows provided by operating activities from continuing operations, a major source of Ashland's liquidity, amounted to \$313 million in 2020, \$228 million in 2019 and \$241 million in 2018.

Operating Activities - Operating Assets and Liabilities

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 2020, 2019 and 2018, respectively.

(In millions)	2020	2019	2018
Cash flows from assets and liabilities (a)			
Accounts receivable	\$ 7	\$ 38	\$ (42)
Inventories	65	(4)	(24)
Trade and other payables	(50)	(79)	48
Other assets and liabilities	(3)	(84)	43
Change in operating assets and liabilities	<u>\$ 19</u>	<u>\$ (129)</u>	<u>\$ 25</u>

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

Changes in net working capital accounted for inflows of \$22 million in 2020, compared to outflows of \$45 million in 2019 and \$18 million in 2018, and were driven by the following:

- Accounts receivable – Changes in accounts receivable resulted in inflows of \$7 million and \$38 million in 2020 and 2019, respectively, compared to cash outflows of \$42 million in 2018, and were primarily related to sales volumes in each period.
- Inventory – Changes in inventory resulted in cash inflows of \$65 million in 2020 compared to cash outflows of \$4 million in 2019 and \$24 million in 2018 and were primarily driven by inventory management activities, including significant plant shut-downs in the fourth quarter of 2020.
- Trade and other payables – Changes in trade and other payables resulted in cash outflows of \$50 million and \$79 million in 2020 and 2019, respectively, compared to cash inflows of \$48 million in 2018, and primarily related to the timing of certain payments.

The remaining cash outflows of \$3 million and \$84 million for 2020 and 2019, respectively, and inflows of \$43 million during 2018, were primarily due to income taxes paid or income tax refunds, interest paid, and adjustments to certain accruals and other long-term assets and liabilities.

Operating Activities - Summary

Operating cash flows for 2020 included loss from continuing operations of \$491 million, non-cash adjustments of \$530 million for a goodwill impairment charge, \$247 million for depreciation and amortization, \$59 million loss on early retirement of debt, \$15 million original issue discounts and debt issuance cost amortization and \$43 million for deferred income taxes. Operating cash flows for 2020 also included non-cash adjustments of \$14 million related for stock-based compensation expense and \$30 million income from restricted investments.

Operating cash flows for 2019 included income from continuing operations of \$24 million, non-cash adjustments of \$289 million for depreciation and amortization and \$20 million for deferred income taxes. The adjustment for deferred income taxes during 2019 included the final adjustment related to the enactment of the Tax Act during 2018. Operating cash flows for 2019 also included non-cash adjustments of \$8 million related to asset impairment charges, \$7 million of net gains on pension and other postretirement plan remeasurements and \$13 million for debt issuance cost amortization.

Operating cash flows for 2018 included income from continuing operations of \$19 million, non-cash adjustments of \$277 million for depreciation and amortization and \$100 million for deferred income taxes. The adjustment for deferred income taxes during 2018 was significantly higher compared to prior years due to the impact from the enactment of the Tax Act during 2018. Operating cash flows for 2018 also included non-cash adjustments of \$16 million related to asset impairment charges, \$14 million of net gains on pension and other postretirement plan remeasurements and \$8 million for debt issuance cost amortization.

Investing activities

The following discloses the cash flows associated with Ashland's investing activities for 2020, 2019 and 2018.

(In millions)	2020	2019	2018
Cash flows provided (used) by investing activities from continuing operations			
Additions to property, plant and equipment	\$ (138)	\$ (154)	\$ (157)
Proceeds from disposal of property, plant and equipment	5	9	4
Purchase of operations - net of cash acquired	—	(2)	(11)
Proceeds from sale or restructuring of operations	9	—	6
Proceeds from settlement of Company-owned life insurance contracts	8	3	2
Company-owned life insurance payments	(6)	(3)	(39)
Net purchases of funds restricted for specific transactions	(3)	(7)	(10)
Reimbursement from restricted investments	35	32	33
Proceeds from sale of securities	21	348	26
Purchase of securities	(21)	(348)	(26)
Proceeds from the settlement of derivative instruments	—	6	1
Payments for the settlement of derivative instruments	—	(2)	(3)
Total cash flows used by investing activities from continuing operations	<u>\$ (90)</u>	<u>\$ (118)</u>	<u>\$ (174)</u>

Cash used by investing activities was \$90 million in 2020 compared to \$118 million and \$174 million in 2019 and 2018, respectively. The significant cash investing activities for the current year primarily related to cash outflows of \$138 million for capital expenditures. Additionally, there were reimbursements of \$35 million from the restricted renewable annual asbestos trust and \$9 million of proceeds from the sale of a manufacturing facility as well as post-closing adjustments.

The 2019 year included cash outflows of \$154 million for capital expenditures. Additionally, there were reimbursements of \$32 million from the restricted renewable annual asbestos trust.

The 2018 year included cash outflows of \$157 million for capital expenditures, \$39 million related to payments for a corporate-owned life insurance policy loan and \$11 million for the purchase of Vornia Limited. Additionally, there were reimbursements of \$33 million from the restricted renewable annual asbestos trust.

Financing activities

The following discloses the cash flows associated with Ashland's financing activities for 2020, 2019 and 2018, respectively.

(In millions)	2020	2019	2018
Cash flows provided (used) by financing activities from continuing operations			
Proceeds from issuance of long-term debt	\$ 804	\$ —	\$ —
Repayment of long-term debt	(767)	(797)	(311)
Premium on long-term debt repayment	(59)	—	—
Proceeds from (repayment of) short-term debt	115	(78)	15
Repurchase of common stock	—	(200)	—
Debt issuance costs	(11)	—	(2)
Cash dividends paid	(66)	(64)	(60)
Stock based compensation employee withholding taxes paid in cash	(7)	(10)	(10)
Total cash flows provided (used) by financing activities from continuing operations	<u>\$ 9</u>	<u>\$ (1,149)</u>	<u>\$ (368)</u>

Cash provided (used) by financing activities was \$9 million for 2020, \$(1,149) million for 2019, and \$(368) million for 2018. Significant cash financing activities for 2020 included proceeds from issuance of long-term debt, repayment of long-term debt, premiums paid on retirement of long-term debt, and debt issuance costs paid of \$804 million, \$767 million, \$59 million and \$11 million, respectively, all related to debt refinancing activity. See note I for additional information. 2020 also included short-term cash inflows of \$115 million, primarily related to draws on the 2020 Revolving Credit Facility and cash dividends paid of \$1.10 per share, for a total of \$66 million.

Significant cash financing activities for 2019 included a cash outflow of \$797 million for repayments of long-term debt, including \$593 million for the full repayment of the term loan B facility, \$195 million for the full repayment of the five-year term loan A facility, \$5 million for repayments of the Series B – 9.35% Medium Term Notes, \$3 million for repayments of the 4.75% Senior Notes due 2022, and \$1 million for the 6.875% Senior Notes due 2043. 2019 also included short-term debt net repayments of \$78 million related to the revolving credit facility, the accounts receivable securitization facilities and a short-term loan facility. The revolving credit facility and the outstanding balance of the three-year term loan A facility were repaid primarily using cash from repatriations. 2019 included cash dividends paid of \$1.05 per share, for a total of \$64 million.

Significant cash financing activities for 2018 included a cash outflow of \$311 million for repayments of long-term debt, including \$250 million for the full repayment of the three-year term loan A facility, \$55 million for early repayments of the five-year term loan A facility and \$6 million for repayments of the term loan B facility. Financing activities for 2018 also included short-term debt net proceeds of \$15 million related to the revolving credit facility, the accounts receivable securitization facilities and a short-term loan facility. The revolving credit facility and the outstanding balance of the three-year term loan A facility were repaid primarily using cash from repatriations. 2018 included cash dividends paid of \$0.95 per share, for a total of \$60 million.

Cash provided (used) by discontinued operations

The following discloses the cash flows associated with Ashland’s discontinued operations for 2020, 2019 and 2018, respectively.

(In millions)	2020	2019	2018
Cash provided (used) by discontinued operations			
Operating cash flows	\$ (110)	\$ 13	\$ 56
Investing cash flows	98	967	(28)
Total cash provided (used) by discontinued operations	<u>\$ (12)</u>	<u>\$ 980</u>	<u>\$ 28</u>

Cash flows for discontinued operations in 2020, 2019 and 2018 primarily related to net cash inflows of \$98 million related to the sale of the Maleic business and \$59 million cash outflows for tax payments associated with the sale of the Composites business and Marl facility in 2020 and \$1 billion (which includes net proceeds from the completed sale of the Composites business (excluding the Maleic business) and Marl facility of \$972 million) and \$74 million related to the divestiture of the Composites business (including the Maleic business) and Marl facility in 2019 and 2018, respectively. The remaining cash flows for discontinued operations for these years 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		
	2020	2019	2018
Cash flows provided by operating activities from continuing operations	\$ 313	\$ 228	\$ 241
Less:			
Additions to property, plant and equipment	(138)	(154)	(157)
Free cash flows (a)	<u>\$ 175</u>	<u>\$ 74</u>	<u>\$ 84</u>

(a) Included \$30 million, \$61 million and \$39 million of restructuring-related and separation payments during 2020, 2019 and 2018, respectively.

At September 30, 2020, working capital (current assets minus current liabilities, excluding long-term debt due within one year) amounted to \$734 million, compared to \$676 million at the end of 2019. Liquid assets (cash, cash equivalents and accounts receivable) amounted to 114% of current liabilities at September 30, 2020 and 94% at September 30, 2019.

The following summary reflects Ashland's cash, investment securities and unused borrowing capacity as of September 30, 2020, 2019 and 2018.

(In millions)	September 30		
	2020	2019	2018
Cash and cash equivalents	\$ 454	\$ 232	\$ 294
Unused borrowing capacity			
Revolving credit facility	\$ 500	\$ 752	\$ 725
Accounts receivable securitizations	—	48	29

During the current year, Ashland entered into a new revolving credit facility. The borrowing capacity remaining under the new \$600 million revolving credit facility was \$500 million due to an outstanding balance of \$80 million and a reduction of \$20 million for letters of credit outstanding at September 30, 2020. In total, Ashland's available liquidity position, which includes cash, the revolving credit facilities and accounts receivable securitization facilities, was \$954 million at September 30, 2020 as compared to \$1,032 million at September 30, 2019 and \$1,048 million at September 30, 2018. 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, 2020 and 2019.

(In millions)	September 30	
	2020	2019
Short-term debt (includes current portion of long-term debt)	\$ 280	\$ 166
Long-term debt (less current portion and debt issuance cost discounts) (a)	1,573	1,501
Total debt	<u>\$ 1,853</u>	<u>\$ 1,667</u>

(a) Includes \$15 million and \$12 million of debt issuance cost discounts as of September 30, 2020 and 2019, respectively.

During the current year, Ashland entered into a new credit facility, the 2020 Credit Agreement, which was comprised of a \$600 million, 5-year credit facility and a \$250 million 5-year term loan. Additionally, Ashland issued new 8-year Senior notes in Europe, for approximately \$554 million. The proceeds of these debt issuances were primarily used to tender for \$767 million of Senior notes. See Note I for more information.

The current portion of long-term debt was zero at September 30, 2020. Debt as a percent of capital employed was 38% at September 30, 2020 and 32% at September 30, 2019. At September 30, 2020, Ashland's total debt had an outstanding principal

balance of \$1,910 million, discounts of \$42 million and debt issuance costs of \$15 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: zero in 2021, \$421 million in 2022, \$22 million in 2023, \$44 million in 2024 and \$175 million in 2025.

Credit Agreements and Refinancing

2020 Credit Agreement

During January 2020, Ashland LLC and Ashland Services B.V., indirect and wholly owned subsidiaries of Ashland, entered into a new senior unsecured credit agreement (the 2020 Credit Agreement) with a group of lenders, replacing the 2017 Credit Agreement. The 2020 Credit Agreement provides for (i) a \$600 million unsecured five-year revolving credit facility (the 2020 Revolving Credit Facility) and (ii) a \$250 million unsecured five-year term loan facility (the 2020 Term Loan Facility). The 2020 Credit Agreement is guaranteed by Ashland Global Holdings Inc. and Ashland Chemco Inc., and the obligations of Ashland Services B.V. under the 2020 Revolving Credit Facility are guaranteed by Ashland LLC. Proceeds of borrowings under the 2020 Revolving Credit Facility were used to refinance the Ashland's existing 2017 Credit Agreement, to provide ongoing working capital and for other general corporate purposes. The proceeds under the 2020 Term Loan Facility were used to refinance a portion of Ashland's outstanding 4.750% Senior Notes due 2022, 6.875% Senior Notes due 2043 and Hercules LLC's 6.500% junior subordinated debentures.

At Ashland's option, loans issued under the 2020 Credit Agreement bear interest at either LIBOR or an alternate base rate, in each case plus the applicable interest rate margin. Loans initially bear interest at LIBOR plus 1.375% per annum, in the case of LIBOR borrowings, or at the alternate base rate plus 0.375%, 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 1.250% per annum and LIBOR plus 1.750% per annum (or between the alternate base rate plus 0.250% per annum and the alternate base rate plus 0.750% annum), based upon the consolidated net leverage ratio (as defined in the 2020 Credit Agreement) at such time. In addition, Ashland is initially required to pay fees of 0.20% per annum on the daily unused amount of the 2020 Revolving Facility through and including the date of delivery of a compliance certificate, and thereafter the fee rate will fluctuate between 0.15% and 0.30% per annum, based upon the consolidated net leverage ratio. The Credit Facilities may be prepaid at any time without premium. The term loan A (TLA) Facility will not amortize in each of the first and second years and will amortize at a rate of 5.0% per annum, 10% per annum and 20% per annum in the third, fourth and fifth years, respectively (payable in equal quarterly installments), with the outstanding balance of the TLA Facility to be paid on January 10, 2025.

The 2020 Credit Agreement contains financial covenants for leverage and interest coverage ratios akin to those in effect under the 2017 Credit Agreement. The 2020 Credit Agreement contains usual and customary representations, warranties and affirmative and negative covenants, including financial covenants for leverage and interest coverage ratios, limitations on liens, additional indebtedness, further negative pledges, investments, mergers, sale of assets and restricted payments, and other customary limitations.

Ashland incurred \$4 million of new debt issuance costs in connection with the 2020 Credit Agreement, of which \$1 million was expensed immediately during 2020 within the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss). The remaining balance is amortized using either the effective interest method or straight-line method.

Financing activity related to the 2017 Credit Agreement

On May 22, 2018, Ashland entered into Amendment No. 3 to the 2017 Credit Agreement which provided for the re-pricing of the 2017 TLB Facility. Due to this amendment, loans issued under the 2017 TLB Facility bear interest at LIBOR plus 1.75% per annum (previously LIBOR plus 2.00% per annum). All other significant terms of the agreement remained unchanged. Ashland incurred \$1 million of new debt issuance costs in connection with the re-pricing, which was expensed during 2018 within the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

During 2018, Ashland utilized cash primarily from repatriations and borrowings from the accounts receivable securitization facilities to fully repay the \$250 million outstanding balance of the Three-Year TLA Facility and to repay \$55 million of the Five-Year TLA Facility. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of less than \$1 million during 2018, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

During 2019, Ashland utilized proceeds from the sale of its Composites business (excluding the Maleic business) and the Marl facility to repay the remaining principal balance of the TLA Facility and the TLB Facility. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of \$6 million during 2019, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

During January 2020, Ashland entered into the 2020 Credit Agreement, replacing the 2017 Credit Agreement. As a result of the termination of the 2017 Credit Agreement, Ashland recognized a \$1 million charge for accelerated amortization of previously capitalized debt issuance costs during 2020, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Note Issuance and existing notes tender

During January 2020, a subsidiary of Ashland, Ashland Services B.V., completed the issuance of 2.00% senior unsecured notes due 2028 with an aggregate principal amount of €500 million (the 2028 Notes). The notes are senior unsecured obligations of Ashland Services B.V and initially guaranteed on an unsecured basis by each of Ashland Global Holdings Inc. and Ashland LLC. Ashland used the net proceeds of the offering (after deducting initial purchasers' discounts and other fees and expenses), together with the proceeds of the new term loan facility and other funds of Ashland LLC or its subsidiaries, to repurchase the existing notes described below in cash tender offers, and to pay fees and expenses associated therewith.

Ashland incurred \$8 million of new debt issuance costs in connection with the 2028 Notes, which is amortized using the effective interest method over the Notes' term.

Debt repayments and repurchases

Cash repatriation

During 2020 and 2019, Ashland repatriated approximately \$576 million (including the proceeds of the 2020 senior notes due 2028) and \$900 million, respectively, in cash that was primarily used to repay existing debt, principally portions of the 4.75% senior notes due 2022, the 6.875% senior notes due 2043 and the 6.5% junior notes in 2020 and the TLA Facility and TLB Facility in 2019 (as previously discussed).

2020 Debt repayments and repurchases

Tender offers of 4.750% notes due 2022

During 2020, Ashland executed tender offers of its 4.750% notes due 2022 (the 2022 Notes). As a result of these repurchases, the carrying values of the 2022 Notes was reduced by \$670 million. Ashland recognized a \$5 million charge related to accelerated accretion on debt discounts and accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Tender offers of 6.875% notes due 2043

During 2020, Ashland executed tender offers of its 6.875% notes due 2043 (the 2043 Notes). As a result of these repurchases, the carrying values of the 2043 Notes was reduced by \$92 million. Ashland recognized a \$1 million charge related to accelerated accretion on debt premiums and accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Tender offers of 6.500% Junior Subordinated Debentures due 2029

During 2020, Ashland executed tender offers of Hercules LLC's 6.500% junior subordinated debentures due 2029 (the 2029 Junior Debentures). As a result of these repurchases, the carrying values of the 2029 Junior Debentures was reduced by \$2 million.

Total premiums paid for all the tender offers in 2020 noted above were \$59 million, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

2019 Debt repayments and repurchases

Repayment of the Term loan A due 2022

During 2019, Ashland repaid all of the outstanding principal balance of its term loan A for a total of \$195 million. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of \$1 million during 2019, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Repayment of the Term loan B due 2024

During 2019, Ashland repaid all of the outstanding principal balance of its term loan B for a total of \$593 million. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of \$5 million during 2019, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Redemption of 9.35% notes due 2019

During 2019, Ashland redeemed all of its outstanding 9.35% medium term notes due 2019, of which approximately \$5 million were outstanding. Cash on hand was used to pay for the redemption.

Open market repurchases of 4.750% notes due 2022 and 6.875% notes due 2043

During 2019, Ashland executed open market repurchases of its 4.750% notes due 2022 (2022 Senior Notes) and its 6.875% notes due 2043 (2043 Senior Notes). As a result of these repurchases, the carrying values of the 2022 and 2043 Senior Notes were reduced by \$3 million and \$1 million, respectively.

Accounts receivable securitizations

2018 accounts receivable securitization

During July 2018, Ashland entered into a €115 million accounts receivable securitization facility (the Program) for the transfer by certain subsidiaries of Ashland (the Sellers) directly or indirectly to Ester Finance Titrisation (the Purchaser), a wholly-owned subsidiary of Crédit Agricole Corporate and Investment Bank (the Arranger), of certain receivables and/or collections originated by the Sellers towards certain corporate debtors located in multiple European jurisdictions and denominated in multiple currencies. The Program originally had a term of two years but was extended to August 2021 in September 2019. During July 2020, the available funding for qualified receivables under the accounts receivable securitization facility decreased from €115 million to €100 million.

Under the Program, each Seller will assign, on an ongoing basis, certain of its accounts receivable and the right to the collections on those accounts receivable to the Purchaser. Under the terms of the Program, the Sellers could, from time to time, obtain up to €100 million from the Purchaser through the sale of an undivided interest in such accounts receivable and collections. 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 Program will be repaid as accounts receivable are collected, with new fundings being advanced (through daily advanced purchase price) as new accounts receivable are originated by the Sellers and assigned to the Purchaser, with settlement occurring monthly. Ashland classifies any borrowings under this facility as a short-term debt instrument within the Consolidated Balance Sheets. Once sold to the Purchaser, the accounts receivable and rights to collection described above are separate and distinct from each Sellers' own assets and are not available to its creditors should such Sellers become insolvent.

At September 30, 2020 and 2019, the outstanding amount of accounts receivable transferred by Ashland to the Purchaser was \$131 million and \$133 million, respectively, and there were \$93 million and \$94 million, respectively, of borrowings (denominated in multiple currencies) under the facility. The weighted-average interest rate for this instrument was 1.2% for both 2020 and 2019.

2012 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.

Under the Sale Agreement, each Originator transfers, on an ongoing basis, certain of its accounts receivable, certain related assets and the right to the collections on those accounts receivable to CVG. 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.

