

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
Form 10-K**

(Mark One)

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

For the fiscal year ended December 31, 2022

OR

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

For the transition period from _____ to _____
Commission file number 1-1070



OLIN CORPORATION

(Exact name of registrant as specified in its charter)

Virginia

(State or other jurisdiction of incorporation or organization)

190 Carondelet Plaza, Suite 1530, Clayton, MO

(Address of principal executive offices)

13-1872319

(I.R.S. Employer Identification No.)

63105

(Zip code)

Registrant's telephone number, including area code: (314) 480-1400

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

Title of each class:	Trading symbol:	Name of each exchange on which registered:
Common Stock, \$1.00 par value per share	OLN	New York Stock Exchange

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

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

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

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

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

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

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

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

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

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

As of June 30, 2022, the aggregate market value of registrant's common stock, \$1.00 par value per share, held by non-affiliates of registrant was approximately \$6,254,428,046 based on the closing sale price as reported on the New York Stock Exchange.

As of January 31, 2023, 131,616,642 shares of the registrant's common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the following document are incorporated by reference in this Form 10-K as indicated herein:

Document	Part of 10-K into which incorporated
Proxy Statement relating to Olin's Annual Meeting of Shareholders to be held in 2023	Part III

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PART I

Item 1. BUSINESS

GENERAL

Olin Corporation (Olin) is a Virginia corporation, incorporated in 1892, having its principal executive offices in Clayton, MO. We are a manufacturer concentrated in three business segments: Chlor Alkali Products and Vinyls, Epoxy and Winchester. The Chlor Alkali Products and Vinyls segment manufactures and sells chlorine and caustic soda, ethylene dichloride and vinyl chloride monomer, methyl chloride, methylene chloride, chloroform, carbon tetrachloride, perchloroethylene, hydrochloric acid, hydrogen, bleach products and potassium hydroxide, which represented 54% of 2022 sales. The Epoxy segment produces and sells a full range of epoxy materials and precursors, including aromatics (acetone, bisphenol, cumene and phenol), allyl chloride, epichlorohydrin, liquid epoxy resins, solid epoxy resins and systems and growth products such as converted epoxy resins and additives, which represented 29% of 2022 sales. The Winchester segment produces and sells sporting ammunition, reloading components, small caliber military ammunition and components, and industrial cartridges, which represented 17% of 2022 sales. See our discussion of our segment disclosures contained in Item 7—"Management's Discussion and Analysis of Financial Condition and Results of Operations."

GOVERNANCE

We maintain an Internet website at www.olin.com. Our reports on Form 10-K, Form 10-Q and Form 8-K, as well as amendments to those reports, are available free of charge on our website, as soon as reasonably practicable after we file the reports with the Securities and Exchange Commission (SEC). Also, a copy of our electronically filed materials can be obtained at www.sec.gov. Our Principles of Corporate Governance, Committee Charters and Code of Conduct are available on our website at www.olin.com in the Leadership & Governance Section under Governance Documents and Committees.

In May 2022, our Chief Executive Officer (CEO) executed the annual Section 303A.12(a) CEO Certification required by the New York Stock Exchange (NYSE), certifying that he was not aware of any violation of the NYSE's corporate governance listing standards by us. Additionally, our Chief Executive Officer and Chief Financial Officer (CFO) executed the required Sarbanes-Oxley Act of 2002 Sections 302 and 906 certifications relating to this Annual Report on Form 10-K, which are filed with the SEC as exhibits to this Annual Report on Form 10-K.

PRODUCTS, SERVICES AND STRATEGIES

Chlor Alkali Products and Vinyls

Products and Services

We have been involved in the chlor alkali industry for approximately 130 years and consider ourselves the leading global chlor alkali and derivatives producer. Chlorine, caustic soda and hydrogen are co-produced commercially by the electrolysis of salt. These co-produced products are produced simultaneously, and in a fixed ratio of 1.0 ton of chlorine to 1.1 tons of caustic soda and 0.03 tons of hydrogen. The industry refers to this as an Electrochemical Unit or ECU.