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 March 2017, this facility was extended for an additional year with similar terms as the previous facility agreement. During March 2018, the termination date of the accounts receivable securitization facility was extended from March 2018 to March 2020. During March 2020, the termination date of the accounts receivable securitization was extended from March 2020 to March 2021. The available funding for qualified receivables under the accounts receivable securitization facility increased from \$100 million to \$115 million, however this was decreased back to \$100 million on August 30, 2019 in conjunction with the Composites and Marl facility divestiture. No other changes to the agreement are expected to have a significant impact to Ashland’s results of operations and financial position.

At September 30, 2020 and 2019, the outstanding amount of accounts receivable transferred by Ashland to CVG was \$151 million and \$147 million, respectively. There were \$84 million of borrowings under the facility as of September 30, 2020, while Ashland had \$50 million of borrowings under the facility as of September 30, 2019. The weighted-average interest rate for this instrument was 1.8% for 2020 and 3.3% for 2019.

Other debt

At September 30, 2020 and 2019, Ashland held other debt totaling \$81 million for each period, respectively, comprised primarily of a European short-term loan facility, the 6.50% notes due 2029 and other notes.

Ashland debt covenants 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, 2020, 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 2020 Credit Agreement) is 4.0. The 2020 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 2020 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, non-cash 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 non-cash 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-13. 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. At September 30, 2020, Ashland's calculation of the consolidated net leverage ratio was 2.7.

The minimum required consolidated interest coverage ratio under the 2020 Credit Agreement is 3.0. The 2020 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, 2020, Ashland's calculation of the consolidated interest coverage ratio was 7.6.

Any change in Covenant Adjusted EBITDA of \$100 million would have an approximate 0.4x effect on the consolidated net leverage ratio and a 1.5x 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 ratings remained unchanged at BB+ by Standard & Poor's and Ba1 by Moody's Investor Services. As of September 30, 2020, Moody's Investor Services outlook remained at stable, while Standard & Poor's outlook remained at negative. Subsequent changes to these ratings or outlook 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 believes that cash flow from operations, availability under existing credit facilities and arrangements, current cash and investment balances and the ability to obtain other financing, if necessary, will provide adequate cash funds for the Company's foreseeable working capital needs, capital expenditures at existing facilities, pending acquisitions, dividend payments and debt service obligations. The Company's cash requirements are subject to change as business conditions warrant and opportunities arise. The timing and size of any new business ventures or acquisitions that the Company may complete may also impact its cash requirements. For information regarding the impact of COVID-19 on the Company, including on its liquidity and capital resources, please see item 1A, Risk Factors in this report.

Total Equity

Total equity was \$3,036 million and \$3,571 million at September 30, 2020 and September 30, 2019, respectively. During 2020, there were increases of \$27 million for deferred translation gains and \$13 million for common shares issued under stock incentive plans. These increases were offset by decreases of \$508 million from net loss and \$67 million for dividends paid during 2020.

Stock repurchase programs

During March 2018, Ashland's Board of Directors approved a new \$1 billion stock repurchase program, which replaced the 2015 stock repurchase program. Under the new program, Ashland's common shares may be repurchased in open market transactions, privately negotiated transactions or pursuant to one or more accelerated stock repurchase programs or Rule 10b5-1 plans. As of September 30, 2020, \$800 million remained available for repurchase under this authorization.

Stock repurchase program agreements

In May 2019, under the 2018 stock repurchase program, Ashland announced that it entered into an accelerated share repurchase agreement (2019 ASR Agreement). Under the 2019 ASR Agreement, Ashland paid an initial purchase price of \$200 million and received an initial delivery of 2.2 million shares of common stock during May 2019. The bank exercised its early termination option under the 2019 ASR Agreement in August 2019, and an additional 400 thousand shares were repurchased, bringing the total shares repurchased upon settlement to 2.6 million.

Stockholder dividends

Ashland paid dividends per common share of \$1.10, \$1.05 and \$0.95 during 2020, 2019 and 2018, respectively.

In May 2019, the Board of Directors of Ashland announced a quarterly cash dividend of 27.5 cents per share to eligible stockholders at record, which represented an increase from the previous quarterly cash dividend of 25.0 cents per share. This dividend was paid in the third and fourth quarters of fiscal 2019 and each quarter of fiscal 2020.

In May 2018, the Board of Directors of Ashland announced a quarterly cash dividend of 25 cents per share to eligible stockholders at record, which represented an increase from the previous quarterly cash dividend of 22.5 cents per share. This dividend was paid in the third quarter and fourth quarters of fiscal 2018 and the first and second quarters of fiscal 2019.

Capital expenditures

Capital expenditures were \$138 million for 2020 and averaged \$150 million during the last three years. A summary of capital expenditures by reportable segment during 2020, 2019 and 2018 follow.

(In millions)	2020	2019	2018
<i>Life Sciences</i>	\$ 51	\$ 54	\$ 43
<i>Personal Care & Household</i>	13	20	18
<i>Consumer Specialties</i>	64	74	61
<i>Specialty Additives</i>	59	57	65
<i>Performance Adhesives</i>	5	6	12
<i>Industrial Specialties</i>	64	63	77
<i>Intermediates and Solvents</i>	5	7	5
Unallocated and other	5	10	14
Total capital expenditures	<u>\$ 138</u>	<u>\$ 154</u>	<u>\$ 157</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 two years is as follows.

(In millions)	2020	2019
Capital employed (a)		
<i>Life Sciences</i>	\$ 1,879	\$ 1,859
<i>Personal Care & Household</i>	885	1,293
<i>Consumer Specialties</i>	2,764	3,152
<i>Specialty Additives</i>	1,506	1,681
<i>Performance Adhesives</i>	562	576
<i>Industrial Specialties</i>	2,068	2,257
<i>Intermediates and Solvents</i>	\$ 143	\$ 165

(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 \$1,945 million and \$2,055 million as of September 30, 2020 and 2019, respectively. Additionally, net assets held for sale were \$6 million and \$52 million as of September 30, 2020 and 2019, 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, 2020. 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)	\$ 155	\$ 64	\$ 81	\$ 7	\$ 3
Employee benefit obligations (b)	67	10	13	13	31
Operating lease obligations (c)	192	28	52	24	88
Debt	1,910	280	442	219	969
Interest payments (d)	658	65	108	83	402
Unrecognized tax benefits (e)	171	—	—	—	171
One-time transition tax (f)	55	5	10	23	17
Total contractual obligations	<u>\$ 3,208</u>	<u>\$ 452</u>	<u>\$ 706</u>	<u>\$ 369</u>	<u>\$ 1,681</u>
Other commitments					
Letters of credit (g)	\$ 71	\$ 71	\$ —	\$ —	\$ —

(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 2020 as well as projected benefit payments through 2029 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, 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, 2020.

(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) As a result of the Tax Act enacted during fiscal year 2018, Ashland has currently recorded a \$55 million liability for the one-time transition tax. This liability will be payable over six years.

(g) 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 ESTIMATES

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, environmental remediation, asbestos litigation, long-lived assets (including goodwill and other intangible assets) and income taxes. 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.

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, 2020, such locations included 81 waste treatment or disposal sites where Ashland has been identified as a potentially responsible party under Superfund or similar state laws, 113 current and former operating facilities and about 1,225 service station properties, of which 25 are being actively remediated. See Note N of the Notes to Consolidated Financial Statements for additional information.

Ashland's reserves for environmental remediation and related environmental litigation amounted to \$200 million at September 30, 2020 compared to \$186 million at September 30, 2019 of which \$150 million at September 30, 2020 and \$143 million at September 30, 2019 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, 2020 and 2019, Ashland's recorded receivable for these probable insurance recoveries was \$15 million and \$13 million, respectively, of which \$12 million, respectively, were classified in other noncurrent assets in the Consolidated Balance Sheets.

During 2020, 2019 and 2018, Ashland recognized \$48 million, \$30 million and \$60 million of expense, respectively, for certain environmental liabilities related to normal ongoing remediation cost estimate updates for sites, which is consistent with Ashland's historical environmental accounting policy.

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 \$475 million. The largest reserve for any site is 14% of the remediation reserve.

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 has retained third party actuarial experts Nathan Associates, Inc. (Nathan). The methodology used by Nathan 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, Nathan 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 (Loss). 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 Nathan.

During the most recent update completed during 2020, it was determined that the liability for Ashland asbestos-related claims should be increased by \$13 million. Total reserves for asbestos claims were \$335 million at September 30, 2020 compared to \$352 million at September 30, 2019.

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.

At September 30, 2020, Ashland's receivable for recoveries of litigation defense and claim settlement costs from insurers amounted to \$103 million (excluding the Hercules receivable for asbestos claims). Receivables from insurers amounted to \$123 million at September 30, 2019. During 2020, 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 \$1 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 Nathan. As a result of the most recent annual update of this estimate, completed during 2020, it was determined that the liability for Hercules asbestos-related claims should be

decreased by \$3 million. Total reserves for asbestos claims were \$229 million at September 30, 2020 compared to \$252 million at September 30, 2019.

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 of September 30, 2020 and 2019, the receivables from insurers amounted to \$47 million and \$49 million, respectively. During 2020, 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 \$2 million decrease 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 \$520 million for the Ashland asbestos-related litigation (current reserve of \$335 million) and approximately \$350 million for the Hercules asbestos-related litigation (current reserve of \$229 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.

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 2020, 2019 and 2018 was \$162 million, \$199 million and \$183 million, respectively. Depreciation expense for 2020, 2019 and 2018 included zero, \$39 million and \$14 million, respectively, in accelerated depreciation. Capitalized interest for 2020 was \$2 million and zero for 2019 and 2018.

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 \$85 million for 2020, \$86 million for 2019 and \$93 million for 2018.

Goodwill

Ashland accounts for goodwill and other intangible assets acquired in a business combination in conformity with current accounting guidance which does not allow for goodwill and indefinite-lived intangible assets to be amortized.

Ashland reviews goodwill for impairment annually as of July 1 or when events and circumstances indicate an impairment may have occurred. Ashland tests goodwill for impairment by comparing the estimated fair value of the reporting units to the related carrying value. If the fair value of the reporting unit is lower than its carrying amount, goodwill is written down for the amount by which the carrying amount exceeds fair value. However, the loss recognized cannot exceed the carrying amount of goodwill. Reporting units are defined as either operating segments or one level below the operating segments for which discrete financial information is available and reviewed by the business management. During the second quarter of fiscal 2020, Ashland realigned its operations which resulted in a reassessment of the Company's reporting units used to evaluate goodwill impairment. The Company's reporting units align with its reportable segments. Ashland determined that its reporting units are Life Sciences, Personal Care & Household, Specialty Additives, Performance Adhesives, Intermediates and Solvents and Unallocated and Other. Prior to the business realignment, the reporting units consisted of Ashland Specialty Ingredients, Intermediates and Solvents and Unallocated and Other. The Ashland Specialty Ingredients reporting unit contained all of Ashland's reported goodwill at September 30, 2019.

Ashland makes various estimates and assumptions in determining the estimated fair value of each reporting unit 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. Discounted cash flow models are highly reliant on various assumptions, including projected business results, long-term growth factors and weighted-average cost of capital. Management judgement is involved in estimating these variables, and they include inherent uncertainties since they are forecasting future events. Ashland performs sensitivity analyses by using a range of inputs to confirm the reasonableness of the long-term growth rate and weighted average cost of capital estimates. Additionally, Ashland compares the indicated equity value to Ashland's market capitalization and evaluates the resulting implied control premium/discount to determine if the estimated enterprise value is reasonable compared to external market indicators.

Ashland tested goodwill for impairment for each reporting unit both immediately before and immediately after the business realignment during the second quarter of fiscal 2020. The fair values of the reporting units were 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.

The goodwill impairment test under the former reporting unit structure concluded that no impairment existed during the second quarter of fiscal 2020. Ashland then allocated goodwill to the new reporting unit structure using a relative fair value approach and re-assessed goodwill for impairment for each of its new reporting units. The impairment test under the new reporting unit structure concluded that Life Sciences and Performance Adhesives fair values were in excess of the carrying amounts by more than 10%. The carrying values of the Personal Care & Household reporting unit and the Specialty Additives reporting unit exceeded the respective fair values, resulting in a non-cash goodwill impairment charge of \$530 million, which was recorded within the Goodwill impairment caption within the Statement of Consolidated Comprehensive Income (Loss) for the year ended September 30, 2020. The Personal Care & Household goodwill impairment charge was due in large part to lower growth and lower margins since the acquisitions of the Oral Care and Avoca businesses, including the loss of certain customers, which collectively have resulted in reduced cash flow projections. The Specialty Additives goodwill impairment charge was also due in large part to lower growth and lower margins within the global construction and energy end markets, which collectively have resulted in reduced cash flow projections.

Ashland performed its annual goodwill impairment using the quantitative approach as of July 1, 2020 and concluded there was no impairment as of that date. Other than the Specialty Additives reporting unit, each of the Company's reporting units exceeded business performance expectations as established during the interim goodwill impairment assessment performed in the second quarter of 2020. Specialty Additives results reflected the downward pressure on demand that adversely impacted results as the COVID-19 pandemic continued. The impairment test at July 1, 2020 concluded that the Life Science reporting unit and the Performance Adhesives reporting unit both had fair values significantly in excess of their respective carrying amounts. The Specialty Additives reporting unit fair value exceeded its carrying value by 12%, which reflects the impact of Ashland's cost reduction initiatives and improved outlook as coatings and construction markets improve. Ashland compared the total fair values of the reporting units to Ashland's market capitalization at July 1, 2020, including the implied control premium, to determine if the fair values are reasonable compared to external market indicators. Ashland believes its use of significant assumptions within its valuation models are reasonable estimates of likely future events. Subsequent to this annual impairment test, no additional indications of an impairment were identified.

Significant assumptions inherent in the valuation methodologies include estimates of future projected business results (principally revenue and EBITDA), long-term growth rates, and the weighted-average cost of capital. Ashland performed sensitivity analyses by using a range of inputs to confirm the reasonableness of long-term growth rate and weighted average cost of capital estimates. Significant assumptions utilized in the impairment analysis performed during the second quarter of 2020 included the weighted-average cost of capital, ranging between 9.0% and 10.5%, and terminal growth rate, ranging between 2.0% and 4.0% depending on the reporting unit. Significant assumptions utilized in the impairment analysis performed during the fourth quarter of 2020 included the weighted-average cost of capital, ranging between 9.0% and 11.5%, and terminal growth rate, ranging between 2.0% and 4.0% depending on the reporting unit. Specific to the Specialty Additives reporting unit, certain risk factor components within the weighted average cost of capital estimate were adjusted upward to factor business performance risk and continued risk in the future outlook. Based on sensitivity analysis performed on two key assumptions in the discounted cash flow model at July 1, 2020, a 1% decrease in the long-term growth factor assumption or a 1% increase in the weighted average cost of capital assumption across each of Ashland's reporting units, including Specialty Additives, would not have resulted in a fair value below the respective reporting units carrying value. For further information, see Note H of Notes to the Consolidated Financial Statements.

Other indefinite-lived intangible assets

Other indefinite-lived intangible assets include certain trademarks and trade names. Ashland reviews these intangible assets for possible impairment annually as of July 1 or whenever events or changes in circumstances indicate that carrying amounts may not be recoverable. If the carrying value of an individual indefinite-lived intangible asset exceeds its fair value, the asset is written down to its fair value and the amount of the write down is the impairment charge. Similar to its annual assessment for goodwill, Ashland performs a quantitative test for impairment.

When a quantitative analysis is performed, Ashland tests these assets using a “relief-from-royalty” valuation method to determine the fair value. Significant assumptions inherent in the valuation methodologies include, but are not limited to, future projected business results, growth rates, the weighted-average cost of capital for a market participant, and royalty and discount rates.

In conjunction with the July 1 annual assessment of indefinite-lived intangible assets, Ashland’s quantitative approach 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 on any of these assets classified currently as having indefinite lives, including goodwill, could change in future periods if significant events happen and/or circumstances change that effect the previously mentioned assumptions. Significant assumptions inherent in the valuation methodologies 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. 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. 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 and credit 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, Ashland considers 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.

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, 2020, 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 Stockholders, 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 and expected effects of the COVID-19 pandemic on Ashland's business, 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, cost savings 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 Ashland has made or may make (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); execution risks associated with our growth strategies; the competitive nature of our business; severe weather, natural disasters, public health crises (including the COVID-19 pandemic), cyber events and legal proceedings and claims (including product recalls, environmental and asbestos matters); the effects of the COVID-19 pandemic on the geographies in which Ashland operates, the end markets Ashland serves and on Ashland's supply chain and customers; and 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 Form 10-K. Various risks and uncertainties may cause actual results to differ materially from those stated, projected or implied by any forward-looking statements. The extent and duration of the COVID-19 pandemic on our business and operations is uncertain. Factors that influence the impact on our business and operations include the duration and extent of the pandemic, the extent of imposed or recommended containment and mitigation measures, and the general economic consequences of the pandemic. 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, 2020 and 2019, 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, 2020.

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 Proxy for its 2021 Annual Meeting.

Management assessed the effectiveness of Ashland's internal control over financial reporting as of September 30, 2020. 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, 2020.

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, 2020 and the effectiveness of Ashland's internal control over financial reporting as of September 30, 2020. The reports of the independent registered public accounting firm are contained in this Annual Report on Form 10-K.

/s/ Guillermo Novo
Guillermo Novo
Chairman of the Board and Chief Executive Officer

/s/ J. Kevin Willis
J. Kevin Willis
Senior Vice President and Chief Financial Officer

November 23, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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

Opinion on Internal Control Over Financial Reporting

We have audited Ashland Global Holdings Inc. and Consolidated Subsidiaries' internal control over financial reporting as of September 30, 2020, 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). In our opinion, Ashland Global Holdings Inc. and Consolidated Subsidiaries (the Company) maintained, in all material respects, effective internal control over financial reporting as of September 30, 2020, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of September 30, 2020 and 2019, the related consolidated statements of comprehensive income (loss), equity and cash flows for each of the three years in the period ended September 30, 2020, and the related notes and our report dated November 23, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's 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 are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. 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.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (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.

/s/ Ernst & Young LLP

Cincinnati, Ohio
November 23, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

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

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Ashland Global Holdings Inc. and Consolidated Subsidiaries (the Company) as of September 30, 2020 and 2019, the related consolidated statements of comprehensive income (loss), equity and cash flows for each of the three years in the period ended September 30, 2020, and the related notes (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at September 30, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended September 30, 2020, 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) (PCAOB), the Company's internal control over financial reporting as of September 30, 2020, 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 23, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Valuation of Environmental Remediation Reserves

Description of the Matter

At September 30, 2020, the reserves for environmental remediation amounted to \$200 million. As discussed within Note N of the consolidated financial statements, the 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 and probable of being incurred, without regard to any third-party recoveries. The Company 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. Ashland regularly adjusts its reserves as environmental remediation continues.

Auditing the environmental remediation reserve was complex due to inherent uncertainties that affect Ashland's ability to estimate its share of the probable costs. Such uncertainties involve assumptions regarding the nature and extent of contamination at each site, the nature and extent of

required cleanup efforts under existing environmental regulations, the duration and effectiveness of the chosen remedial strategy, and changes in environmental regulations.

*How We
Addressed the
Matter in Our
Audit*

We obtained an understanding, evaluated the design and tested the operating effectiveness of relevant controls over Ashland's environmental remediation process. For example, we tested controls over the Company's annual training process for the setting of reserves, management's review of the assumptions used in determining the probability and the development of the environmental reserve estimates. We also tested management's controls over the completeness and accuracy of the underlying data used in the reserve estimates.

To test the environmental reserves, we performed audit procedures that included, among others: assessing the appropriateness of Ashland's policies and procedures and testing the significant assumptions discussed above and the underlying data used by Ashland in its analysis. We obtained an understanding of the assumptions underlying the reserves through discussions with Ashland's remediation project managers. We also involved our environmental reserve subject matter specialists to evaluate the reasonableness of management's estimates, including consideration of information available on regulatory databases in the public domain that was assessed for possible contrary evidence. With the support of our environmental reserve subject matter specialists, we evaluated whether the method, models and assumptions utilized in estimating the reserve balances were appropriate based on testing of engineering studies and historical experience.

Valuation of Asbestos Litigation Reserve

*Description of
the Matter*

At September 30, 2020, the reserves for asbestos litigation amounted to \$564 million. As discussed within Note N of the consolidated financial statements, Ashland has liabilities from claims alleging personal injury caused by exposure to asbestos. Ashland retained third party actuarial experts to assist in developing and annually updating independent reserve estimates for future asbestos claims and related costs given various assumptions. The methodology used by the actuarial experts 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. Further, the claim experience identified is compared to the results of previously conducted third party epidemiological studies estimating the number of people likely to develop asbestos-related diseases. Using that information, the Company 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, 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 the Company's third party actuarial experts.

Auditing the Company's asbestos litigation reserve is complex and highly judgmental due to uncertainty associated with the estimate of projected future asbestos costs. The methodology employed by management to develop the estimate of projected future asbestos costs is subject to assumptions such as the number of claims that may be received in the future, the type and severity of disease alleged by claimant, the related costs incurred in resolving those claims, the mortality rates, and the dismissal rates. These assumptions have a significant effect on the asbestos litigation reserve.

*How We
Addressed the
Matter in Our
Audit*

We obtained an understanding, evaluated the design and tested the operating effectiveness of internal controls over the asbestos litigation reserves process. These include controls over management's assessment of the assumptions utilized within the estimate, management's

oversight of asbestos trends including claims movement and costs incurred, and the completeness and accuracy of the underlying data utilized to project future costs.

To evaluate the reasonableness of the reserve for asbestos litigation, our audit procedures included testing the completeness and accuracy of the underlying claims data provided to management's actuarial experts utilized to project future costs. Additionally, we evaluated the claims and spend activity from legal letters obtained from internal and external legal counsel. Furthermore, we involved our actuarial subject matter specialists to assist in the evaluation of the methodologies and assumptions applied by management's experts as described above to determine the appropriateness of the asbestos litigation reserve, to independently prepare an estimated range of the liability. We then assessed the reasonableness of the Company's recorded reserve against our independently calculated range.

Impairment Analyses of Goodwill of the Specialty Additives Reporting Unit

Description of the Matter

At September 30, 2020, goodwill was \$1,758 million, and included \$444 million related to the Specialty Additives reporting unit. As disclosed in Notes A and H to the consolidated financial statements, goodwill is tested for impairment annually on July 1 and whenever events or circumstances make it more likely than not that impairment may have occurred. During the second quarter of 2020, in connection with a change in reporting units, the Company recognized a partial impairment of \$174 million related to its Specialty Additives reporting unit.

Auditing management's goodwill impairment assessments for the Specialty Additives reporting unit was complex due to the significant estimation required to determine the fair value of the reporting unit. The fair value of each reporting unit is based equally on the market approach using transaction multiples and the income approach using the present value of discounted future cash flows. The fair value estimate was sensitive to significant assumptions, such as revenue growth rates, the terminal growth rate, EBITDA margin, and the weighted average cost of capital, which are affected by expectations about future market or economic conditions.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's goodwill impairment review process. For example, we tested controls over management's review of the significant judgmental assumptions, including revenue growth rates, the terminal growth rate, EBITDA margin, and the weighted average cost of capital.

To test the Company's goodwill impairment assessment for the Specialty Additives reporting unit, we performed audit procedures that included, among others, evaluating the estimated fair value of the Specialty Additives reporting unit, including evaluating methodologies used. We involved our specialists in the evaluation of the significant assumptions described above. We compared the significant assumptions used by management to current trends, recent historical performance and other factors. We assessed the historical accuracy of management's estimates and performed sensitivity analyses of significant assumptions to evaluate the changes in the fair value of the reporting unit that would result from changes in the assumptions. We also tested the underlying data used by the Company in its analysis for completeness and accuracy.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2014.
Cincinnati, Ohio
November 23, 2020

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

(In millions except per share data)	2020	2019	2018
Sales	\$ 2,326	\$ 2,493	\$ 2,589
Cost of sales	1,619	1,726	1,726
Gross profit	707	767	863
Selling, general and administrative expense	424	453	599
Research and development expense	64	66	73
Intangibles amortization expense	85	86	93
Equity and other income	8	4	4
Goodwill impairment - Note H	530	—	—
Operating income (loss)	(388)	166	102
Net interest and other expense - Note I	119	99	102
Other net periodic benefit income - Note M	2	5	15
Net income (loss) on acquisitions and divestitures - Notes B and C	2	(2)	(4)
Income (loss) from continuing operations before income taxes	(503)	70	11
Income tax expense (benefit) - Note L	(12)	46	(8)
Income (loss) from continuing operations	(491)	24	19
Income (loss) from discontinued operations (net of tax) - Note D	(17)	481	95
Net income (loss)	<u>\$ (508)</u>	<u>\$ 505</u>	<u>\$ 114</u>

PER SHARE DATA - NOTE A

Basic earnings per share			
Income (loss) from continuing operations	\$ (8.10)	\$ 0.39	\$ 0.30
Income (loss) from discontinued operations	(0.29)	7.76	1.52
Net income (loss)	<u>\$ (8.39)</u>	<u>\$ 8.15</u>	<u>\$ 1.82</u>
Diluted earnings per share			
Income (loss) from continuing operations	\$ (8.10)	\$ 0.39	\$ 0.29
Income (loss) from discontinued operations	(0.29)	7.64	1.50
Net income (loss)	<u>\$ (8.39)</u>	<u>\$ 8.03</u>	<u>\$ 1.79</u>

COMPREHENSIVE INCOME (LOSS)

Net income (loss)	\$ (508)	\$ 505	\$ 114
Other comprehensive income (loss), net of tax			
Unrealized translation gain (loss)	27	(80)	(82)
Pension and postretirement obligation adjustment	—	(5)	—
Net change in investment securities	—	—	13
Other comprehensive income (loss)	27	(85)	(69)
Comprehensive income (loss)	<u>\$ (481)</u>	<u>\$ 420</u>	<u>\$ 45</u>

See Notes to Consolidated Financial Statements.

Ashland Global Holdings Inc. and Consolidated Subsidiaries
Consolidated Balance Sheets
At September 30

(In millions)	2020	2019
Assets		
Current assets		
Cash and cash equivalents	\$ 454	\$ 232
Accounts receivable (a)	471	481
Inventories - Note A	529	597
Other assets	87	64
Current assets held for sale - Note C	6	59
Total current assets	1,547	1,433
Noncurrent assets		
Property, plant and equipment - Note G		
Cost	3,265	3,165
Accumulated depreciation	1,700	1,588
Net property, plant and equipment	1,565	1,577
Goodwill - Note H	1,758	2,253
Intangibles - Note H	1,013	1,088
Operating lease assets, net - Note K	137	—
Restricted investments - Note F	301	310
Asbestos insurance receivable - Note N	136	157
Deferred income taxes - Note L	26	23
Other assets - Note J	394	410
Total noncurrent assets	5,330	5,818
Total assets	\$ 6,877	\$ 7,251
Liabilities and Equity		
Current liabilities		
Short-term debt - Note I	\$ 280	\$ 166
Trade and other payables	233	313
Accrued expenses and other liabilities	277	271
Current operating lease obligations - Note K	23	—
Current liabilities held for sale - Note C	—	7
Total current liabilities	813	757
Noncurrent liabilities		
Long-term debt - Note I	1,573	1,501
Asbestos litigation reserve - Note N	513	555
Deferred income taxes - Note L	229	264
Employee benefit obligations - Note M	157	150
Operating lease obligations - Note K	124	—
Other liabilities - Note J	432	453
Total noncurrent liabilities	3,028	2,923
Commitments and contingencies - Notes K and N		
Equity - Notes O and P		
Common stock, par value \$.01 per share, 200 million shares authorized	1	1
Issued 61 million and 60 million shares in 2020 and 2019		
Paid-in capital	769	756
Retained earnings	2,649	3,224
Accumulated other comprehensive loss	(383)	(410)
Total equity	3,036	3,571
Total liabilities and equity	\$ 6,877	\$ 7,251

(a) Accounts receivable includes an allowance for doubtful accounts of \$3 million at both September 30, 2020 and 2019.
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) (a)	Total
Balance at September 30, 2017	\$ 1	\$ 931	\$ 2,696	\$ (222)	\$ 3,406
Total comprehensive income (loss)					
Net income			114		114
Other comprehensive loss				(69)	(69)
Dividends, \$0.95 per common share			(60)		(60)
Common shares issued under stock incentive and other plans (b) (c)		15			15
Balance at September 30, 2018	1	946	2,750	(291)	3,406
Adoption of new accounting pronouncements (d)			34	(34)	—
Total comprehensive income (loss)					
Net income			505		505
Other comprehensive loss				(85)	(85)
Dividends, \$1.05 per common share			(65)		(65)
Common shares issued under stock incentive and other plans (b) (c)		10			10
Repurchase of common stock (e)		(200)			(200)
Balance at September 30, 2019	1	756	3,224	(410)	3,571
Total comprehensive income (loss)					
Net loss			(508)		(508)
Other comprehensive income				27	27
Dividends, \$1.10 per common share			(67)		(67)
Common shares issued under stock incentive and other plans (b) (c)		13			13
Balance at September 30, 2020	\$ 1	\$ 769	\$ 2,649	\$ (383)	\$ 3,036

(a) At September 30, 2020 and 2019, the accumulated other comprehensive loss of \$383 million and \$410 million, respectively, was comprised of net unrealized translation losses of \$381 million and \$408 million, respectively, and unrecognized prior service costs as a result of certain employee benefit plan amendments of \$2 million and \$2 million, respectively.

(b) Includes income tax expense resulting from the exercise of stock appreciation rights of \$1 million each in 2020, 2019 and 2018.

(c) Common shares issued were 391,180, 336,188 and 360,468 for 2020, 2019 and 2018, respectively.

(d) Represents the cumulative-effect adjustment related to the adoption of the new guidance related to the accounting for equity securities and the tax effects of intercompany transfers during fiscal 2019. See note A for more information.

(e) Common shares repurchased were 2,637,054 for 2019.

See Notes to Consolidated Financial Statements.

Ashland Global Holdings Inc. and Consolidated Subsidiaries
Statements of Consolidated Cash Flows
Years Ended September 30

(In millions)	2020	2019	2018
Cash flows provided (used) by operating activities from continuing operations			
Net income (loss)	\$ (508)	\$ 505	\$ 114
(Income) loss from discontinued operations (net of tax)	17	(481)	(95)
Adjustments to reconcile income from continuing operations to cash flows from operating activities			
Depreciation and amortization	247	289	277
Original issue discount and debt issuance cost amortization	15	13	8
Deferred income taxes	(43)	20	(100)
Distributions from equity affiliates	1	—	1
Stock based compensation expense - Note P	14	21	27
Excess tax benefits on stock based compensation	1	11	4
Loss on early retirement of debt	59	—	—
Income from restricted investments	(30)	(17)	(14)
(Income) loss on acquisitions and divestitures - Notes B and C	(3)	—	1
Impairments	530	8	16
Pension contributions	(6)	(5)	(9)
Gain on pension and other postretirement plan remeasurements	—	(7)	(14)
Change in operating assets and liabilities (a)	19	(129)	25
Total cash flows provided by operating activities from continuing operations	313	228	241
Cash flows provided (used) by investing activities from continuing operations			
Additions to property, plant and equipment	(138)	(154)	(157)
Proceeds from disposal of property, plant and equipment	5	9	4
Purchase of operations - net of cash acquired	—	(2)	(11)
Proceeds from sale or restructuring of operations	9	—	6
Proceeds from settlement of Company-owned life insurance contracts	8	3	2
Company-owned life insurance payments	(6)	(3)	(39)
Net purchases of funds restricted for specific transactions	(3)	(7)	(10)
Reimbursement from restricted investments	35	32	33
Proceeds from sale of securities	21	348	26
Purchase of securities	(21)	(348)	(26)
Proceeds from the settlement of derivative instruments	—	6	1
Payments for the settlement of derivative instruments	—	(2)	(3)
Total cash flows used by investing activities from continuing operations	(90)	(118)	(174)
Cash flows provided (used) by financing activities from continuing operations			
Proceeds from issuance of long-term debt	804	—	—
Repayment of long-term debt	(767)	(797)	(311)
Premium on long-term debt repayment	(59)	—	—
Proceeds from (repayment of) short-term debt	115	(78)	15
Repurchase of common stock	—	(200)	—
Debt issuance costs	(11)	—	(2)
Cash dividends paid	(66)	(64)	(60)
Stock based compensation employee withholding taxes paid in cash	(7)	(10)	(10)
Total cash flows provided (used) by financing activities from continuing operations	9	(1,149)	(368)
Cash provided (used) by continuing operations			
Cash provided (used) by discontinued operations			
Operating cash flows	(110)	13	56
Investing cash flows	98	967	(28)
Total cash provided (used) by discontinued operations	(12)	980	28
Effect of currency exchange rate changes on cash and cash equivalents	2	(3)	1
Increase (decrease) in cash and cash equivalents	222	(62)	(272)
Cash and cash equivalents - beginning of year	232	294	566
Cash and cash equivalents - end of year	\$ 454	\$ 232	\$ 294
Changes in assets and liabilities (a)			
Accounts receivable	\$ 7	\$ 38	\$ (42)
Inventories	65	(4)	(24)
Trade and other payables	(50)	(79)	48
Other assets and liabilities	(3)	(84)	43
Change in operating assets and liabilities	\$ 19	\$ (129)	\$ 25
Supplemental disclosures			
Interest paid	\$ 77	\$ 124	\$ 126
Income taxes paid	91	67	77

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

See Notes to Consolidated Financial Statements.

Notes to Consolidated Financial Statements

NOTE A – SIGNIFICANT ACCOUNTING POLICIES

Principles of consolidation and basis of presentation

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. The Consolidated Financial Statements include the accounts of Ashland Global Holdings Inc. (Ashland) and its majority owned subsidiaries and, when applicable, entities for which Ashland has a controlling financial interest or is the primary beneficiary. 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. All intercompany transactions and balances have been eliminated. Additionally, certain prior period data, which includes the reclassification of Intangibles Amortization Expense as a separate component within operating expenses and changes in Ashland's reportable segment and reporting unit structure, 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 August 30, 2019, Ashland completed the sale of its Composites business (excluding Ashland's maleic anhydride business (Maleic business)) and its butanediol facility in Marl, Germany (Marl facility). On September 30, 2020, Ashland completed the sale of its Maleic business to AOC Materials LLC (AOC). This disposal group represented a strategic shift in Ashland's business and in accordance with U.S. GAAP, qualified as a discontinued operation. Accordingly, Composites (including the Maleic business) and the Marl facility assets, liabilities, operating results and cash flows for all periods presented have been classified as discontinued operations within the Consolidated Financial Statements. See Note D for additional information on the Composites business and Marl facility.

During fiscal 2020, Ashland changed the manner in which it manages the business, moving from a functionally led to a business led organization. This change recognizes that Ashland has a diverse portfolio of businesses with different value propositions for the markets Ashland serves. The organizational change allows Ashland to align its business models, resources and cost structure to the specific needs of each business and enable greater ownership and accountability for both short- and long- term performance. Ashland has realigned its segment reporting structure commensurate with this organizational change. As a result, Ashland's reportable segments include the consumer specialty businesses: Life Sciences and Personal Care & Household; the industrial specialty businesses: Specialty Additives and Performance Adhesives; and Intermediates and Solvents. Unallocated and Other includes corporate governance activities and certain legacy matters. For additional information, see Note R.

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, environmental remediation, asbestos litigation, long-lived assets (including goodwill and other intangible assets) and income taxes. 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.

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. 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 collectability. 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)	2020	2019	2018
Allowance for doubtful accounts - beginning of year	\$ 3	\$ 3	\$ 3
Adjustments to net income	2	—	1
Reserves utilized	(2)	—	(1)
Allowance for doubtful accounts - end of year	<u>\$ 3</u>	<u>\$ 3</u>	<u>\$ 3</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 \$47 million at September 30, 2020 and \$66 million at September 30, 2019 are valued at cost using the last-in, first-out (LIFO) method. LIFO reserves were \$3 million as of September 30, 2020.

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

(In millions)	2020	2019
Finished products	\$ 336	\$ 400
Raw materials, supplies and work in process	193	197
	<u>\$ 529</u>	<u>\$ 597</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)	2020	2019	2018
Inventory reserves - beginning of year	\$ 23	\$ 23	\$ 24
Adjustments to net income	1	3	4
Reserves utilized	(6)	(3)	(5)
Inventory reserves - end of year	<u>\$ 18</u>	<u>\$ 23</u>	<u>\$ 23</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). See Note G for additional information related to property, plant and equipment.

Leasing arrangements

Effective October 1, 2019, Ashland adopted Accounting Standards Codification 842, Leases (“ASC 842”) using the modified retrospective method applied to those contracts that were not completed as of the date of adoption. ASC 842 consists of a comprehensive lease accounting standard requiring most leases to be recognized on the Consolidated Balance Sheet and significant new disclosures. Ashland determines if an arrangement contains a lease at inception based on whether or not it has the right to control the asset during the contract period and other facts and circumstances. Ashland elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed it to carry forward the historical lease classification.

Operating lease right-of-use assets represent Ashland’s right to use an underlying asset for the lease term and lease liabilities represent Ashland’s obligation to make lease payments arising from the lease, both of which are recognized based on the present value of the future minimum lease payments over the lease term at the commencement date. Leases with a lease term of 12 months or less at inception are not recorded within the Consolidated Balance Sheet and are expensed on a straight-line basis over the lease term within the Statements of Consolidated Comprehensive Income (Loss). The lease term is determined by assuming the exercise of renewal options that are reasonably certain. As most leases do not provide an implicit interest rate, Ashland used its incremental borrowing rate based on the information available at commencement date in determining the present value of future payments. When contracts contain lease and non-lease components, Ashland generally accounts for both components as a single lease component.

The adoption of ASC 842 resulted in the recognition of right-of-use assets, net of prepaid lease payments, lease abandonments and lease incentives, of \$164 million and operating lease liabilities of \$174 million as of October 1, 2019. Results for reporting periods beginning prior to October 1, 2019 continue to be reported in accordance with our historical accounting treatment. The adoption of ASC 842 did not have a material impact on the Company’s results of operations, cash flows or debt covenants. For additional information, see Note K for additional information on leasing arrangements.

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 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. If the fair value of the reporting unit is lower than its carrying amount, goodwill is written down for the amount by which the carrying amount exceeds the fair value. However, the loss recognized cannot exceed the carrying amount of goodwill.

Using the quantitative approach, Ashland makes various estimates and assumptions in determining the estimated fair value of each reporting unit 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. Discounted cash flow models are highly reliant on various assumptions, including projected business results, long-term growth factors and weighted-average cost of capital. Management judgement is involved in estimating these variables, and they include inherent uncertainties since they are forecasting future events. Ashland performs sensitivity analyses by using a range of inputs to confirm the reasonableness of the long-term growth rate and weighted average cost of capital. Additionally, Ashland compares the indicated equity value to Ashland’s market capitalization and evaluates the resulting implied control premium/discount to determine if the estimated enterprise value is reasonable compared to external market indicators.

Ashland tests at least annually its indefinite-lived intangible assets, principally trademarks and trade names. 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. Ashland performs a quantitative goodwill impairment test for the trademarks and trade names during which, trademarks and trade names are valued using a “relief-from-royalty” valuation method compared to the carrying value. Significant assumptions inherent in the valuation methodologies 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.

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. The Intangibles Amortization Expense presented within the Statement of Consolidated Comprehensive Income (Loss) includes amortization expense related to trademarks and trade names, intellectual property and customer and supplier relationships. Intangible assets classified as finite are amortized on a straight-line basis over their estimated useful lives. 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 that Ashland determined is 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 and \$24 million classified within other current assets in the Consolidated Balance Sheets as of September 30, 2020 and 2019, respectively.

As of September 30, 2020 and 2019, the funds within the trust had a balance of \$331 million and \$334 million, respectively, and were primarily invested in public equity, U.S. government bonds and investment grade corporate bond investments with a portion maintained in demand deposits. The funds within the trust are classified as investment securities reported at fair value. Interest income and gains and losses on the investment securities are reported in the net interest and other expense caption in the Statements of Consolidated Comprehensive Income (Loss). See Note F for additional information regarding the fair value of these investments within the trust.

In January 2016, the FASB issued accounting guidance related to the recognition and measurement as well as the presentation and disclosures for certain financial instruments. Most notably, the guidance requires entities to measure equity investments at fair value and to recognize any changes in fair value in net income rather than accumulated other comprehensive income (AOCI). The guidance became effective for Ashland on October 1, 2018 and resulted in Ashland recording a cumulative-effect adjustment to reclassify net after-tax unrealized gains of \$34 million on its equity securities from AOCI to retained earnings.

Revenue recognition

Effective with the October 1, 2018 adoption of ASU 2014-09, “Revenue from Contracts with Customers (Topic 606),” and the associated ASUs (collectively, “Topic 606”), Ashland recognizes revenue when its customer obtains control of promised goods or services in an amount that reflects the consideration which Ashland expects to receive in exchange for those goods or services. To determine revenue recognition for the arrangements that Ashland determines are within the scope of Topic 606, Ashland performs the following five steps: (1) identify the contract(s) with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when (or as) the entity satisfies a performance obligation. The impact of Topic 606 adoption was not material to Ashland’s Consolidated Financial Statements. See Note Q for additional information.

In periods prior to the adoption of Topic 606, Ashland’s accounting policy was to recognize revenue when it was realized or realizable, and the earnings process was complete. Revenue for product sales was recognized as risk and title to the product transferred to the customer, which usually occurred at either the time shipment was made or received. Ashland’s terms of delivery were included in its contracts of sale, order confirmation documents and invoices.