Chlorine is used as a raw material in the production of thousands of products, including vinyls, urethanes, epoxy, water treatment chemicals and a variety of other organic and inorganic chemicals. A significant portion of chlorine production is consumed in the manufacturing of vinyls intermediates, ethylene dichloride (EDC) and vinyl chloride monomer (VCM), both of which our Chlor Alkali Products and Vinyls segment produces. A large portion of our EDC production is utilized in the production of VCM, but we are also one of the largest global participants in merchant EDC sales. In addition to marketing Olin produced EDC, we also purchase EDC for re-sale on a global basis. EDC and VCM are precursors for polyvinyl chloride (PVC), a material used in applications such as vinyl siding, pipe, pipe fittings and automotive parts.

Our Chlor Alkali Products and Vinyls segment is one of the largest global marketers of caustic soda, including caustic soda produced by Olin, as well as globally produced material purchased by Olin for re-sale. The diversity of caustic soda sourcing allows us to cost effectively supply customers worldwide. Caustic soda has a wide variety of end-use applications, the largest of which includes water treatment, alumina, pulp and paper, urethanes, detergents and soaps and a variety of other organic and inorganic chemicals.

Our Chlor Alkali Products and Vinyls segment also includes our chlorinated organics business which is the largest global producer of chlorinated organic products that include chloromethanes (methyl chloride, methylene chloride and chloroform)

and chloroethanes (perchloroethylene and carbon tetrachloride). Our chlorinated organics business participates in both the solvent segment, as well as the intermediate segment of the global chlorocarbon industry with a focus on sustainable applications and in applications where we can benefit from our cost advantages. Intermediate products are used as feedstocks in the production of fluoropolymers, fluorocarbon refrigerants and blowing agents, silicones, cellulose and agricultural chemicals. Solvent products are sold into end uses such as surface preparation, dry cleaning, pharmaceuticals and regeneration of refining catalysts. This business's unique technology allows us to utilize both hydrochloric acid and chlorinated hydrocarbon byproducts (RCl), produced by our other production processes, as raw materials in an integrated system.

We also manufacture and sell other chlor alkali-related products, including hydrochloric acid, sodium hypochlorite (bleach) and potassium hydroxide. These products, along with chlorinated organics products and epoxy resins, generally consume chlorine as a raw material creating downstream applications that upgrade the value of the ECU. Our industry leadership in the production of chlorinated organics and epoxy resins, as well as other products, offer us eighteen integrated outlets for our captive chlorine.

The Chlor Alkali Products and Vinyls segment's products are delivered by pipeline, marine vessel, deep-water and coastal barge, railcar and truck. We own, operate, and lease a geographically dispersed terminal infrastructure at our production sites and other locations that expands our geographic coverage and enhances our service capabilities. At our largest integrated product sites, our deep-water access enables us to reach global markets. In North America we own and operate a private fleet of trucks and tank trailers that allow us to more effectively serve our domestic bleach and caustic soda customers.

Our Chlor Alkali Products and Vinyls segment currently maintains a reliable supply of key raw materials. Electricity, salt, ethylene and methanol are the major purchased raw materials for our Chlor Alkali Products and Vinyls segment. Electricity is the single largest raw material component in the production of Chlor Alkali Products and Vinyls' products. Approximately 68% of our electricity is generated from natural gas or hydroelectric sources. We satisfy our electricity needs through a combination of market power, long-term contracts and the operation of our own power assets, which allow for cost differentiation at specific U.S. manufacturing sites. Approximately 73% of our salt requirements are met by internal supply. Ethylene is primarily supplied for the vinyls business under a long-term supply arrangement whereby we receive ethylene at integrated producer economics. Methanol is sourced domestically and internationally primarily from large producers. The high volume nature of the chlor alkali industry places an emphasis on cost management, and we believe that our scale, integration and raw material positions make us one of the low cost producers in the industry.

The following table lists principal products and services of our Chlor Alkali Products and Vinyls segment.