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 (\$2 million in 2020, and \$4 million each in 2019 and 2018) and research and development costs (\$64 million in 2020, \$66 million in 2019 and \$73 million in 2018) 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. Ashland recognizes the income tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by taxing authorities, based on the technical merits of the position. Ashland evaluates and adjusts these accruals based on changing facts and circumstances. 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 and credit carryforwards. The effect on deferred taxes of changes in tax rates is recognized in the period in which the enactment date occurs. Taxes due on future Global Intangible Low-Taxed Income (GILTI) exclusions in U.S. are recognized as a current period expense when incurred. 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 (Loss) 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)	2020	2019	2018
Tax valuation allowances - beginning of year	\$ 83	\$ 79	\$ 122
Adjustments to income tax expense (benefit)	2	8	(5)
Reserves utilized	(6)	(4)	(38)
Tax valuation allowances - end of year	<u>\$ 79</u>	<u>\$ 83</u>	<u>\$ 79</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 Nathan Associates, Inc. (Nathan) to assist in developing and annually updating independent reserve estimates for future asbestos claims and related costs given various assumptions. The methodology used 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, Nathan 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.

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 within the other net periodic benefit income (costs) caption on the Statements of Consolidated Comprehensive Income (Loss).

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 earnings per share from continuing operations per diluted share because the effect of these instruments would be antidilutive. The total number of these shares outstanding was 1.7 million for 2020, 1.0 million for 2019 and 0.7 million for 2018.

(In millions except per share data)	2020	2019	2018
Numerator			
Numerator for basic and diluted EPS -			
Income (loss) from continuing operations, net of tax	\$ (491)	\$ 24	\$ 19
Denominator			
Denominator for basic EPS - Weighted-average common shares			
outstanding	61	62	63
Share based awards convertible to common shares (a)	—	1	1
Denominator for diluted EPS - Adjusted weighted - average shares and			
assumed conversions	61	63	64
EPS from continuing operations			
Basic	\$ (8.10)	\$ 0.39	\$ 0.30
Diluted	(8.10)	0.39	0.29

(a) As a result of the loss from continuing operations for 2020, the effect of approximately one million share-based awards convertible to common shares would be antidilutive. In accordance with US GAAP, they have been excluded from the diluted EPS calculation.

Other accounting pronouncements

In February 2018, the FASB issued guidance which permits entities to reclassify tax effects stranded in AOCI as a result of U.S. tax reform legislation to retained earnings. Additionally, this guidance requires entities to disclose whether they made an election to reclassify the tax effects and to disclose their accounting policy for releasing income tax effects from AOCI. This guidance became effective for Ashland on October 1, 2019. Ashland did not elect to reclassify the disproportionate amount in AOCI to retained earnings. Ashland estimated the impact of this guidance to be approximately \$3 million. Ashland's accounting policy for releasing income tax effects from AOCI is under the individual units of account method for items sold, terminated or extinguished from AOCI.

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 became effective for Ashland on October 1, 2019 and had no material impact on the Consolidated Financial Statements.

In June 2016, the FASB issued amended accounting guidance related to the measurement of credit losses on financial instruments. The amended accounting guidance changes the impairment model for most financial assets to require measurement and recognition of expected credit losses for financial assets held. This guidance will become effective for Ashland on October 1, 2020. Ashland does not expect that the guidance will have a material impact on the Consolidated Financial Statements.

In October 2016, the FASB issued new accounting guidance which requires entities to recognize income tax effects of intercompany transfers of assets other than inventory when the transfer occurs. This guidance eliminates the exception under previous U.S. GAAP that the income tax effects of all intercompany transfers of assets other than inventory be deferred until the assets are sold to a third party or otherwise recovered through use. This guidance became effective for Ashland on October 1, 2018 and was applied using a modified retrospective approach. Consequently, Ashland recorded a cumulative-effect adjustment to reclassify less than \$1 million from other current assets and deferred taxes to retained earnings.

In January 2016, the FASB issued accounting guidance related to the recognition and measurement as well as the presentation and disclosures for certain financial instruments. Most notably, the guidance requires entities to measure equity investments as fair value and to recognize any changes in fair value in net income rather than accumulated other comprehensive income (AOCI). The guidance became effective for Ashland on October 1, 2018 and resulted in Ashland recording a cumulative-effect adjustment to reclassify net after-tax unrealized gains of \$34 million on its equity securities from AOCI to retained earnings. In the current period, the adoption of this guidance resulted in a significant impact to net income as Ashland recognized investment gains of \$20 million and \$7 million in 2020 and 2019, respectively, within the net interest and other expense caption on the Statement of Consolidated Comprehensive Income (Loss). The impact of this guidance could continue to have a material impact on Ashland's Statements of Consolidated Comprehensive Income (Loss) in prospective periods depending on the fluctuations of unrealized gains and losses within the investment securities portfolio. For current and future periods, the changes in fair value of the equity securities will no longer be classified within other comprehensive income under the new guidance. For further information on Ashland's equity securities, see Note F.

NOTE B – ACQUISITIONS

Vornia Limited

In January 2018, Ashland completed the acquisition of Vornia Limited for \$12 million, of which \$1 million was paid in 2019. Vornia Limited's principal activity is the design, development and fabrication of customized biomaterial solutions. The purchase price allocation primarily included \$8 million of intellectual property and \$4 million of goodwill and has been included within the Life Sciences reportable segment.

NOTE C – DIVESTITURES

Composites and Marl facility

On November 15, 2018, Ashland announced that it had signed a definitive agreement to sell its Composites segment and Intermediates and Solvents Marl facility to INEOS Enterprises (INEOS) in a transaction valued at \$1.1 billion. Ashland retained the remaining Intermediates and Solvents facility in Lima, Ohio primarily for its own internal business use.

In late July of 2019, Ashland and INEOS agreed to certain additional changes to the sale agreement. As part of the proposed changes, the purchase price was adjusted to \$1.015 billion while Ashland retained the right to the Maleic business, including the retention of any subsequent sale proceeds. On August 30, 2019 Ashland completed the sale of its Composites business (excluding the Maleic business) and butanediol manufacturing facility in Marl, Germany to INEOS. Net proceeds from the sale were approximately \$1 billion and were used primarily for debt reductions. Approximately \$0.9 billion of debt had been retired by September 30, 2019. As a result of the sale, Ashland recognized a \$372 million after-tax gain within the Statement of Consolidated Comprehensive Income (Loss) within the income from discontinued operations caption for the twelve months ended September 30, 2019.

On September 30, 2020, Ashland completed the sale of its Maleic business to AOC. Net proceeds from the sale were approximately \$98 million. As a result of the sale, Ashland recognized a \$29 million after-tax gain within the Statement of Consolidated Comprehensive Income (Loss) within the income from discontinued operations caption for the twelve months ended September 30, 2020.

Since this disposal group signifies a strategic shift in Ashland's business and had a major effect on Ashland's operations and financial results, the operating results and cash flows related to Composites and the Marl facility, including the Maleic business, have been reflected as discontinued operations in the Statements of Consolidated Comprehensive Income (Loss) and Statements of Consolidated Cash Flows. See Note D of the Notes to Consolidated Financial Statements for the results of operations for Composites and the Marl facility, including the Maleic business, for all periods presented.

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 Composites segment and Marl facility do not qualify for classification within discontinued operations and are now reported as selling, general and administrative expense within continuing operations on a consolidated basis and within the Unallocated and other segment. These costs were zero, \$41 million and \$46 million during the twelve months ended September 30, 2020, 2019, and 2018, respectively.

Subsequent to the completion of the sale, Ashland is providing certain transition services to INEOS for a fee. While the transition services are expected to vary in duration depending upon the type of service provided, Ashland expects to reduce costs as the transition services are completed. Ashland recognized transition service fee income of \$15 and \$1 million during the twelve months ended September 30, 2020 and 2019, respectively.

Other manufacturing facility sales

During 2020, Ashland entered into a definitive sale agreement to sell a Specialty Additives facility. This transaction is expected to close within the next twelve months and qualified as held for sale.

During 2018, Ashland entered into a definitive sale agreement to sell a Specialty Additives facility and recognized a loss of \$2 million before tax. The loss was reported within the net loss on acquisitions and divestitures caption within the Statement of Consolidated Comprehensive Income (Loss) for 2018.

Ashland determined these transactions did not qualify for discontinued operations treatment since they did not represent a strategic shift that had or will have a major effect on Ashland's operations and financial results.

Other assets

Ashland sometimes pursues options to divest corporate assets, primarily related to land and buildings. When these sales that are expected to close within the next 12 months, they are classified as held for sale. The net property, plant and equipment value related to these sites was zero and \$6 million at September 30, 2020 and 2019, respectively. During 2019, a \$5 million impairment charge was recorded within the selling, general and administrative expense caption of the Statement of Consolidated Comprehensive Income (Loss) for one of these corporate assets. During 2020, Ashland completed the sale of an office building with a net book value of \$6 million and received net proceeds of \$5 million. As a result, Ashland recognized a loss of \$1 million before tax. The loss was reported within the net loss on acquisitions and divestitures caption within the Statement of Consolidated Comprehensive Income (Loss) for 2020.

Held for sale classification

The assets and liabilities of the Maleic business, along with other corporate property and manufacturing facilities, have been reflected as assets and liabilities held for sale as described above. As a result, in accordance with U.S. GAAP standards, depreciation and amortization were not being recorded within the Statements of Consolidated Comprehensive Income (Loss) and the Consolidated Balance Sheets. These assets and liabilities are comprised of the following components:

(In millions)	2020		2019	
Accounts receivable, net	\$	—	\$	5
Inventories		—		3
Net property, plant and equipment		—		34
Goodwill		6		14
Other assets		—		3
Current assets held for sale	\$	6	\$	59
Trade and other payables	\$	—	\$	6
Accrued expenses and other liabilities		—		1
Current liabilities held for sale	\$	—	\$	7

NOTE D – DISCONTINUED OPERATIONS

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 described in Note C, Ashland has completed the previously announced sale of its Composites business (excluding the Maleic business) and butanediol manufacturing facility in Marl, Germany to INEOS during 2019. Ashland also completed the sale its Maleic business to AOC during 2020. Ashland determined that this disposal group qualified as a discontinued operation, in accordance with U.S. GAAP, since it represented a strategic shift for Ashland and had a major effect on Ashland's operations and financial results. Accordingly, the operating results and cash flows for the Composites business (including the Maleic business) and the Marl facility have been classified as discontinued operations within the Consolidated Financial Statements for all periods presented.

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, which qualified as a discontinued operation and from the acquisition during 2009 of Hercules LLC (formerly Hercules Incorporated), an indirect wholly-owned subsidiary of Ashland. Adjustments to the recorded litigation reserves and related insurance receivables are recorded within the discontinued operations caption. See Note N for more information related to the adjustments on asbestos liabilities and receivables.

During 2017, Ashland completed the IPO of Valvoline Inc. (Valvoline). 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 Valvoline business. Ashland has made subsequent adjustments to the discontinued operations caption related to the separation.

During 2014, Ashland completed the sale of the Ashland Water Technologies (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 (Loss). 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)	2020	2019	2018
Income (loss) from discontinued operations			
Composites/Marl facility	\$ 9	\$ 118	\$ 103
Valvoline	(24)	—	(1)
Asbestos-related litigation	(18)	—	14
Water Technologies	—	(1)	—
Distribution	(10)	18	(11)
Gain on disposal of discontinued operations			
Composites/Marl facility	37	423	—
Income before taxes	(6)	558	105
Income tax benefit (expense)			
Benefit (expense) related to income (loss) from discontinued operations			
Composites/Marl facility	(5)	(24)	(17)
Valvoline	—	—	—
Asbestos-related litigation	—	—	(1)
Water Technologies	—	2	3
Distribution	2	(4)	5
Expense related to gain on disposal of discontinued operations			
Composites/Marl facility	(8)	(51)	—
Income from discontinued operations (net of taxes)	<u>\$ (17)</u>	<u>\$ 481</u>	<u>\$ 95</u>

Composites and Marl divestiture

The following table presents a reconciliation of the captions within Ashland's Statements of Consolidated Income (Loss) for the income (loss) from discontinued operations attributable to the Composites business and the Marl facility disposal group for each of the years ended September 30. Interest expense was allocated to discontinued operations based on Ashland's mandatory debt prepayments upon the disposition of the Composites business and the Marl facility. The Maleic business, which was sold during 2020 to AOC, was operated under the Composites business and Marl facility disposal group, and is therefore reported in discontinued operations.

(In millions)	2020	2019	2018
Income(loss) from discontinued operations attributable to Composites/Marl facility disposal group			
Sales	\$ 51	\$ 1,012	\$ 1,154
Cost of sales	(35)	(785)	(942)
Selling, general and administrative expense	(9)	(74)	(79)
Research and development expense	—	(11)	(12)
Equity and other income	2	3	4
Pretax operating income of discontinued operations	9	145	125
Net interest and other financing expense	—	(21)	(20)
Other net periodic benefit income (costs)	—	(6)	(2)
Net gain on acquisitions and divestitures	—	—	—
Pretax income of discontinued operations	9	118	103
Income tax expense	(5)	(24)	(17)
Income from discontinued operations	<u>\$ 4</u>	<u>\$ 94</u>	<u>\$ 86</u>

NOTE E – RESTRUCTURING ACTIVITIES

Company-wide restructuring activities

Ashland periodically implements company-wide restructuring programs related to acquisitions, divestitures and other cost reduction programs in order to enhance profitability through streamlined operations and an improved overall cost structure.

Fiscal 2020 restructuring costs

During 2020, Ashland incurred severance expense of \$51 million, attributable to executive management changes and business management changes within the organization. As of September 30, 2020, the severance reserve associated with this transition was \$39 million.

The following table details at September 30, 2020, the amount of restructuring severance reserves related to this program. The severance reserves were primarily recorded within accrued expenses and other liabilities in the Condensed Consolidated Balance Sheet as of September 30, 2020.

(In millions)	Severance costs
Balance as of September 30, 2019	\$ —
Restructuring reserve	51
Utilization (cash paid)	(12)
Balance as of September 30, 2020	<u>\$ 39</u>

Fiscal 2019 plant restructuring costs

During 2019, Specialty Additives committed to a cost reduction plan within an existing manufacturing facility. As a result, Ashland incurred restructuring charges of \$47 million for 2019. The charges were recorded primarily within the cost of sales caption of the Statements of Consolidated Comprehensive Income (Loss) consisting of \$38 million of accelerated depreciation and amortization, \$5 million of severance and \$4 million of plant closure costs during 2019. As of September 30, 2020, there was no restructuring reserve related to this plant restructuring as this program has been completed.

Fiscal 2018 restructuring costs

Severance costs

During 2018, Ashland announced and initiated a company-wide restructuring program as a result of ongoing strategic asset plans and activities. As part of this restructuring program, Ashland announced a voluntary severance offer (VSO) to certain qualifying employees that were formally approved during 2018. Additionally, during 2018, an involuntary program for employees was also initiated as part of the restructuring program. The VSO and involuntary programs resulted in expense of \$1 million, \$6 million and \$36 million being recognized during 2020, 2019 and 2018, respectively, which were primarily recorded within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income (Loss). As of September 30, 2020, the severance reserve for the company-wide restructuring program was zero as this program has been completed.

The following table details at September 30, 2020, the amount of restructuring reserves related to the activity discussed above. The severance reserves were primarily included in accrued expenses and other liabilities in the Consolidated Balance Sheet as of September 30, 2020.

(In millions)	Severance costs
Balance as of September 30, 2018	\$ 36
Restructuring reserve	6
Utilization (cash paid)	(35)
Balance as of September 30, 2019	\$ 7
Restructuring reserve	1
Utilization (cash paid)	(8)
Balance as of September 30, 2020	\$ —

Impairments

During 2018, Ashland incurred \$16 million of asset impairment charges primarily related to restructuring activities which were recorded within the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income (Loss). Of these impairment charges, \$12 million was related to the sale of an office facility. Consistent with historical policies and U.S. GAAP provisions, Ashland recognized the building at fair value using Level 2 nonrecurring fair value measurements.

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, 2020. 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	\$ 454	\$ 454	\$ 454	\$ —	\$ —
Restricted investments (a)	331	331	331	—	—
Investments of captive insurance company (b)	9	9	9	—	—
Foreign currency derivatives	1	1	—	1	—
Total assets at fair value	<u>\$ 795</u>	<u>\$ 795</u>	<u>\$ 794</u>	<u>\$ 1</u>	<u>\$ —</u>
Liabilities					
Foreign currency derivatives	\$ 3	\$ 3	\$ —	\$ 3	\$ —

(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.

The following table summarizes financial instruments subject to recurring fair value measurements as of September 30, 2019.

(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	\$ 232	\$ 232	\$ 232	\$ —	\$ —
Restricted investments (a)	334	334	334	—	—
Investments of captive insurance company (b)	5	5	5	—	—
Foreign currency derivatives	2	2	—	2	—
Total assets at fair value	<u>\$ 573</u>	<u>\$ 573</u>	<u>\$ 571</u>	<u>\$ 2</u>	<u>\$ —</u>
Liabilities					
Foreign currency derivatives	\$ 2	\$ 2	\$ —	\$ 2	\$ —

(a) Included in restricted investments and \$24 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 company restricted renewable annual trust for the purpose of paying future asbestos indemnity and defense costs. The financial instruments are designated as investment 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. Fiscal 2019 included a portfolio rebalancing between equity and bond funds held within the portfolio resulting in significant purchases and sales of investment securities totaling \$348 million each.

The following table provides a summary of the activity within the investment securities portfolio as of September 30, 2020 and 2019:

(In millions)	2020	2019
Original cost	\$ 335	\$ 335
Accumulated adjustments, net	(30)	(47)
Adjusted cost, beginning of year (a)	305	288
Investment income (b)	10	10
Net unrealized gain (c)	46	29
Realized gain (c)	2	32
Settlement funds	3	7
Disbursements	(35)	(32)
Fair value	<u>\$ 331</u>	<u>\$ 334</u>

(a) The adjusted cost of the demand deposit includes accumulated investment income, realized gains, 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 fixed income mutual funds.

(c) Presented under the original cost method.

The following table presents gross unrealized gains and losses for the available-for-sale securities as of September 30, 2020 and 2019:

(In millions)	Adjusted Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value
As of September 30, 2020				
Demand Deposit	\$ 7	\$ —	\$ —	\$ 7
Equity Mutual Fund	116	31	(1)	146
Fixed Income Fund	162	16	—	178
Fair value	<u>\$ 285</u>	<u>\$ 47</u>	<u>\$ (1)</u>	<u>\$ 331</u>
As of September 30, 2019				
Demand Deposit	\$ 9	\$ —	\$ —	\$ 9
Equity Mutual Fund	120	24	(2)	142
Fixed Income Fund	176	7	—	183
Fair value	<u>\$ 305</u>	<u>\$ 31</u>	<u>\$ (2)</u>	<u>\$ 334</u>

The following table presents the investment income, net unrealized gains and losses, realized gains and disbursements related to the investments within the portfolio during 2020, 2019 and 2018.

(In millions)	2020	2019	2018
Investment income	\$ 10	\$ 10	\$ 8
Net unrealized gains (losses) (a)	20	7	18
Realized gains (b)	—	—	6
Disbursements	(35)	(32)	(33)

(a) Ashland determined that all unrealized gains and (losses) were related to equity securities with readily determinable fair values. Due to the new accounting guidance adopted in the first quarter of fiscal year 2019, the net unrealized gains and (losses) during the year ended September 30, 2019 and forward were recorded within the net interest and other expense caption in the Statements of Consolidated Income (Loss). In 2018 these net unrealized gains (losses) were in AOCI.

(b) Relates only to the year ended September 30, 2018 prior to adoption of the new accounting guidance for equity securities.

Foreign currency derivatives

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 2020, 2019 and 2018 within the Statements of Consolidated Comprehensive Income (Loss).

(In millions)	2020	2019	2018
Foreign currency derivative gain (loss)	\$ 5	\$ 2	\$ (32)

The following table summarizes the fair values of the outstanding foreign currency derivatives as of September 30, 2020 and 2019 included in accounts receivable and accrued expenses and other liabilities of the Consolidated Balance Sheets.

(In millions)	2020		2019	
Foreign currency derivative assets	\$	1	\$	2
Notional contract values		170		271
Foreign currency derivative liabilities	\$	3	\$	2
Notional contract values		215		168

Other financial instruments

At September 30, 2020 and 2019, Ashland's long-term debt (including the current portion and excluding debt issuance cost discounts) had a carrying values of \$1,588 million and \$1,513 million, respectively, compared to a fair value of \$1,708 million and \$1,680 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)	2020		2019	
Land	\$	150	\$	148
Buildings		489		461
Machinery and equipment		2,433		2,361
Construction in progress		193		195
Total property, plant and equipment (gross)		3,265		3,165
Accumulated depreciation		(1,700)		(1,588)
Total property, plant and equipment (net)	\$	1,565	\$	1,577

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

(In millions)	2020		2019		2018	
Depreciation	\$	162	\$	199	\$	183
Capitalized interest		2		—		—

Accelerated Depreciation

During 2019, Ashland committed to a cost reduction plan within an existing manufacturing facility. As a result, depreciation included \$38 million of accelerated depreciation for the remaining value of this facility primarily related to machinery and equipment. See Note E for additional information related to this facility. This charge related to the Specialty Additives reportable segment and was recorded primarily within the cost of sales caption of the Statement of Consolidated Comprehensive Income (Loss) for 2019.