<i>Products & Services</i>	<i>Major End Uses</i>	<i>Plants & Facilities</i>	<i>Major Raw Materials & Components for Products/Services</i>
Chlorine/caustic soda	Pulp & paper processing, chemical manufacturing, water purification, vinyl chloride manufacturing, bleach, swimming pool chemicals and urethane chemicals	Becancour, Canada Charleston, TN Freeport, TX McIntosh, AL Niagara Falls, NY Plaquemine, LA St. Gabriel, LA	salt, electricity
Ethylene dichloride/vinyl chloride monomer	Precursor to polyvinyl chloride used in vinyl siding, plumbing and automotive parts	Freeport, TX Plaquemine, LA	chlorine, ethylene, ethylene dichloride
Chlorinated organics intermediates	Used as feedstocks in the production of fluoropolymers, fluorocarbon refrigerants and blowing agents, silicones, celluloses and agricultural chemicals	Freeport, TX Plaquemine, LA Stade, Germany	chlorine, ethylene dichloride, hydrochloric acid, methanol, RCl _s
Chlorinated organics solvents	Surface preparation, dry cleaning and pharmaceuticals	Freeport, TX Plaquemine, LA Stade, Germany	chlorine, ethylene dichloride, hydrochloric acid, RCl _s
Sodium hypochlorite (bleach)	Household cleaners, laundry bleaching, swimming pool sanitizers, semiconductors, water treatment, textiles, pulp & paper and food processing	Augusta, GA Becancour, Canada Charleston, TN Freeport, TX Henderson, NV Lemont, IL McIntosh, AL* Niagara Falls, NY* Santa Fe Springs, CA	caustic soda, chlorine
Hydrochloric acid	Steel, oil & gas, plastics, organic chemical synthesis, water & wastewater treatment, brine treatment, artificial sweeteners, pharmaceuticals, food processing and ore & mineral processing	Becancour, Canada Charleston, TN Freeport, TX McIntosh, AL Niagara Falls, NY	chlorine, hydrogen
Potassium hydroxide	Fertilizer manufacturing, soaps, detergents & cleaners, battery manufacturing, food processing chemicals and deicers	Charleston, TN	electricity, potassium chloride
Hydrogen	Fuel source, hydrogen fuel cells, hydrogen peroxide and hydrochloric acid	Becancour, Canada Charleston, TN Freeport, TX McIntosh, AL Niagara Falls, NY Plaquemine, LA St. Gabriel, LA	electricity, salt

* Includes low salt, high strength bleach manufacturing.

Strategies

Maximize returns to the ECU. Leverage our diverse and flexible chlor alkali derivatives portfolio via our strategic operating model to continually mitigate exposure and maximize value from the entire ECU by managing our production rates to the prevailing weaker side of the ECU.

Participate in global trade flow of the products we market. Access excess product available for global trade, complementing our internal produced product to serve a growing customer demand at the highest value.

Continually drive down costs through productivity. Our advantaged cost position is derived from low cost energy, scale, integration, and deep water ports. Maintaining a strong discipline on areas such as cost management, capital outlays, and asset maintenance are key to creating greater operating flexibility to maximize returns to the ECU.

Epoxy

Products and Services

The Epoxy business was one of the first major manufacturers of epoxy products, and has continued to build on more than half a century of history through product innovation and technical excellence. We believe the Epoxy segment is one of the largest fully integrated global producers of epoxy resins, curing agents and intermediates. The Epoxy segment has a favorable manufacturing cost position, primarily in North America, driven by a combination of scale and integration into low cost feedstocks (including chlorine, caustic soda, allylics and aromatics). The Epoxy segment produces and sells a full range of epoxy materials and precursors, including aromatics (acetone, bisphenol (BisA), cumene and phenol), allylics, such as allyl chloride (Allyl) and epichlorohydrin (EPI), resins such as liquid epoxy resins (LER) and solid epoxy resins (SER) and systems and growth platform products such as converted epoxy resins (CER) and additives.

The Epoxy segment serves a diverse array of applications, including wind energy, electrical laminates, consumer goods and composites, as well as numerous applications in civil engineering and protective coatings. The Epoxy segment has important relationships with established customers, some of which span decades. The Epoxy segment’s primary geographies are North America and Western Europe. The segment products are delivered primarily by marine vessel, deep-water and coastal barge, railcar and truck.

Allyl is used not only as a feedstock in the production of EPI, but also as a chemical intermediate in multiple industries and applications, including water purification chemicals. EPI is primarily produced as a feedstock for use in the business’s epoxy resins, and is also sold in the merchant market. LER is manufactured in liquid form and cures with the addition of a hardener into a three-dimensional thermoset solid material offering a distinct combination of structural strength, adhesion, electrical insulation, thermal or chemical resistance and corrosion protection that is well-suited to coatings and composites applications. SER is processed further with BisA to meet specific end market applications. While LER and SER are sold externally, a significant portion of LER production is further converted through our systems and growth platform into CER and other additive products where value-added modifications produce higher margin resins for specific customer applications.