During 2018, the termination of a contract at a manufacturing facility resulted in \$6 million of accelerated depreciation for the remaining value of the related machinery and equipment. This charge related to the Specialty Additives reportable segment and was recorded within the equity and other income (loss) caption of the Statements of Consolidated Comprehensive Income (Loss).

During 2019 and 2018, depreciation also included \$1 million and \$8 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

As indicated in footnote A, 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 tests goodwill and other indefinite-lived intangible assets for impairment by comparing the estimated fair value of the reporting units (for goodwill) and other indefinite-lived intangible assets to the related carrying value. If the carrying amount of a reporting unit or other indefinite-lived intangible asset exceeds its estimated fair value, Ashland records an impairment loss based on the difference between fair value and carrying amount, in the case of reporting units, not to exceed to the associated carrying amount of goodwill.

Ashland's assessment of an impairment on any of these assets classified currently as having indefinite lives, including goodwill, could change in future periods if significant events happen and/or circumstances change that effect the previously mentioned assumptions such as: a significant change in projected business result, a divestiture decision, increase in Ashland's weighted-average cost of capital rates, decrease in growth rates or assumptions, economic deterioration that is more severe or of a longer duration than anticipated, or another significant economic event.

During the second quarter of fiscal 2020, Ashland realigned its operations which resulted in a reassessment of Ashland's reporting units used to evaluate goodwill impairment. Ashland's reporting units align with its reportable segments. Ashland determined that its reporting units are Life Sciences, Personal Care & Household, Specialty Additives, Performance Adhesives, Intermediates and Solvents and Unallocated and Other. Prior to the business realignment, the reporting units consisted of Ashland Specialty Ingredients, Intermediates and Solvents and Unallocated and Other. The Ashland Specialty Ingredients reporting unit contained all of Ashland's reported goodwill at September 30, 2019.

In conjunction with the realignment during the second quarter of fiscal 2020, Ashland tested goodwill for impairment for each reporting unit both immediately before and immediately after the business realignment. The fair values of the reporting units were 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. Significant assumptions inherent in the valuation methodologies include estimates of future projected business results (principally revenue and EBITDA), long-term growth rates, and the weighted-average cost of capital.

The goodwill impairment test under the former reporting unit structure concluded that no impairment existed during the second quarter of fiscal 2020. Ashland then allocated goodwill to the new reporting unit structure using a relative fair value approach and re-assessed goodwill for impairment for each of its new reporting units. The impairment test under the new reporting unit structure concluded that the carrying value of the Personal Care & Household and the Specialty Additives reporting units exceeded their fair value, resulting in a non-cash goodwill impairment charge of \$530 million, which was recorded within the Goodwill impairment caption within the Statement of Consolidated Comprehensive Income (Loss) for the year ended September 30, 2020. The Personal Care & Household goodwill impairment charge was due in large part to lower growth and lower margins since the acquisition of the Oral Care and Avoca businesses, including the loss of certain customers, which collectively have resulted in reduced cash flow projections. The Specialty Additives goodwill impairment charge was due in large part to lower growth and lower margins within the global construction and energy markets, which collectively have resulted in reduced cash flow projections.

Ashland performed its annual goodwill impairment test using the quantitative approach as of July 1, 2020 and concluded that the reporting unit fair values for all reporting units exceeded their carrying values. No impairment existed as of that date and no subsequent impairment indicators have been identified.

The following is a progression of goodwill by reportable segment for the years ended September 30, 2020 and 2019.

(In millions)	Life Sciences	Personal Care & Household	Specialty Additives	Performance Adhesives	Intermediates and Solvents (a)	Total
Balance at September 30, 2018	\$ 855	\$ 363	\$ 623	\$ 463	\$ —	\$ 2,304
Currency translation	(19)	(8)	(14)	(10)	—	(51)
Balance at September 30, 2019	836	355	609	453	—	2,253
Impairment	—	(356)	(174)	—	—	(530)
Currency translation and other (b)	25	1	9	—	—	35
Balance at September 30, 2020	<u>\$ 861</u>	<u>\$ —</u>	<u>\$ 444</u>	<u>\$ 453</u>	<u>\$ —</u>	<u>\$ 1,758</u>

(a) As of September 30, 2020 and 2019, there was accumulated impairment of \$90 million related to the Intermediates and Solvents reportable segment.

(b) As of September 30, 2020, \$6 million of goodwill related to a Specialty Additives facility that was reclassified to held for sale. See Note C for additional information.

Other intangible assets

Intangible assets principally consist of trademarks and trade names, intellectual property and customer and supplier 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.

Ashland annually reviews, as of July 1, indefinite-lived intangible assets for possible impairment or whenever events or changes in circumstances indicate that carrying amounts may not be recoverable.

Ashland tested its indefinite-lived intangible assets for impairment during the second quarter of fiscal 2020 as a result of the business realignment. Trademarks and trade names are valued using a “relief-from-royalty” valuation method compared to the carrying value. Significant assumptions inherent in the valuation methodologies include, but are not limited to, future projected business results, growth rates, the weighted-average cost of capital for a market participant, and royalty and discount rates. No impairment was indicated for trademarks and trade names during the second quarter of fiscal 2020.

Ashland performed its annual other intangibles impairment test using the quantitative approach as of July 1, 2020 and concluded that the assets fair values exceeded their carrying values. No impairment existed as of that date.

Other intangible assets were comprised of the following as of September 30, 2020 and 2019.

(In millions)	2020			2019		
	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
Definite-lived intangible assets						
Trademarks and trade names	\$ 66	\$ (32)	\$ 34	\$ 66	\$ (29)	\$ 37
Intellectual property	721	(442)	279	712	(391)	321
Customer and supplier relationships	757	(335)	422	744	(292)	452
Total definite-lived intangible assets	<u>1,544</u>	<u>(809)</u>	<u>735</u>	<u>1,522</u>	<u>(712)</u>	<u>810</u>
Indefinite-lived intangible assets						
Trademarks and trade names	278	—	278	278	—	278
Total intangible assets	<u>\$ 1,822</u>	<u>\$ (809)</u>	<u>\$ 1,013</u>	<u>\$ 1,800</u>	<u>\$ (712)</u>	<u>\$ 1,088</u>

Amortization expense recognized on intangible assets was \$85 million for 2020, \$86 million for 2019 and \$93 million for 2018, and is primarily included in the selling, general and administrative expense caption of the Statements of Consolidated Comprehensive Income. As of September 30, 2020, 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 \$85 million in 2021, \$84 million in 2022, \$84 million in 2023, \$70 million in 2024 and \$68 million in 2025. 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.

Goodwill and Other Intangible assets

Ashland's assessment of an impairment on any of these assets classified currently as having indefinite lives, including goodwill, could change in future periods if significant events happen and/or circumstances change that effect the previously mentioned assumptions such as: a significant change in projected business result, a divestiture decision, increase in Ashland's weighted-average cost of capital rates, decrease in growth rates or assumptions, economic deterioration that is more severe or of a longer duration than anticipated, or another significant economic event.

NOTE I – DEBT

The following table summarizes Ashland's current and long-term debt at September 30, 2020 and 2019.

(In millions)	2020	2019
4.750% notes, due 2022	\$ 411	\$ 1,080
2.00% Senior Notes, due 2028 (Euro 500 million principal)	587	—
6.875% notes, due 2043	282	374
Term loan A	250	—
Accounts receivable securitizations	177	144
6.50% junior subordinated notes, due 2029	55	54
Revolving credit facility	80	—
Other (a)	11	15
Total debt	1,853	1,667
Short-term debt (includes current portion of long-term debt)	(280)	(166)
Long-term debt (less current portion and debt issuance costs)	\$ 1,573	\$ 1,501

(a) Other includes \$15 million and \$12 million of debt issuance costs as of September 30, 2020 and 2019, respectively. Additionally, as of September 30, 2020 and 2019, Other included a European short-term loan facility with outstanding balances of \$23 million and \$22 million, respectively.

At September 30, 2020, Ashland's total debt had an outstanding principal balance of \$1,910 million, discounts of \$42 million and debt issuance costs of \$15 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: zero in 2021, \$421 million in 2022, \$22 million in 2023, \$44 million in 2024 and \$175 million in 2025.

Credit Agreements and Refinancing

2020 Credit Agreement

During January 2020, Ashland LLC and Ashland Services B.V., indirect and wholly owned subsidiaries of Ashland, entered into a new senior unsecured credit agreement (the 2020 Credit Agreement) with a group of lenders, replacing the 2017 Credit Agreement. The 2020 Credit Agreement provides for (i) a \$600 million unsecured five-year revolving credit facility (the 2020 Revolving Credit Facility) and (ii) a \$250 million unsecured five-year term loan facility (the 2020 Term Loan Facility). The 2020 Credit Agreement is guaranteed by Ashland Global Holdings Inc. and Ashland Chemco Inc., and the obligations of Ashland Services B.V. under the 2020 Revolving Credit Facility are guaranteed by Ashland LLC. Proceeds of borrowings under the 2020 Revolving Credit Facility were used to refinance the Ashland's existing 2017 Credit Agreement, to provide ongoing working capital and for other general corporate purposes. The proceeds under the 2020 Term Loan Facility were used to refinance a portion of Ashland's outstanding 4.750% Senior Notes due 2022, 6.875% Senior Notes due 2043 and Hercules LLC's 6.500% junior subordinated debentures.

At Ashland's option, loans issued under the 2020 Credit Agreement bear interest at either LIBOR or an alternate base rate, in each case plus the applicable interest rate margin. Loans initially bear interest at LIBOR plus 1.375% per annum, in the case of LIBOR borrowings, or at the alternate base rate plus 0.375%, 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 1.250% per annum and LIBOR plus 1.750% per annum (or between the alternate base rate plus 0.250% per annum and the alternate base rate plus 0.750% annum), based upon the consolidated net leverage ratio (as defined in the 2020 Credit Agreement) at such time. In addition, Ashland is initially required to pay fees of 0.20% per annum on the daily unused amount of the 2020 Revolving Facility through and including the date of delivery of a compliance certificate, and thereafter the fee rate will fluctuate between 0.15% and 0.30% per annum, based upon the consolidated net leverage ratio. The Credit Facilities may be prepaid at any time

without premium. The term loan A (TLA) Facility will not amortize in each of the first and second years and will amortize at a rate of 5.0% per annum, 10% per annum and 20% per annum in the third, fourth and fifth years, respectively (payable in equal quarterly installments), with the outstanding balance of the TLA Facility to be paid on January 10, 2025.

The 2020 Credit Agreement contains financial covenants for leverage and interest coverage ratios akin to those in effect under the 2017 Credit Agreement. The 2020 Credit Agreement contains usual and customary representations, warranties and affirmative and negative covenants, including financial covenants for leverage and interest coverage ratios, limitations on liens, additional indebtedness, further negative pledges, investments, mergers, sale of assets and restricted payments, and other customary limitations.

Ashland incurred \$4 million of new debt issuance costs in connection with the 2020 Credit Agreement, of which \$1 million was expensed immediately during 2020 within the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss). The remaining balance is amortized using either the effective interest method or straight-line method.

Financing activity related to the 2017 Credit Agreement

On May 22, 2018, Ashland entered into Amendment No. 3 to the 2017 Credit Agreement which provided for the re-pricing of the 2017 TLB Facility. Due to this amendment, loans issued under the 2017 TLB Facility bear interest at LIBOR plus 1.75% per annum (previously LIBOR plus 2.00% per annum). All other significant terms of the agreement remained unchanged. Ashland incurred \$1 million of new debt issuance costs in connection with the re-pricing, which was expensed during 2018 within the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

During 2018, Ashland utilized cash primarily from repatriations and borrowings from the accounts receivable securitization facilities to fully repay the \$250 million outstanding balance of the Three-Year TLA Facility and to repay \$55 million of the Five-Year TLA Facility. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of less than \$1 million during 2018, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

During 2019, Ashland utilized proceeds from the sale of its Composites business (excluding the Maleic business) and the Marl facility to repay the remaining principal balance of the TLA Facility and the TLB Facility. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of \$6 million during 2019, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

During January 2020, Ashland entered into the 2020 Credit Agreement, replacing the 2017 Credit Agreement. As a result of the termination of the 2017 Credit Agreement, Ashland recognized a \$1 million charge for accelerated amortization of previously capitalized debt issuance costs during 2020, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Note Issuance and existing notes tender

During January 2020, a subsidiary of Ashland, Ashland Services B.V., completed the issuance of 2.00% senior unsecured notes due 2028 with an aggregate principal amount of €500 million (the 2028 Notes). The notes are senior unsecured obligations of Ashland Services B.V and initially guaranteed on an unsecured basis by each of Ashland Global Holdings Inc. and Ashland LLC. Ashland used the net proceeds of the offering (after deducting initial purchasers' discounts and other fees and expenses), together with the proceeds of the new term loan facility and other funds of Ashland LLC or its subsidiaries, to repurchase the existing notes described below in cash tender offers, and to pay fees and expenses associated therewith.

Ashland incurred \$8 million of new debt issuance costs in connection with the 2028 Notes, which is amortized using the effective interest method over the Notes' term.

Debt repayments and repurchases

Cash repatriation

During 2020 and 2019, Ashland repatriated approximately \$576 million (including the proceeds of the 2020 senior notes due 2028) and \$900 million, respectively, in cash that was primarily used to repay existing debt, principally portions of the 4.75% senior notes due 2022, the 6.875% senior notes due 2043 and the 6.5% junior notes in 2020 and the TLA Facility and TLB Facility in 2019 (as previously discussed).

2020 Debt repayments and repurchases

Tender offers of 4.750% notes due 2022

During 2020, Ashland executed tender offers of its 4.750% notes due 2022 (the 2022 Notes). As a result of these repurchases, the carrying values of the 2022 Notes was reduced by \$670 million. Ashland recognized a \$5 million charge related to accelerated accretion on debt discounts and accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Tender offers of 6.875% notes due 2043

During 2020, Ashland executed tender offers of its 6.875% notes due 2043 (the 2043 Notes). As a result of these repurchases, the carrying values of the 2043 Notes was reduced by \$92 million. Ashland recognized a \$1 million charge related to accelerated accretion on debt premiums and accelerated amortization of previously capitalized debt issuance costs, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Tender offers of 6.500% Junior Subordinated Debentures due 2029

During 2020, Ashland executed tender offers of Hercules LLC's 6.500% junior subordinated debentures due 2029 (the 2029 Junior Debentures). As a result of these repurchases, the carrying values of the 2029 Junior Debentures was reduced by \$2 million.

Total premiums paid for all the tender offers in 2020 noted above were \$59 million, which is included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

2019 Debt repayments and repurchases

Repayment of the Term loan A due 2022

During 2019, Ashland repaid all of the outstanding principal balance of its term loan A for a total of \$195 million. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of \$1 million during 2019, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Repayment of the Term loan B due 2024

During 2019, Ashland repaid all of the outstanding principal balance of its term loan B for a total of \$593 million. As a result of these repayments, Ashland recognized accelerated amortization of previously capitalized debt issuance costs of \$5 million during 2019, which was included in the net interest and other expense caption of the Statements of Consolidated Comprehensive Income (Loss).

Redemption of 9.35% notes due 2019

During 2019, Ashland redeemed all of its outstanding 9.35% medium term notes due 2019, of which approximately \$5 million were outstanding. Cash on hand was used to pay for the redemption.

Open market repurchases of 4.750% notes due 2022 and 6.875% notes due 2043

During 2019, Ashland executed open market repurchases of its 4.750% notes due 2022 (2022 Senior Notes) and its 6.875% notes due 2043 (2043 Senior Notes). As a result of these repurchases, the carrying values of the 2022 and 2043 Senior Notes were reduced by \$3 million and \$1 million, respectively.

Accounts receivable securitizations

2018 accounts receivable securitization

During July 2018, Ashland entered into a €115 million accounts receivable securitization facility (the Program) for the transfer by certain subsidiaries of Ashland (the Sellers) directly or indirectly to Ester Finance Titrisation (the Purchaser), a wholly-owned subsidiary of Crédit Agricole Corporate and Investment Bank (the Arranger), of certain receivables and/or collections originated by the Sellers towards certain corporate debtors located in multiple European jurisdictions and denominated in multiple currencies. The Program originally had a term of two years, but was extended to August 2021 in September 2019. During July 2020, the available funding for qualified receivables under the accounts receivable securitization facility decreased from €115 million to €100 million.

Under the Program, each Seller will assign, on an ongoing basis, certain of its accounts receivable and the right to the collections on those accounts receivable to the Purchaser. Under the terms of the Program, the Sellers could, from time to time, obtain up to €100 million from the Purchaser through the sale of an undivided interest in such accounts receivable and collections. 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 Program will be repaid as accounts receivable are collected, with new fundings being advanced (through daily advanced purchase price) as new accounts receivable are originated by the Sellers and assigned to the Purchaser, with settlement occurring monthly. Ashland classifies any borrowings under this facility as a short-term debt instrument within the Consolidated Balance Sheets. Once sold to the Purchaser, the accounts receivable and rights to collection described above are separate and distinct from each Sellers' own assets and are not available to its creditors should such Sellers become insolvent.

At September 30, 2020 and 2019, the outstanding amount of accounts receivable transferred by Ashland to the Purchaser was \$131 million and \$133 million, respectively, and there were \$93 million and \$94 million, respectively, of borrowings (denominated in multiple currencies) under the facility. The weighted-average interest rate for this instrument was 1.2% for both 2020 and 2019.

2012 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.

Under the Sale Agreement, each Originator transfers, on an ongoing basis, certain of its accounts receivable, certain related assets and the right to the collections on those accounts receivable to CVG. 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.

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 March 2017, this facility was extended for an additional year with similar terms as the previous facility agreement. During March 2018, the termination date of the accounts receivable securitization facility was extended from March 2018 to March 2020. During March 2020, the termination date of the accounts receivable securitization was extended from March 2020 to March 2021. The available funding for qualified receivables under the accounts receivable securitization facility increased from \$100 million to \$115 million, however this was decreased back to \$100 million on August 30, 2019 in conjunction with the Composites and Marl facility divestiture. No other changes to the agreement are expected to have a significant impact to Ashland's results of operations and financial position.

At September 30, 2020 and 2019, the outstanding amount of accounts receivable transferred by Ashland to CVG was \$151 million and \$147 million, respectively. There were \$84 million of borrowings under the facility as of September 30, 2020, while Ashland had \$50 million of borrowings under the facility as of September 30, 2019. The weighted-average interest rate for this instrument was 1.8% for 2020 and 3.3% for 2019.

Other debt

At September 30, 2020 and 2019, Ashland held other debt totaling \$81 million for each period, respectively, comprised primarily of a European short-term loan facility, the 6.50% notes due 2029 and other notes.

Available borrowing capacity

During the current year, Ashland entered into a new revolving credit facility. The borrowing capacity remaining under the new \$600 million revolving credit facility was \$500 million due to an outstanding balance of \$80 million, as well as a reduction of \$20 million for letters of credit outstanding at September 30, 2020. Ashland's total borrowing capacity at September 30, 2020 was \$500 million, which included zero of available capacity under the two accounts receivable securitization facilities.

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, 2020, 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 2020 Credit Agreement) is 4.0. The 2020 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 2020 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, non-cash 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 non-cash 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 within item 7 of this document. In general, consolidated indebtedness includes debt plus all purchase money indebtedness, banker's acceptances and bank guarantees, deferred purchase price of property or services, attributable indebtedness and guarantees. At September 30, 2020, Ashland's calculation of the consolidated net leverage ratio was 2.7.

The minimum required consolidated interest coverage ratio under the 2020 Credit Agreement is 3.0. The 2020 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, 2020, Ashland's calculation of the consolidated interest coverage ratio was 7.6.

Guarantee of senior notes

Ashland Global Holdings Inc. fully and unconditionally guaranteed the 4.750% notes due 2022, 2.00% notes due 2028 and 6.875% notes due 2043 and has no significant independent assets or operations.

Net interest and other expense (income)

(In millions)	2020	2019	2018
Interest expense (a)	\$ 88	\$ 114	\$ 116
Interest income	(1)	(2)	(4)
Investment securities income (b)	(30)	(17)	(14)
Other financing costs (c)	62	4	4
	<u>\$ 119</u>	<u>\$ 99</u>	<u>\$ 102</u>

(a) Includes \$8 million, \$6 million and \$1 million of accelerated accretion and/or amortization for original issue discounts and debt issuance costs during 2020, 2019 and 2018, respectively.

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

(c) Includes costs of \$59 million related to early redemption premium payments for the 2022 Notes, 2043 Notes and 2029 Junior Debentures during 2020.