Our Epoxy segment maintains a reliable supply of certain key raw materials, such as benzene and propylene, under long-term, cost based contracts. The Epoxy segment’s production economics benefit from its integration into chlor alkali and aromatics which are key inputs in epoxy production. This fully integrated structure provides both access to low cost materials and significant operational flexibility. The Epoxy segment operates an integrated aromatics production chain producing cumene, phenol, acetone and BisA for internal consumption and external sale. The Epoxy segment’s consumption of chlorine enables the Chlor Alkali Products and Vinyls segment to generate caustic soda production and sales. Chlorine and caustic soda used in our Epoxy segment is transferred at cost from the Chlor Alkali Products and Vinyls segment.

The following table lists principal products and services of our Epoxy segment.

<i>Products & Services</i>	<i>Major End Uses</i>	<i>Plants & Facilities</i>	<i>Major Raw Materials & Components for Products/Services</i>
Allylics (allyl chloride, epichlorohydrin and glycerin) & aromatics (acetone, bisphenol, cumene and phenol)	Manufacturers of polymers, resins and other plastic materials and water purification	Freeport, TX Stade, Germany Termeuzen, Netherlands	benzene, caustic soda, chlorine, propylene
Resins: liquid epoxy resin/solid epoxy resin	Adhesives, marine and protective coatings, composites and flooring	Freeport, TX Guarujá, Brazil Stade, Germany	bisphenol, caustic soda, epichlorohydrin
Systems and Growth Platforms: Converted epoxy resins and additives	Electrical laminates, paint and coatings, wind blades, electronics and construction	Baltringen, Germany Freeport, TX Guarujá, Brazil Gumi, South Korea Pisticci, Italy Rheinmunster, Germany Roberta, GA Stade, Germany Zhangjiagang, China	liquid epoxy resins, solid epoxy resins

Strategies

Focus on Return to the ECU. The Epoxy segment is focused on maximizing return to the ECU by targeting participation and improving margins in EPI, LER, and derivative applications with the highest return to the ECU.

Drive Productivity to Sustain Our Cost Advantage. The Epoxy segment continues to drive productivity cost improvements through the entire supply chain to build on our position as the low cost producer of EPI and LER in the Americas and Europe.

Focus on Systems and Growth Platforms. The Epoxy segment is focused on expanding our market participation in higher value add platform products aligning with growing end-use markets.

Winchester

Products and Services

In 2023, Winchester is in its 157th year of operation and its 93rd year as part of Olin. Winchester is a premier developer and manufacturer of small caliber ammunition for sale to domestic and international retailers (commercial customers), law enforcement agencies and domestic and international militaries. We believe we are a leading U.S. producer of ammunition for recreational shooters, hunters, law enforcement agencies and the U.S. Armed Forces. Winchester also manufactures industrial products that have various applications in the construction industry.

On October 1, 2020, Winchester assumed full management and operational control of the Lake City Army Ammunition Plant (Lake City) in Independence, MO. The United States Army selected Winchester to operate and manage Lake City in September 2019. The contract is for the production of small caliber military ammunition, including 5.56mm, 7.62mm, and .50 caliber rounds, as well as certain cartridges and casings. The contract also allows for the production of certain ammunition for commercial customers. The contract has an initial term of seven years and may be extended by the United States Army for up to three additional years.

Our legendary Winchester[®] product line includes all major gauges and calibers of shotgun shells, rimfire and centerfire ammunition for pistols and rifles, reloading components and industrial cartridges. We believe we are a leading U.S. supplier of small caliber commercial ammunition.

Winchester has strong relationships throughout the sales and distribution chain and strong ties to traditional dealers and distributors. Winchester has also built its business with key high-volume mass merchants and specialty sporting goods and outdoor merchandise retailers. Winchester has consistently developed industry-leading ammunition, which is recognized in the industry for manufacturing excellence, design innovation and consumer value.

In November 2021, Winchester introduced Shoot United[™], a dynamic initiative designed to promote the shooting sports and drive increased participation. Shoot United embodies engaging content that will continue to be shared nationwide through mainstream media and on ShootUnited.com. The content is meant to entertain, inform and foster a healthy and transparent dialogue. In addition, grassroots events will continue to be coordinated throughout the U.S. for people to join, with the mission to drive awareness and introduce new participants to the sport.