The following table details the debt issuance cost and original issue discount amortization included in interest expense during 2020, 2019 and 2018.

(In millions)	2020	2019	2018
Normal amortization	\$ 7	\$ 7	\$ 7
Accelerated amortization (a)	8	6	1
Total	<u>\$ 15</u>	<u>\$ 13</u>	<u>\$ 8</u>

(a) Fiscal year 2020 includes \$2 million of accelerated accretion of the recorded debt discount for the 2022 Notes, 2029 Junior Debentures and 2043 Notes, while the remaining amounts in each year related to the 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.

(In millions)	2020	2019
Deferred compensation investments	\$ 173	\$ 170
Tax and tax indemnity receivables	41	68
Life insurance policies	60	56
Manufacturing catalyst supplies	35	38
Defined benefit plan assets	37	33
Equity and other unconsolidated investments	5	6
Land use rights	6	6
Environmental insurance receivables	12	12
Debt issuance costs	4	4
Other	21	17
	<u>\$ 394</u>	<u>\$ 410</u>

Deferred compensation investments

Deferred compensation investments consist of insurance policies valued at cash surrender value. Gains and losses related to deferred compensation investments are immediately recognized within the selling, general and administrative expense caption on the Statements of Consolidated Comprehensive Income (Loss). The gains on these investments were \$10 million, \$7 million and \$10 million during 2020, 2019 and 2018, respectively.

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

(In millions)	2020	2019
Tax liabilities	\$ 214	\$ 220
Environmental remediation reserves	150	143
Deferred compensation	32	42
Other	36	48
	<u>\$ 432</u>	<u>\$ 453</u>

NOTE K – LEASING ARRANGEMENTS

Ashland leases certain office buildings, transportation equipment, warehouses and storage facilities, and equipment. All of Ashland's leases are operating leases. Real estate leases represent approximately 88% of the total lease liability. See Note A for additional information related to Ashland's leasing policies.

The components of lease cost recognized within the Statements of Consolidated Comprehensive Income (Loss) were as follows:

(In millions)	Location	Twelve months ended September 30, 2020
Lease cost:		
Operating lease cost	Selling, General & Administrative	\$ 16
Operating lease cost	Cost of Sales	15
Variable lease cost	Selling, General & Administrative	4
Variable lease cost	Cost of Sales	3
Short-term leases	Cost of Sales	5
Total lease cost		<u>\$ 43</u>

The following table summarizes Ashland's lease assets and liabilities as presented in the Consolidated Balance Sheet at September 30:

(In millions)	September 30, 2020
Assets	
Operating lease assets, net	\$ 137
Total lease assets	<u>137</u>
Liabilities	
Current operating lease obligations	\$ 23
Non-current operating lease obligations	124
Total lease liabilities	<u>\$ 147</u>

The weighted average remaining lease term for operating leases as of September 30, 2020 was approximately 15 years.

The discount rate implicit within the leases is generally not determinable. Therefore, Ashland determines the discount rate based on its incremental borrowing rate. The incremental borrowing rate is determined using a buildup method resulting in an estimated range of secured borrowing rates matching the lease term and the currency of the jurisdiction in which lease payments are made, adjusted for impacts of collateral. Consideration was given to Ashland's own relevant debt issuances as well as debt instruments of comparable companies with similar credit characteristics. The weighted average discount rate used to measure operating lease liabilities as of September 30, 2020 was 2.9%. There are no leases that have not yet commenced but that create significant rights and obligations for Ashland.

Right-of-use assets exchanged for new operating lease obligations was \$6 million for the twelve months ended September 30, 2020.

Cash paid for amounts included in the measurement of operating lease liabilities:

(In millions)	Twelve months ended September 30, 2020
Operating cash flows from operating leases	\$ 28

Maturity Analysis of Lease Liabilities

Maturities of lease liabilities are shown below as of September 30, 2020:

(In millions)	As of September 30, 2020
2021	\$ 28
2022	35
2023	17
2024	13
2025	11
Thereafter	88
Total lease payments	192
Less amount of lease payment representing interest	(45)
Total present value of lease payments	<u>\$ 147</u>

As of September 30, 2019, under the previous guidance, the future minimum rental payments are as follows:

(In millions)	As of September 30, 2019
2020	\$ 29
2021	27
2022	34
2023	15
2024	13
Thereafter	110
Total lease payments	<u>\$ 228</u>

NOTE L – INCOME TAXES

Tax Law Changes

The Tax Cuts and Jobs Act (Tax Act) was enacted on December 22, 2017. The Tax Act reduces the U.S. federal corporate tax rate from 35% to 21%, requires companies to pay a one-time transition tax on earnings of certain foreign subsidiaries that were previously tax deferred and creates new taxes on certain foreign sourced earnings. At September 30, 2018, Ashland had not completed the internal accounting assessment for the tax effects of enactment of the Tax Act; however, Ashland determined a reasonable estimate of the effects on Ashland's existing deferred tax balances and the one-time transition tax. Due to the Tax Act, Ashland recognized a provisional amount during 2018, which is included as a component of income tax expense from continuing operations. Ashland recorded net unfavorable tax adjustments of \$2 million during 2018 primarily related to deferred tax rate changes and a one-time transition tax assessed on foreign cash and unremitted earnings. This adjustment included an expense of \$128 million related to the one-time transition tax, a benefit of \$139 million related to the tax deferred rate change and other tax expense of \$13 million. The one-time transition tax and deferred rate change associated with the Tax Act are discussed in greater detail below.

During 2019, Ashland completed its internal accounting assessment for the tax effects of enactment of the Tax Act and recorded adjustments to provisional amounts previously recorded. Ashland's final assessment resulted in net unfavorable tax adjustments of \$29 million during the twelve months ended September 30, 2019. These adjustments primarily related to the one-time transition tax assessed on foreign cash and unremitted earnings.

Provisional amounts - Deferred tax assets and liabilities

Ashland remeasured certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future, which is generally 21%. The provisional amount recorded related to the remeasurement of the deferred tax balance was a favorable tax adjustment of \$139 million during 2018.

Provisional amounts - Foreign tax effects

The one-time transition tax is based on Ashland's total post-1986 earnings and profits (E&P) of foreign subsidiaries that were previously deferred from U.S. income taxes. Ashland recorded a provisional amount for this one-time transition tax of \$128 million during 2018, which includes the one-time transition tax expense of \$187 million, a foreign tax credit benefit of \$46 million, a reversal of uncertain tax position benefits of \$9 million, state tax expense of \$2 million and a benefit for other miscellaneous items of \$6 million. Ashland completed its calculation of the total post-1986 E&P for these foreign subsidiaries and recorded an additional unfavorable \$29 million adjustment in 2019. No additional income taxes have been provided for any remaining undistributed foreign earnings not subject to the transition tax, or any additional outside basis difference inherent in these entities, as management intends to indefinitely reinvest all foreign earnings. Ashland determined that estimating the amount of unrecognized deferred tax liability related to any remaining undistributed foreign earnings not subject to the transition tax and additional outside basis difference in these entities (i.e., basis difference in excess of that subject to the one-time transition tax) is not practicable at this time.

Income Tax Provision

A summary of the provision for income taxes related to continuing operations follows.

(In millions)	2020	2019	2018
Current			
Federal	\$ 4	\$ (2)	\$ 20
State	(7)	(7)	(2)
Foreign	34	35	74
	<u>31</u>	<u>26</u>	<u>92</u>
Deferred	(43)	20	(100)
Income tax expense (benefit)	<u>\$ (12)</u>	<u>\$ 46</u>	<u>\$ (8)</u>

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)	2020	2019
Deferred tax assets		
Foreign net operating loss carryforwards (a)	\$ 37	\$ 36
Employee benefit obligations	30	29
Environmental, self-insurance and litigation reserves (net of receivables)	103	114
State net operating loss carryforwards (net of unrecognized tax benefits) (b)	37	38
Compensation accruals	23	28
Credit carryforwards (net of unrecognized tax benefits) (c)	19	10
Other items	30	38
Other lease liability	36	—
Valuation allowances (d)	(75)	(83)
Total deferred tax assets	240	210
Deferred tax liabilities		
Goodwill and other intangibles (e)	200	243
Property, plant and equipment	208	207
Right of use assets	34	—
Other	1	1
Total deferred tax liabilities	443	451
Net deferred tax liability	\$ (203)	\$ (241)

(a) Gross net operating loss carryforwards of \$145 million will expire in future years beyond 2022 or have no expiration.

(b) Apportioned net operating loss carryforwards generated of \$1.0 billion will expire in future years as follows: \$64 million in 2020, \$121 million in 2021 and the remaining balance in other future years.

(c) Credit carryforwards consist primarily of foreign tax credits of \$12 million expiring in future years beyond 2021, and state tax credits that will expire in 2025 or other future years.

(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, 2020 expected to be deductible for tax purposes is \$5 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.

(In millions)	2020	2019	2018
Income (loss) from continuing operations before income taxes			
United States	\$ (579)	\$ (76)	\$ (214)
Foreign	76	146	225
Income (loss) from continuing operations before income taxes	<u>\$ (503)</u>	<u>\$ 70</u>	<u>\$ 11</u>
Income taxes computed at U.S. statutory rate (a)	\$ (105)	\$ 15	\$ 3
Increase (decrease) in amount computed resulting from			
Tax reform (b)	(23)	29	44
Uncertain tax positions	9	10	(13)
Deemed inclusions, foreign dividends and other restructuring (c)	33	30	48
Foreign tax credits	(17)	(17)	(54)
Valuation allowance changes (d)	(1)	14	(2)
Research and development credits	(7)	(6)	(5)
State taxes (e)	(4)	(5)	(3)
Goodwill impairment	95	—	—
International rate differential	(2)	(30)	(50)
Other items (f)	10	6	24
Income tax expense (benefit)	<u>\$ (12)</u>	<u>\$ 46</u>	<u>\$ (8)</u>

(a) The domestic tax rate is 21% for 2020 and 2019, respectively and 24.5% for 2018.

(b) 2020 includes a benefit of \$23 million from Swiss tax reform. 2019 includes an expense of \$29 million related to a return to provision adjustment for transition tax. 2018 includes expense of \$187 million related to the one-time transition tax, a benefit of \$139 million related to the deferred rate change and a benefit of \$4 million related to tax reform in a foreign jurisdiction. Foreign tax credits of \$46 million related to the transition tax were included within the foreign tax credits caption. Other items related to the transition tax or other U.S. tax reform offset to immaterial amounts within the state taxes, uncertain tax positions and other captions and net to zero in the aggregate. In summary, total U.S. tax reform expense was \$2 million related to transition tax expense of \$187 million, a deferred rate change benefit of \$139 million and a foreign tax credit benefit of \$46 million. Ashland completed its calculation of the total post-1986 E&P for these foreign subsidiaries and recorded an additional unfavorable \$29 million adjustment in 2019.

(c) 2020 includes \$31 million primarily related to GILTI permanent adjustments. 2019 includes \$19 million primarily related to GILTI permanent adjustments. 2018 includes a gain recognition of \$6 million, deemed inclusions of \$13 million and tax restructuring costs of \$23 million.

(d) 2019 includes \$5 million related to state tax NOL's and \$9 million related to a foreign jurisdiction. 2018 includes a \$5 million benefit for the release of a foreign tax credit valuation allowance.

(e) 2018 includes a \$27 million tax benefit for a valuation reserve release against state net operating losses and \$26 million of tax expense for state tax rate changes.

(f) 2020 includes \$4 million for foreign withholding taxes. 2018 includes \$22 million related to foreign withholding taxes.

The 2020 effective tax rate was impacted by Swiss Tax Reform and non-deductible goodwill impairment. The 2020, 2019 and 2018 effective tax rates were impacted by jurisdictional income mix, restructuring activities, and the impact of U.S. tax reform.

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 \$171 million and \$165 million of unrecognized tax benefits at September 30, 2020 and 2019, respectively, recorded within other noncurrent liabilities. As of September 30, 2020, the total amount of unrecognized tax benefits that, if recognized, would affect the tax rate for continuing and discontinued operations was \$162 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 \$8 million expense in 2020, \$5

million benefit in 2019 and \$1 million expense in 2018. Ashland had \$32 million and \$26 million in interest and penalties related to unrecognized tax benefits accrued as of September 30, 2020 and 2019, respectively.

Changes in unrecognized tax benefits were as follows:

(In millions)	
Balance at September 30, 2018 (a)	\$ 164
Increases related to positions taken on items from prior years	1
Decreases related to positions taken on items from prior years	(5)
Increases related to positions taken in the current year	21
Lapse of statute of limitations	(10)
Disposition of Composites and Marl facility	(6)
Balance at September 30, 2019 (a)	<u>165</u>
Increases related to positions taken on items from prior years	6
Decreases related to positions taken on items from prior years	(2)
Increases related to positions taken in the current year	5
Lapse of statute of limitations	(3)
Disposition of Composites and Marl facility	—
Balance at September 30, 2020	<u>\$ 171</u>

(a) Ashland has indemnity receivables from Valvoline and Pharmachem for \$29 million and \$32 million of the gross unrecognized tax benefits at September 30, 2020 and 2019, respectively, recorded within other noncurrent assets.

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 \$51 million and \$61 million for continuing operations. For the remaining balance as of September 30, 2020, 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, 2013 and U.S. state income tax examinations by tax authorities for periods after September 30, 2010. 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 2009.

NOTE M – EMPLOYEE BENEFIT PLANS

Pension plans

Ashland and its subsidiaries have several contributory and noncontributory qualified defined benefit pension plans 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.

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 increase trend rate as of September 30, 2020 was 6.6% and continues to be reduced to 4.5% 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 costs.

Plan Amendments and Remeasurements

During 2019, Ashland settled a non-U.S. plan, which required the plan to be remeasured. This remeasurement resulted in a curtailment gain of \$18 million recorded within the other net periodic benefit (costs) caption of the Statements of Consolidated Comprehensive Income.

Plan Transfers

During August 2019, Ashland transferred a substantial portion of its non-qualified non-U.S. pension plans to INEOS as part of the sale of its Composites business (excluding the Maleic business) and the Marl facility. As of September 30, 2019, the net pension and other postretirement plan liabilities that transferred to INEOS totaled \$27 million.

The disclosures within this footnote exclude these amounts that were transferred and only relate to plans Ashland currently records within continuing operations.

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.

(In millions)	Pension benefits			Other postretirement benefits		
	2020	2019	2018	2020	2019	2018
Net periodic benefit costs (income)						
Service cost (a)	\$ 5	\$ 6	\$ 9	\$ 1	\$ 1	\$ 1
Interest cost (b)	7	10	10	2	2	1
Curtailement, settlement and other (b)	—	(18)	—	—	—	—
Expected return on plan assets (b)	(11)	(10)	(12)	—	—	—
Amortization of prior service credit (b)	—	—	—	—	—	—
Actuarial (gain) loss (b)	2	18	(14)	(2)	(7)	—
	<u>\$ 3</u>	<u>\$ 6</u>	<u>\$ (7)</u>	<u>\$ 1</u>	<u>\$ (4)</u>	<u>\$ 2</u>
Weighted-average plan assumptions (c)						
Discount rate for service cost	1.84%	2.40%	2.54%	3.39%	4.37%	3.93%
Discount rate for interest cost	2.16%	3.02%	2.55%	2.76%	3.91%	3.13%
Rate of compensation increase	2.51%	2.52%	2.53%			
Expected long-term rate of return on plan assets	3.05%	3.44%	3.36%			

(a) Service cost was not impacted by new accounting guidance adopted in 2018 and is therefore still classified within the selling, general and administrative expense and cost of sales captions on the Statements of Consolidated Comprehensive Income (Loss). See Note A for additional information.

(b) These components are now classified within the other net periodic benefit income (costs) caption on the Statements of Consolidated Comprehensive Income (Loss) due to the adoption of new accounting guidance in 2018. See Note A for additional information.

(c) The plan assumptions discussed are a blended weighted-average rate for Ashland's U.S. and non-U.S. plans.

The changes in prior service credit recognized in accumulated other comprehensive income during both 2020 and 2019 were less than \$1 million each. At September 30, 2020, Ashland expects to recognize less than \$1 million of the prior service credit in accumulated other comprehensive income as net periodic benefit cost (income) during the next fiscal year.

At September 30, 2020 and 2019, the amounts included in accumulated other comprehensive income are shown in the following table.

(In millions)	Pension		Postretirement	
	2020	2019	2020	2019
Prior service credit	\$ 2	\$ 3	\$ —	\$ —

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 2020 and 2019 are as follows.

(In millions)	Pension plans		Other postretirement benefit plans	
	2020	2019	2020	2019
Change in benefit obligations				
Benefit obligations at October 1	\$ 405	\$ 404	\$ 52	\$ 58
Service cost	5	5	1	1
Interest cost	7	10	2	2
Participant contributions	1	1	—	—
Benefits paid	(15)	(16)	(3)	(2)
Actuarial (gain) loss	7	65	(2)	(7)
Curtailments	(1)	(18)	—	—
Foreign currency exchange rate changes	16	(18)	—	—
Other	(1)	(1)	—	—
Settlements	(6)	(27)	—	—
Benefit obligations at September 30	<u>\$ 418</u>	<u>\$ 405</u>	<u>\$ 50</u>	<u>\$ 52</u>
Change in plan assets				
Value of plan assets at October 1	\$ 337	\$ 341	\$ —	\$ —
Actual return on plan assets	14	50	—	—
Employer contributions	6	5	—	—
Participant contributions	1	1	—	—
Benefits paid	(15)	(16)	—	—
Foreign currency exchange rate changes	12	(15)	—	—
Settlements	(6)	(27)	—	—
Other	(2)	(2)	—	—
Value of plan assets at September 30	<u>\$ 347</u>	<u>\$ 337</u>	<u>\$ —</u>	<u>\$ —</u>
Unfunded status of the plans	<u>\$ (71)</u>	<u>\$ (68)</u>	<u>\$ (50)</u>	<u>\$ (52)</u>
Amounts recognized in the balance sheet				
Noncurrent benefit assets	\$ 37	\$ 33	\$ —	\$ —
Current benefit liabilities	(1)	(3)	(3)	(3)
Noncurrent benefit liabilities	(107)	(98)	(47)	(49)
Net amount recognized	<u>\$ (71)</u>	<u>\$ (68)</u>	<u>\$ (50)</u>	<u>\$ (52)</u>
Weighted-average plan assumptions				
Discount rate	1.85%	1.96%	2.61%	3.11%
Rate of compensation increase	2.51%	2.52%		

The accumulated benefit obligation for all pension plans was \$413 million at September 30, 2020 and \$400 million at September 30, 2019. All 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:

(In millions)	2020	2019
Projected benefit obligation	\$ 219	\$ 207
Accumulated benefit obligation	214	202
Fair value of plan assets	112	106

Plan assets

The expected long-term rate of return on pension plan assets was 3.05% and 3.44% for 2020 and 2019, 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, 2020. 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	\$ 7	\$ 7	\$ —	\$ —
U.S. Government securities	20	—	20	—
Non-U.S. Government securities	80	—	80	—
Corporate debt instruments	144	—	144	—
Listed real assets	13	—	13	—
Asset-backed securities	21	—	21	—
Corporate stocks	36	—	36	—
Insurance contracts	26	—	26	—
Total assets at fair value	\$ 347	\$ 7	\$ 340	\$ —

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, 2019.

(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	\$ 5	\$ 5	\$ —	\$ —
U.S. Government securities	29	—	29	\$ —
Non-U.S. Government securities	73	—	73	—
Corporate debt instruments	145	—	145	—
Listed real assets	11	—	11	—
Asset-backed securities	22	—	22	—
Corporate stocks	29	—	29	—
Insurance contracts	23	—	23	—
Total assets at fair value	\$ 337	\$ 5	\$ 332	\$ —

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 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 asset allocation for the U.S. plans is 41% fixed income securities, 44% equity securities and 15% other securities. Fixed income securities primarily include cash and cash equivalents, long duration corporate debt obligations and U.S. government debt obligations. In addition, Ashland's non-U.S. plan fixed income securities include insurance contracts. Equity securities are comprised solely of traditional public 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 investment allocation 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, 2020 and 2019 by asset category follow.

(In millions)	Target	Actual at September 30	
		2020	2019
Plan assets allocation			
Equity securities	5 - 45%	10%	9%
Fixed income securities	55 - 95%	86%	88%
Other	0 - 5%	4%	3%
		<u>100%</u>	<u>100%</u>

Cash flows

During 2020 and 2019, Ashland contributed \$1 million to its U.S. pension plans each year and \$5 million and \$4 million to its non-U.S. pension plans. Ashland expects to contribute approximately \$2 million to its U.S. pension plans and \$5 million to its non-U.S. pension plans during 2021.

The following benefit payments, which reflect future service expectations, are projected to be paid from plan assets in each of the next five years and in aggregate for five years thereafter.

(In millions)	Pension benefits	Other postretirement benefits
2021	\$ 17	\$ 3
2022	16	3
2023	17	3
2024	18	3
2025	17	3
2026 - 2030	94	16

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 2020 and 2019, respectively, and \$25 million in 2018. 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 \$3 million and \$3 million as of September 30, 2020 and 2019, 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 has retained third party actuarial experts Nathan Associates, Inc. (Nathan). The methodology used by Nathan 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, Nathan 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 (Loss).

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)	2020	2019	2018
Open claims - beginning of year	53	53	54
New claims filed	2	2	2
Claims settled	(1)	(1)	(1)
Claims dismissed	(5)	(1)	(2)
Open claims - end of year	<u>49</u>	<u>53</u>	<u>53</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 Nathan.

During the most recent update completed during 2020, it was determined that the liability for Ashland asbestos-related claims should be increased by \$13 million. Total reserves for asbestos claims were \$335 million at September 30, 2020 compared to \$352 million at September 30, 2019.

A progression of activity in the asbestos reserve is presented in the following table.

(In millions)	2020	2019	2018
Asbestos reserve - beginning of year	\$ 352	\$ 380	\$ 419
Reserve adjustment	13	1	(8)
Amounts paid	(30)	(29)	(31)
Asbestos reserve - end of year (a)	<u>\$ 335</u>	<u>\$ 352</u>	<u>\$ 380</u>

(a) Included \$29 million and \$28 million classified in accrued expenses and other liabilities on the Consolidated Balance Sheets as of September 30, 2020 and 2019, respectively.

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.

At September 30, 2020, Ashland's receivable for recoveries of litigation defense and claim settlement costs from insurers amounted to \$103 million (excluding the Hercules receivable for asbestos claims). Receivables from insurers amounted to \$123 million at September 30, 2019. During 2020, 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 \$1 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)	2020	2019	2018
Insurance receivable - beginning of year	\$ 123	\$ 140	\$ 155
Receivable adjustment	1	(5)	(5)
Insurance settlement	(10)	—	—
Amounts collected	(11)	(12)	(10)
Insurance receivable - end of year (a)	<u>\$ 103</u>	<u>\$ 123</u>	<u>\$ 140</u>

(a) Included \$14 million and \$15 million classified in accounts receivable on the Consolidated Balance Sheets as of September 30, 2020 and 2019.

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)	2020	2019	2018
Open claims - beginning of year	13	13	12
New claims filed	1	1	2
Claims dismissed	(2)	(1)	(1)
Open claims - end of year	<u>12</u>	<u>13</u>	<u>13</u>

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 Nathan. As a result of the most recent annual update of this estimate, completed during 2020, it was determined that the liability for Hercules asbestos-related claims should be decreased by \$3 million. Total reserves for asbestos claims were \$229 million at September 30, 2020 compared to \$252 million at September 30, 2019.

A progression of activity in the asbestos reserve is presented in the following table.

(In millions)	2020	2019	2018
Asbestos reserve - beginning of year	\$ 252	\$ 282	\$ 323
Reserve adjustments	(3)	(10)	(19)
Amounts paid	(20)	(20)	(22)
Asbestos reserve - end of year (a)	<u>\$ 229</u>	<u>\$ 252</u>	<u>\$ 282</u>

(a) Included \$22 million and \$21 million classified in accrued expenses and other liabilities on the Consolidated Balance Sheets as of September 30, 2020 and 2019, 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 of September 30, 2020 and 2019, the receivables from insurers amounted to \$47 million and \$49 million, respectively. During 2020, 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 \$2 million decrease in the receivable for probable insurance recoveries.

A progression of activity in the Hercules insurance receivable is presented in the following table.

(In millions)	2020	2019	2018
Insurance receivable - beginning of year	\$ 49	\$ 54	\$ 68
Receivable adjustment	(2)	(5)	(14)
Insurance receivable - end of year	<u>\$ 47</u>	<u>\$ 49</u>	<u>\$ 54</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 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 \$520 million for the Ashland asbestos-related litigation (current reserve of \$335 million) and approximately \$350 million for the Hercules asbestos-related litigation (current reserve of \$229 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, 2020, such locations included 81 waste treatment or disposal sites where Ashland has been identified as a potentially responsible party under Superfund or similar state laws, 113 current and former operating facilities and about 1,225 service station properties, of which 25 are being actively remediated.

Ashland's reserves for environmental remediation and related environmental litigation amounted to \$200 million at September 30, 2020 compared to \$186 million at September 30, 2019, of which \$150 million at September 30, 2020 and \$143 million at September 30, 2019 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 2020 and 2019.

(In millions)		2020		2019
Environmental remediation reserve - beginning of year	\$	186	\$	187
Disbursements		(35)		(32)
Revised obligation estimates and accretion		49		31
Environmental remediation reserve - end of year	\$	<u>200</u>	\$	<u>186</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, 2020 and 2019, Ashland's recorded receivable for these probable insurance recoveries was \$15 million and \$13 million, respectively, of which \$12 million was classified in other noncurrent assets in the Consolidated Balance Sheets.

During 2020 and 2019, Ashland recognized \$48 million and \$30 million of expense, respectively, for certain environmental liabilities related to normal ongoing remediation cost estimate updates for sites, which is consistent with Ashland's historical environmental accounting policy.

During 2018, Ashland recognized \$60 million of expense for certain environmental liabilities. Of that amount, \$18 million related to one site where, after significant research and analysis as part of Ashland's normal process and protocol for these matters, the estimated cost for the ongoing remediation was finalized. As such, Ashland recorded the expense for this remediation project during 2018 since a reasonable estimate that is in accordance with U.S. GAAP provisions could be determined. The remaining charges in 2018 related to normal ongoing remediation cost estimate updates for sites, which is consistent with Ashland's historical environmental accounting policy.

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, 2020, 2019 and 2018.

(In millions)	2020	2019	2018
Environmental expense	\$ 48	\$ 30	\$ 60
Accretion	1	1	1
Legal expense	5	6	6
Total expense	54	37	67
Insurance receivable	(6)	(3)	(2)
Total expense, net of receivable activity (a)	\$ 48	\$ 34	\$ 65

(a) Net expense of \$12 million, \$7 million and \$5 million for the fiscal years ended September 30, 2020, 2019 and 2018, respectively, related 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 (Loss).

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 \$475 million. The largest reserve for any site is 14% 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, 2020 and 2019. 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, 2020 and 2019.

NOTE O – EQUITY ITEMS

Stock repurchase programs

During March 2018, Ashland's Board of Directors approved a new \$1 billion stock repurchase program. Under the new program, Ashland's common shares may be repurchased in open market transactions, privately negotiated transactions or pursuant to one or more accelerated stock repurchase programs or Rule 10b5-1 plans. As of September 30, 2020, \$800 million remained available for repurchase under the 2018 stock repurchase program.

Stock repurchase program agreements

In May 2019, under the 2018 stock repurchase program, Ashland announced that it entered into an accelerated share repurchase agreement (2019 ASR Agreement). Under the 2019 ASR Agreement, Ashland paid an initial purchase price of \$200 million and received an initial delivery of 2.2 million shares of common stock during May 2019. The bank exercised its early termination option under the 2019 ASR Agreement in August 2019, and an additional 400 thousand shares were repurchased, bringing the total shares repurchased upon settlement to 2.6 million. This was the first stock, and currently only, repurchase under the 2018 stock repurchase program. There were no repurchases of common stock in 2020.

Stockholder dividends

Ashland paid dividends per common share of \$1.10, \$1.05 and \$0.95 during 2020, 2019 and 2018, respectively.

In May 2019, the Board of Directors of Ashland announced a quarterly cash dividend of 27.5 cents per share to eligible stockholders at record, which represented an increase from the previous quarterly cash dividend of 25.0 cents per share. This dividend was paid in the third and fourth quarters of fiscal 2019, and each quarter of fiscal 2020.

In May 2018, the Board of Directors of Ashland announced a quarterly cash dividend of 25 cents per share to eligible stockholders at record, which represented an increase from the previous quarterly cash dividend of 22.5 cents per share. This dividend was paid in the third and fourth quarters of fiscal 2018, and the first and second quarters of fiscal 2019.

Shares reserved for issuance

At September 30, 2020, 14.2 million common shares were 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.

(In millions)	Before tax	Tax (expense) benefit	Net of tax
Year ended September 30, 2020			
Other comprehensive income (loss)			
Unrealized translation income	\$ 28	\$ (1)	\$ 27
Total other comprehensive gain	<u>\$ 28</u>	<u>\$ (1)</u>	<u>\$ 27</u>
Year ended September 30, 2019			
Other comprehensive income (loss)			
Unrealized translation loss	\$ (80)	\$ —	\$ (80)
Pension and postretirement obligation adjustment	(7)	2	(5)
Total other comprehensive loss	<u>\$ (87)</u>	<u>\$ 2</u>	<u>\$ (85)</u>
Year ended September 30, 2018			
Other comprehensive income (loss)			
Unrealized translation loss	\$ (82)	\$ —	\$ (82)
Net change in investment securities:			
Unrealized gain on investment securities (a)	24	(7)	17
Reclassification adjustment for gains included in net income	(6)	2	(4)
Total other comprehensive loss	<u>\$ (64)</u>	<u>\$ (5)</u>	<u>\$ (69)</u>

(a) Due to the adoption of new accounting guidance in fiscal 2019, unrealized gains and losses on Ashland's equity securities are now recognized in net income rather than other comprehensive income. See Notes A and F for more information.

Summary of Stockholders' Equity

A reconciliation of changes in stockholders' equity are as follows:

(In millions)	2020	2019	2018
Common stock and paid in capital			
Balance, beginning of period	\$ 757	\$ 947	\$ 932
Common shares issued under stock incentive and other plans (a)	13	10	15
Common shares purchased under repurchase program (b)	—	(200)	—
Balance, end of period	770	757	947
Retained earnings			
Balance, beginning of period	3,224	2,750	2,696
Adoption of new accounting pronouncements (c)	—	34	—
Net income (loss)	(508)	505	114
Regular dividends	(67)	(65)	(60)
Balance, end of period	2,649	3,224	2,750
Accumulated other comprehensive income (loss)			
Balance, beginning of period	(410)	(291)	(222)
Adoption of new accounting pronouncements (c)	—	(34)	—
Unrealized translation gain (loss)	27	(80)	(82)
Net change in investment securities	—	—	13
Pension and postretirement obligation adjustment	—	(5)	—
Balance, end of period	(383)	(410)	(291)
Total stockholders' equity	\$ 3,036	\$ 3,571	\$ 3,406
Cash dividends declared per common share	\$ 1.10	\$ 1.05	\$ 0.95

(a) Common shares issued were 391,180, 336,188 and 360,468 for 2020, 2019 and 2018, respectively.

(b) Common shares repurchased were 2,637,054 for 2019.

(c) Represents the cumulative-effect adjustment related to the adoption of the new guidance related to the accounting for equity securities and tax effects of intercompany transfers during fiscal 2019. See Note A for more information.

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 and accounts for forfeitures when they occur across all stock-based awards.

The components of Ashland's pretax compensation expense for stock-based awards (net of forfeitures) and associated income tax benefits are as follows:

(In millions)	2020 (a)	2019 (b)	2018 (c)
SARs	\$ 5	\$ 7	\$ 7
Nonvested stock awards	10	18	24
Performance share awards	1	1	13
	\$ 16	\$ 26	\$ 44
Income tax benefit	\$ 4	\$ 6	\$ 14

(a) The year ended September 30, 2020 included \$2 million and zero of expense related to cash-settled nonvested restricted stock awards and cash-settled performance units, respectively.

(b) The year ended September 30, 2019 included \$5 million and zero of expense related to cash-settled nonvested restricted stock awards and cash-settled performance units, respectively.

(c) The year ended September 30, 2018 included \$9 million and \$8 million of expense related to cash-settled nonvested restricted stock awards and cash-settled performance units, respectively.

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 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 peer companies because historical volatility was not considered reflective of future volatility given the divestitures discussed in Notes C and D. The expected life is based on the mid-point of the weighted average time to vest and contractual term.

(In millions except per share data)	2020	2019	2018
Weighted-average fair value per share of SARs granted	\$ 16.15	\$ 21.95	\$ 19.62
Assumptions (weighted-average)			
Risk-free interest rate	1.7%	3.0%	2.1%
Expected dividend yield	1.4%	1.2%	1.3%
Expected volatility	23.0%	25.9%	31.8%
Expected life (in years)	6	6	6

A progression of activity and various other information relative to SARs and previously issued and vested stock options is presented in the following table.

(In thousands except per share data)	2020		2019		2018	
	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
Outstanding - beginning of year	2,102	\$ 57.94	2,263	\$ 53.21	2,261	\$ 47.98
Granted	314	77.58	299	82.34	470	67.16
Exercised	(271)	46.00	(380)	46.15	(421)	40.10
Forfeitures and expirations	(152)	78.27	(80)	71.38	(47)	58.73
Outstanding - end of year (a)	<u>1,993</u>	61.11	<u>2,102</u>	57.94	<u>2,263</u>	53.21
Exercisable - end of year	1,609	57.31	1,579	53.04	1,472	47.76

(a) Exercise prices per share for SARs outstanding at September 30, 2020 ranged from \$27.54 to \$29.50 for 93 thousand shares, from \$37.37 to \$47.63 for 279 thousand shares, from \$57.96 to \$59.95 for 773 thousand shares, and from \$62.33 to \$82.34 for 848 thousand shares. The weighted-average remaining contractual life of outstanding SARs and stock options was 5.7 years and exercisable SARs and stock options was 5.0 years

The total intrinsic value of SARs exercised was \$8 million in 2020, \$12 million in 2019 and \$15 million in 2018. The actual tax benefit realized from the exercised SARs was \$2 million in 2020, \$3 million in 2019 and \$5 million in 2018. The total grant date fair value of SARs that vested during 2020, 2019 and 2018 was \$4 million, \$8 million and \$4 million, respectively. As of September 30, 2020, there was \$3 million of total unrecognized compensation costs related to SARs. That cost is expected to be recognized over a weighted-average period of 1.6 years. As of September 30, 2020, the aggregate intrinsic value of outstanding SARs and exercisable SARs was \$23 million, each.

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. Beginning in 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.

A progression of activity and various other information relative to nonvested stock awards is presented in the following table.

(In thousands except per share data)	2020		2019		2018	
	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
Nonvested - beginning of year	215	\$ 73.26	291	\$ 66.98	219	\$ 59.16
Granted	140	75.42	96	81.31	192	71.36
Vested	(125)	72.43	(151)	66.24	(107)	59.46
Forfeitures	(31)	77.99	(21)	73.63	(13)	62.22
Nonvested - end of year	<u>199</u>	<u>74.57</u>	<u>215</u>	<u>73.26</u>	<u>291</u>	<u>66.98</u>

The total fair value of nonvested stock awards that vested during 2020, 2019 and 2018 was \$9 million, \$10 million and \$6 million, respectively. As of September 30, 2020, there was \$7 million of total unrecognized compensation costs related to nonvested stock awards. That cost is expected to be recognized over a weighted-average period of 2.1 years.

Cash-settled nonvested stock awards

Certain nonvested stock awards are granted to employees and are settled in cash upon vesting. As of September 30, 2020, 74 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 \$2 million, \$5 million, and \$9 million during 2020, 2019 and 2018, 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, upon vesting, each performance unit will be settled in stock based on the fair market value of Ashland common stock and recorded as a component of stockholders' equity. 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 total shareholder return (TSR) performance modifier relative to peers for Ashland.

For awards granted in 2020, each performance share is convertible to one share of Ashland Common Stock and recorded as a component of stockholders' equity. Performance measures used to determine the actual number of performance shares issuable upon vesting includes 60:40 weighting of Ashland's total shareholder return (TSR) performance and Ashland's return on net assets (RONA) performance as compared to internal targets. TSR relative to peers is considered a market condition while RONA is considered a performance condition in accordance with U.S. GAAP.

The following table shows the performance shares/units granted for all plans that award Ashland Common Stock.

(In thousands)	Vesting period	Target shares/units granted (a)	Weighted-average fair value per share/unit (a)
Fiscal Year 2020	October 1, 2019 - September 30, 2022	110	\$ 88.65
Fiscal Year 2019	October 1, 2018 - September 30, 2021	78	\$ 84.93
Fiscal Year 2018	October 1, 2017 - September 30, 2020	101	\$ 68.93

(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.

For these awards, 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.

	2020	2019	2018
Risk-free interest rate	1.6%	2.9%	1.6% - 1.8%
Expected dividend yield	1.4%	1.3%	1.4%
Expected life (in years)	3	3	3
Expected volatility	20.5%	24.6%	25.0%

The following table shows changes in nonvested performance shares/units for all plans that award Ashland Common Stock or cash (fiscal year 2017 only).

	2020		2019		2018	
	Shares/ Units	Weighted- average grant date fair value	Shares/ Units	Weighted- average grant date fair value	Shares/ Units	Weighted- average grant date fair value
(In thousands except per share data)						
Nonvested - beginning of year	260	\$ 76.59	260	\$ 64.55	268	\$ 63.00
Granted	110	88.65	78	84.93	101	68.93
Vested	(92)	77.09	(68)	61.67	(104)	65.53
Forfeitures	(51)	82.53	(10)	65.16	(5)	66.24
Nonvested - end of year	<u>227</u>	<u>80.86</u>	<u>260</u>	<u>76.59</u>	<u>260</u>	<u>64.55</u>

As of September 30, 2020, there was \$6 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 2.0 years.

NOTE Q – REVENUE

Revenue recognition

Ashland's revenue is measured as the amount of consideration it expects to receive in exchange for transferring goods or providing services and is recognized when performance obligations are satisfied under the terms of contracts with customers. Ashland generally utilizes standardized language for the terms of contracts, unless a separate agreement has been entered into with a customer that supersedes the standard language.

A performance obligation is deemed to be satisfied by Ashland when control of the product or service is transferred to the customer. The transaction price of a contract, or the amount Ashland expects to receive upon satisfaction of all performance obligations, is determined by reference to the contract's terms and includes adjustments, if applicable, for any variable consideration, such as volume discounts, rebates, refunds and rights to return. Where a contract contains more than one distinct performance obligation, the transaction price is allocated to each performance obligation based on the standalone selling price of each performance obligation, although these situations do not occur frequently and are generally not included within Ashland's contracts. Any unsatisfied performance obligations were not material. Standalone selling prices are based on prices Ashland charges to customers, which in some cases are based on established market prices. Ashland generally collects the cash from its customers within 60 days of the product delivery date. Sales and other similar taxes collected from customers on behalf of third parties are excluded from the contract price.

All of Ashland's revenue is derived from contracts with customers, and nearly all contracts with customers contain one performance obligation for the transfer of goods where such performance obligation is satisfied at a point in time. Control of a product is deemed to be transferred to the customer generally upon shipment or delivery. Costs for shipping and handling

activities, whether performed before or after the customer obtains control of the goods, are accounted for as fulfillment costs when not reimbursed.

Costs incurred to obtain contracts with customers have historically not been significant and are expensed immediately as the period of performance is generally one year or less. Ashland records bad debt expense in specific situations when it is determined that the customer is unable to meet its financial obligation.

Practical expedients

Upon adoption, Ashland utilized the following applicable practical expedients, as permitted by ASC 606, Revenue from Contracts with Customers:

- Sales and other similar taxes collected from customers on behalf of third parties are excluded from the contract price;
- Costs for shipping and handling activities, whether performed before or after the customer obtains control of the goods, are accounted for as fulfillment costs when not reimbursed; and
- Costs incurred to obtain contracts with customers are expensed immediately when the amortization period is one year or less.

Trade receivables

Trade receivables are defined as receivables arising from contracts with customers and are recorded within the accounts receivable caption within the Condensed Consolidated Balance Sheets. Ashland's trade receivables were \$441 million and \$435 million as of September 30, 2020 and September 30, 2019, respectively.

Disaggregation of revenue

Ashland disaggregates its revenue from contracts with customers by segment and geographical region, as Ashland believes these categories best depict how management reviews the financial performance of its operations for the twelve months ended September 30, 2020, 2019 and 2018. Ashland includes only U.S. and Canada in its North America designation. See the following tables for details (Intersegment sales eliminations have been excluded. See Note R for additional information.)

		Sales by geography		
(In millions)		2020	2019	2018
	Life Sciences			
North America	\$	226	\$ 252	\$ 264
Europe		229	226	222
Asia Pacific		181	182	180
Latin America & other		72	72	65
	\$	<u>708</u>	<u>\$ 732</u>	<u>\$ 731</u>

(In millions)		2020	2019	2018
	Personal Care & Household			
North America	\$	185	\$ 182	\$ 187
Europe		258	280	299
Asia Pacific		97	109	109
Latin America & other		75	80	107
	\$	<u>615</u>	<u>\$ 651</u>	<u>\$ 702</u>

(In millions)		2020	2019	2018
	Specialty Additives			
North America	\$	199	\$ 218	\$ 236
Europe		218	237	248
Asia Pacific		134	160	160
Latin America & other		38	39	42
	\$	<u>589</u>	<u>\$ 654</u>	<u>\$ 686</u>

(In millions)		2020	2019	2018
	Performance Adhesives			
North America	\$	263	\$ 293	\$ 301
Europe		33	36	37
Asia Pacific		8	7	5
Latin America & other		6	9	8
	\$	<u>310</u>	<u>\$ 345</u>	<u>\$ 351</u>

(In millions)		2020	2019	2018
	Intermediates and Solvents			
North America	\$	73	\$ 107	\$ 93
Europe		24	23	24
Asia Pacific		26	25	31
Latin America & other		6	5	7
	\$	<u>129</u>	<u>\$ 160</u>	<u>\$ 155</u>

NOTE R – 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 and EBITDA are the primary measures of performance that are 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.

Change in Reportable Segments

During the second quarter of fiscal year 2020, Ashland changed the manner in which it manages the business moving from a functionally led to a business led organization. This change recognizes that Ashland has a diverse portfolio of businesses with different value propositions for the markets Ashland serves. The organizational change allows Ashland to align its business models, resources and cost structure to the specific needs of each business and enables greater ownership and accountability for

both short- and long-term performance. Ashland has realigned its segment reporting structure commensurate with this organizational change. The reportable segments are consistent with how the segments report to and are managed by Ashland's Chief Executive Officer (the chief operating decision maker). As a result, Ashland's reportable segments include Life Sciences, Personal Care & Household, Specialty Additives, Performance Adhesives and Intermediates and Solvents. Unallocated and Other includes corporate governance activities and certain legacy matters. The historical segment information has been recast to conform to the current segment structure. Ashland has also provided subtotals by its consumer and industrial businesses to reflect the end markets served by each reportable segment.

Reportable segment business descriptions

Consumer Specialties

The Consumer Specialties business is comprised of the following reportable segments:

Life Sciences is comprised of pharmaceuticals, nutrition, nutraceuticals, agricultural chemicals, advanced materials and fine chemicals. Pharmaceutical solutions include controlled release polymers, disintegrants, film coatings, solubilizers, and tablet binders. Nutrition solutions include for thickeners, stabilizers, emulsifiers and additives for enhancing mouthfeel, controlling moisture migration, reducing oil uptake and controlling color. Nutraceutical solutions include products for weight management, joint comfort, stomach and intestinal health, sports nutrition and general wellness, and provide custom formulation, toll processing and particle engineering solutions. Customers include pharmaceutical, food, beverage, nutraceuticals and supplements manufacturers, hospitals and radiologists and industrial manufacturers.

Personal Care & Household is comprised of biofunctionals, preservatives, skin care, sun care, oral care, hair care and household. These businesses have a broad range of nature-based, biodegradable, and performance ingredients for customer-driven solutions to help protect, renew, moisturize and revitalize skin and hair, and provide solutions for toothpastes, mouth washes and rinses, denture cleaning and care for teeth. Household supplies nature-derived rheology ingredients, biodegradable surface wetting agents, performance encapsulates, and specialty polymers for household, industrial and institutional cleaning products. Customers include formulators at large multinational branded consumer products companies and smaller, independent boutique companies.

Industrial Specialties

The Industrial Specialties business is comprised of the following reportable segments:

Specialty Additives is comprised of rheology- and performance-enhancing additives serving the coatings, construction, energy, automotive and various industrial markets. Solutions include coatings additives for architectural paints, finishes and lacquers, cement- and gypsum- based dry mortars, ready-mixed joint compounds, synthetic plasters for commercial and residential construction, and specialty materials for industrial applications. Products include rheology modifiers (cellulosic and associative thickeners), foamcontrol agents, surfactants and wetting agents, pH neutralizers, advanced ceramics used in catalytic converters, and environmental filters, ingredients that aid the manufacturing process of ceramic capacitors, plasma display panels and solar cells, ingredients for textile printing, thermoplastic metals and alloys for welding. Products help improve desired functional outcomes through rheology modification and control, water retention, workability, adhesive strength, binding power, film formation, deposition and suspension and emulsification. Customers include global paint manufacturers, electronics and automotive manufacturers, textile mills, the construction industry, and welders.

Performance Adhesives is comprised of adhesives used in packaging, converting and structural applications. Packaging adhesives has an extensive line of pressure sensitive adhesives, functional coatings and primers combined with innovative technology solutions for narrow-, mid- and wide-web applications. Products meet stringent requirements in food and beverage safety, shipping, transportation, health and beauty, industrial, postage and security printing. Structural adhesives include light weighting vehicles and eliminating VOCs in buildings. Customers include converters of packaging materials, manufacturers of building materials and tier one suppliers to transportation industry.

Other

Intermediates and Solvents is comprised of the production of 1,4 butanediol (BDO) and related derivatives, including 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 provided as a feedstock to the supplied to Life Sciences, Personal Care, and Specialty Additives for use as a raw material.

Unallocated and Other generally includes items such as certain significant company-wide restructuring activities, corporate governance costs and legacy costs or activities 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 2020, 2019 or 2018.

(In millions)	Sales to external customers			Net assets (liabilities)		Property, plant and equipment - net	
	2020	2019	2018	2020	2019	2020	2019
United States	\$ 878	\$ 959	\$ 997	\$ 1,786	\$ 1,789	\$ 1,211	\$ 1,231
International	1,448	1,534	1,592	1,250	1,782	354	346
	<u>\$ 2,326</u>	<u>\$ 2,493</u>	<u>\$ 2,589</u>	<u>\$ 3,036</u>	<u>\$ 3,571</u>	<u>\$ 1,565</u>	<u>\$ 1,577</u>

Reportable segment results

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, certain corporate governance costs and other costs or activities 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 within the other net periodic benefit income (costs) caption of the Statement of Consolidated Comprehensive Income (loss). 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. This includes changes in the current fiscal year for certain corporate governance costs, which were previously allocated. These costs are now reflected in Unallocated and Other for all periods presented.

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.

The following table presents various financial information for each reportable segment for the years ended September 30, 2020, 2019 and 2018.

Ashland Global Holdings Inc. and Consolidated Subsidiaries

Reportable Segment Information

Years Ended September 30

(In millions)	2020	2019	2018
Sales			
<i>Life Sciences</i>	\$ 708	\$ 732	\$ 731
<i>Personal Care & Household</i>	615	651	702
Consumer Specialties	1,323	1,383	1,433
<i>Specialty Additives</i>	589	654	686
<i>Performance Adhesives</i>	310	345	351
Industrial Specialties	899	999	1,037
<i>Intermediates and Solvents</i>	129	160	155
<i>Intersegment sales (a)</i>	(25)	(49)	(36)
	<u>\$ 2,326</u>	<u>\$ 2,493</u>	<u>\$ 2,589</u>
Equity income			
<i>Life Sciences</i>	\$ —	\$ —	\$ —
<i>Personal Care & Household</i>	—	—	1
Consumer Specialties	—	—	1
<i>Specialty Additives</i>	—	—	—
<i>Performance Adhesives</i>	—	—	—
Industrial Specialties	—	—	—
<i>Intermediates and Solvents</i>	—	—	—
	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 1</u>
Other income (expense)			
<i>Life Sciences</i>	\$ 1	\$ —	\$ 1
<i>Personal Care & Household</i>	—	(1)	—
Consumer Specialties	1	(1)	1
<i>Specialty Additives</i>	1	—	(6)
<i>Performance Adhesives</i>	—	—	—
Industrial Specialties	1	—	(6)
<i>Intermediates and Solvents</i>	—	—	—
<i>Unallocated and other</i>	6	5	8
	<u>\$ 8</u>	<u>\$ 4</u>	<u>\$ 3</u>
Equity and other income	<u>\$ 8</u>	<u>\$ 4</u>	<u>\$ 4</u>
Operating income (loss)			
<i>Life Sciences</i>	\$ 123	\$ 114	\$ 117
<i>Personal Care & Household</i>	(296)	85	105
Consumer Specialties	(173)	199	222
<i>Specialty Additives</i>	(132)	18	64
<i>Performance Adhesives</i>	56	58	52
Industrial Specialties	(76)	76	116
<i>Intermediates and Solvents</i>	(10)	28	25
<i>Unallocated and other</i>	(129)	(137)	(261)
	<u>\$ (388)</u>	<u>\$ 166</u>	<u>\$ 102</u>

(In millions)	2020	2019	2018
Depreciation expense			
<i>Life Sciences</i>	\$ 33	\$ 33	\$ 30
<i>Personal Care & Household</i>	41	42	45
Consumer Specialties	74	75	75
<i>Specialty Additives</i>	62	98	73
<i>Performance Adhesives</i>	13	13	13
Industrial Specialties	75	111	86
<i>Intermediates and Solvents</i>	13	10	11
<i>Unallocated and other</i>	—	3	11
	<u>\$ 162</u>	<u>\$ 199</u>	<u>\$ 183</u>
Amortization expense (b)			
<i>Life Sciences</i>	\$ 27	\$ 28	\$ 30
<i>Personal Care & Household</i>	36	37	39
Consumer Specialties	63	65	69
<i>Specialty Additives</i>	19	21	21
<i>Performance Adhesives</i>	2	1	1
Industrial Specialties	21	22	22
<i>Intermediates and Solvents</i>	1	3	3
<i>Unallocated and other</i>	—	—	—
	<u>\$ 85</u>	<u>\$ 90</u>	<u>\$ 94</u>
EBITDA (c) (d)			
<i>Life Sciences</i>	\$ 183	\$ 175	\$ 177
<i>Personal Care & Household</i>	(219)	164	189
Consumer Specialties	(36)	339	366
<i>Specialty Additives</i>	(51)	137	158
<i>Performance Adhesives</i>	71	72	66
Industrial Specialties	20	209	224
<i>Intermediates and Solvents</i>	4	41	39
<i>Unallocated and other</i>	(129)	(134)	(250)
	<u>\$ (141)</u>	<u>\$ 455</u>	<u>\$ 379</u>
Additions to property, plant and equipment			
<i>Life Sciences</i>	\$ 51	\$ 54	\$ 43
<i>Personal Care & Household</i>	13	20	18
Consumer Specialties	64	74	61
<i>Specialty Additives</i>	59	57	65
<i>Performance Adhesives</i>	5	6	12
Industrial Specialties	64	63	77
<i>Intermediates and Solvents</i>	5	7	5
<i>Unallocated and other</i>	5	10	14
	<u>\$ 138</u>	<u>\$ 154</u>	<u>\$ 157</u>

(In millions)	2020	2019
Assets		
<i>Life Sciences</i>	\$ 1,974	\$ 1,946
<i>Personal Care & Household</i>	939	1,366
Consumer Specialties	2,913	3,312
<i>Specialty Additives</i>	1,666	1,775
<i>Performance Adhesives</i>	591	618
Industrial Specialties	2,257	2,393
<i>Intermediates and Solvents</i>	161	185
<i>Unallocated and other</i>	1,546	1,361
	<u>\$ 6,877</u>	<u>\$ 7,251</u>
Property, plant and equipment - net		
<i>Life Sciences</i>	\$ 439	\$ 430
<i>Personal Care & Household</i>	205	225
Consumer Specialties	644	655
<i>Specialty Additives</i>	656	633
<i>Performance Adhesives</i>	80	89
Industrial Specialties	736	722
<i>Intermediates and Solvents</i>	72	78
<i>Unallocated and other</i>	113	122
	<u>\$ 1,565</u>	<u>\$ 1,577</u>

- (a) Intersegment sales from Intermediates and Solvents are accounted for at prices that approximate fair value. All other intersegment sales are accounted for at cost.
- (b) Includes amortization of zero, \$4 million and \$1 million related to land-use-rights associated with other non-current assets.
- (c) Excludes income (loss) from discontinued operations, other net periodic benefit income (expense) and net income (loss) on divestitures. See the Statement of Consolidated Comprehensive Income (Loss) for applicable amounts excluded.
- (d) Includes zero, \$39 million and \$14 million of accelerated depreciation for the years ended September 30, 2020, 2019 and 2018, respectively.

NOTE S – SUBSEQUENT EVENTS

During November 2020, Ashland closed on the definitive sale agreement to sell a Specialty Additives facility described in Note C. Consideration per the sales agreement was \$23 million, subject to customary closing adjustments. The gain associated with this sale will be recorded during the first quarter of fiscal 2021. See Note C for additional details.

QUARTERLY FINANCIAL INFORMATION (UNAUDITED)

The following table presents quarterly financial information and per share data relative to Ashland's Common Stock.

Quarters ended (In millions except per share data)	December 31		March 31		June 30		September 30	
	2019	2018	2020	2019	2020	2019	2020 (a)	2019 (b)
Sales	\$ 533	\$ 576	\$ 610	\$ 667	\$ 574	\$ 641	\$ 609	\$ 609
Cost of sales	380	424	413	469	378	434	448	400
Gross profit as a percentage of sales	28.7%	26.4%	32.3%	29.7%	34.1%	32.3%	26.4%	34.3%
Operating income (loss)	17	(7)	(468)	44	48	43	15	85
Income (loss) from continuing operations	34	(71)	(575)	45	50	23	—	27
Net income (loss)	32	(48)	(582)	76	37	66	5	411
Basic earnings per share								
Continuing operations	\$ 0.57	\$ (1.14)	\$ (9.48)	\$ 0.72	\$ 0.82	\$ 0.38	\$ —	\$ 0.45
Net income (loss)	\$ 0.54	\$ (0.76)	\$ (9.61)	\$ 1.21	\$ 0.61	\$ 1.06	0.08	6.80
Diluted earnings per share								
Continuing operations	\$ 0.56	\$ (1.14)	\$ (9.48)	\$ 0.71	\$ 0.81	\$ 0.37	\$ —	\$ 0.44
Net income (loss)	0.53	(0.76)	(9.61)	1.19	0.61	1.05	0.07	6.71
Regular cash dividends per share	\$ 0.275	\$ 0.250	\$ 0.275	\$ 0.250	\$ 0.275	\$ 0.275	\$ 0.275	\$ 0.275

- (a) Fourth quarter results for 2020 included pre-tax key items of \$7 million related to environmental adjustments, \$11 million gain on securities, \$22 million related to restructuring, separation and other costs, and \$47 million for inventory control measures. In addition, a \$29 million (net of tax) gain on sale was recorded for the completed sale of the Maleic business within net income (loss). Income tax expense for the fourth quarter included \$8 million of net unfavorable tax specific key items.
- (b) Fourth quarter results for 2019 included pre-tax key items of \$11 million related to the loss on pension and postretirement benefit plan remeasurements, \$6 million debt refinancing costs, \$5 million gain on securities, \$1 million related to restructuring, separation and other costs, and \$1 million favorable true-up related to proxy costs. In addition, a \$372 million (net of tax) gain on sale was recorded for the completed sale of the Composites segment (excluding the Maleic business) and the Marl facility within net income (loss). Income tax expense for the fourth quarter included \$11 million of net unfavorable tax specific key items.

Ashland Global Holdings Inc. and Consolidated Subsidiaries
Five-Year Selected Financial Information (unaudited)
Years Ended September 30

(In millions except per share data) (a)	2020	2019	2018	2017	2016
Summary of operations					
Sales	\$ 2,326	\$ 2,493	\$ 2,589	\$ 2,309	\$ 2,179
Cost of sales	1,619	1,726	1,726	1,580	1,463
Gross profit	707	767	863	729	716
Selling, general and administrative expense	424	453	599	530	631
Research and development expense	64	66	73	73	77
Intangibles amortization expense	85	86	93	80	74
Equity and other income (loss)	8	4	4	3	2
Goodwill impairment	530	—	—	—	—
Operating income (loss)	(388)	166	102	49	(64)
Net interest and other financing expense	119	99	102	229	173
Other net periodic benefit income (costs)	2	5	15	(6)	(62)
Net gain (loss) on acquisitions and divestitures	2	(2)	(4)	(10)	(8)
Income (loss) from continuing operations before income taxes	(503)	70	11	(196)	(307)
Income tax expense (benefit)	(12)	46	(8)	(16)	(46)
Income (loss) from continuing operations	(491)	24	19	(180)	(261)
Income from discontinued operations	(17)	481	95	208	233
Net income (loss)	(508)	505	114	28	(28)
Net income attributable to noncontrolling interest	—	—	—	27	1
Net income (loss)	<u>\$ (508)</u>	<u>\$ 505</u>	<u>\$ 114</u>	<u>\$ 1</u>	<u>\$ (29)</u>
Balance sheet information (as of September 30)					
Current assets	\$ 1,547	\$ 1,433	\$ 1,712	\$ 1,904	\$ 2,888
Current liabilities	813	757	1,076	968	1,238
Working capital	<u>\$ 734</u>	<u>\$ 676</u>	<u>\$ 636</u>	<u>\$ 936</u>	<u>\$ 1,650</u>
Total assets	\$ 6,877	\$ 7,251	\$ 8,259	\$ 8,618	\$ 10,000
Short-term debt	\$ 280	\$ 166	\$ 254	\$ 235	\$ 170
Long-term debt	1,573	1,501	2,275	2,584	2,325
Equity	3,036	3,571	3,406	3,406	3,165
Cash flow information					
Cash flows provided (used) by operating activities from continuing operations	\$ 313	\$ 228	\$ 241	\$ 174	\$ 291
Additions to property, plant and equipment	138	154	157	168	205
Cash dividends	66	64	60	77	97
Common stock information					
Basic earnings per share					
Income (loss) from continuing operations	\$ (8.10)	\$ 0.39	\$ 0.30	\$ (2.90)	\$ (4.16)
Net income (loss) attributable to Ashland	(8.39)	8.15	1.82	0.01	(0.47)
Diluted earnings per share					
Income (loss) from continuing operations	(8.10)	0.39	0.29	(2.90)	(4.16)
Net income (loss) attributable to Ashland	(8.39)	8.03	1.79	0.01	(0.47)
Dividends	1.10	1.05	0.95	1.23	1.56

(a) As a result of the final Valvoline Inc. distribution on May 12, 2017 and the Composites and Marl facility divestiture (including the Maleic business), these assets, liabilities, operating results and cash flows for all periods presented have been classified as discontinued operations within the Consolidated Financial Statements. See Note D within the Notes to Consolidated Financial Statements for more information.

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board of directors

Guillermo Novo ⁽²⁾
Chairman and Chief Executive Officer,
Ashland

Brendan M. Cummins ^(1, 2, 4^a)
Former Chief Executive Officer,
Ciba Specialty Chemicals

William G. Dempsey ^(1, 2, 3^a)
Former Executive Vice President,
Global Pharmaceuticals,
Abbott Laboratories

Jay V. Ihlenfeld ^(1, 2, c)
Former Sr. Vice President,
3M Company

Susan L. Main ^(1^a, 3)
Senior Vice President and
Chief Financial Officer,
Teledyne Technologies Incorporated

Jerome A. Peribere ^(3, 4)
Former President and
Chief Executive Officer,
Sealed Air Corporation

Craig A. Rogerson ^(2, 4)
Chairman, President and Chief
Executive Officer, Hexion Inc.

Ricky Sandler ^(1, 3)
Founder and Chief Executive
Officer/Chief Investment Officer,
Eminence Capital

Janice J. Teal, Ph.D. ^(2^a, 4)
Former Group Vice President
and Chief Scientific Officer,
Avon Products Inc.

executive officers

Guillermo Novo
Chairman and Chief Executive Officer

Eric N. Boni
Vice President, Finance and Principal
Accounting Officer

Min Chong
Senior Vice President and General
Manager, Specialty Additives and
Intermediates and Solvents

Peter J. Ganz
Senior Vice President, General
Counsel and Secretary; Chief Legal
and Compliance Officer

Ashok Kalyana
Senior Vice President and General
Manager, Life Sciences

J. Kevin Willis
Senior Vice President and
Chief Financial Officer

Osama M. Musa
Senior Vice President and Chief
Technology Officer

Xiaolan Wang
Senior Vice President and General
Manager, Personal Care and Household

Yvonne Winkler von Mohrenfels
Deputy General Counsel

corporate governance

Ashland is governed by a nine-member board of directors, eight of whom are independent directors under New York Stock Exchange (NYSE) guidelines. The board conducted 10 meetings in fiscal 2020. During fiscal 2020, 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 26 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 2020 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, Guillermo Novo, certified Ashland's compliance with the NYSE corporate governance listing standards on February 4, 2020.

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

*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.

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.
8145 Blazer Drive
Wilmington, DE 19808

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
Wilmington, DE 19808
Tel +1 302 594 5010
samrozek@ashland.com

ticker symbol: ASH

Fiscal 2020 closing stock prices per common share:

High:	\$81.31	2/13/20
Low:	\$39.76	3/23/20
Year-end:	\$70.92	09/30/20

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:

EQ Shareowner Services
1110 Centre Point Curve, Suite 101
Mendota Heights, MN 55120

Mailing Address:

EQ 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 27.5 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 EQ Shareowner Services at +1 855 598 5486 +1 651 450 4064 (outside the U.S.)

independent registered public accounting firm

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 **Ashland**
always solving

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