During 2022, the U.S. Army awarded Winchester the second year of a five-year contract to manufacture 5.56 mm, 7.62 mm and .50 caliber rifle ammunition as well as a new five-year pistol contract for .38 caliber, .45 caliber and 9mm handgun ammunition. The rifle contract was made under the third consecutive "Second Source" ammunition contract Winchester has received from the U.S. Army. The pistol contract maintains Winchester's longstanding position as the leading supplier of pistol ammunition to the U.S. military.

During 2022, the U.S. Army awarded Winchester contracts to support the 6.8mm Next Generation Squad Weapons (NGSW) program at the Lake City Army Ammunition Plant, including the design of the NGSW ammunition manufacturing facility.

During 2021, Winchester received the exclusive .308 Winchester/7.62x51 NATO FBI sniper contract, the first of its kind in this caliber, as well as a 9mm duty and training contract, both of which were renewed in 2022.

In May 2021, Winchester was recognized with the Overall Supplier of the Year award by Academy Sports and Outdoors, Incorporated (Academy), one of the nation’s largest retailers of sporting goods products and outdoor merchandise. The Overall Supplier of the Year is Academy’s highest merchandising supplier award across all categories and departments; Winchester was chosen from more than 1,800 merchandise suppliers for superior performance, consistent reliability, valued relationships at all levels, and overall contribution to the company during 2020.

In October 2021, Winchester was recognized by the National Association of Sporting Goods Wholesalers (NASGW) with the group’s 2021 Ammunition Manufacturer of the Year award for providing outstanding value and service to NASGW distributor members.

Winchester’s new ammunition products continue to receive awards from major industry publications and organizations, with recent awards including: *American Rifleman* magazine’s Golden Bullseye Award as "Ammunition Product of the Year" in 2020 and 2022; *Guns & Ammo* magazine’s "Ammunition of the Year" award in 2021.

Winchester purchases raw materials such as copper-based strip and ammunition cartridge case cups and lead from vendors based on a conversion charge or premium. These conversion charges or premiums are in addition to the market prices for metal as posted on exchanges such as the Commodity Exchange, or COMEX, and London Metals Exchange, or LME. Winchester’s other main raw material is propellant, which is purchased predominantly from one of the U.S.’s largest propellant suppliers.

The following table lists principal products and services of our Winchester segment.

<i>Products & Services</i>	<i>Major End Uses</i>	<i>Plants & Facilities</i>	<i>Major Raw Materials & Components for Products/Services</i>
Winchester® sporting ammunition (shotshells, small caliber centerfire & rimfire ammunition)	Hunters & recreational shooters, law enforcement agencies	East Alton, IL Independence, MO* Oxford, MS	brass, lead, steel, plastic, propellant, explosives
Small caliber military ammunition	Infantry and mounted weapons	East Alton, IL Independence, MO* Oxford, MS	brass, lead, propellant, explosives
Industrial products (8 gauge loads & powder-actuated tool loads)	Maintenance applications in power & concrete industries, powder-actuated tools in construction industry	East Alton, IL Oxford, MS	brass, lead, plastic, propellant, explosives

*Government-owned, contractor-operated (GOCO) facility

Strategies

Maximize Existing Strengths. Winchester will increase our value by strengthening our leadership position in small caliber ammunition through all of the customer segments that we serve – Commercial, Military, Law Enforcement, and Industrial. Through our Shoot United™ strategic initiative, Winchester will focus on promoting shooting sports and drive increased participation. With one of the world’s largest small caliber ammunition manufacturing footprints, we will leverage employee engagement, engineering, and process excellence across our three production sites.

Innovative Solutions. Winchester will continue building on our strong reputation as an industry innovator with a long record of meeting the needs of recreational shooters, first responders, and the modern warfighter. We will drive value for our business through developing market driven new products and delivering engineered solutions for our customers.

Productivity Improvement. Winchester will leverage our continuous improvement process to increase productivity through optimizing our people, processes, and equipment. We will continue to modernize our facilities and equipment for productivity as well as improved safety and environmental impact.

INTERNATIONAL OPERATIONS

Olin has an international presence, including the geographic regions of Europe, Asia Pacific and Latin America. Approximately 39% of Olin’s 2022 sales were generated outside of the U.S., including 33% of our Chlor Alkali Products and Vinyls 2022 segment sales, 68% of our Epoxy 2022 segment sales and 8% of our Winchester 2022 segment sales. See Note 19 "Segment Information" of the notes to consolidated financial statements contained in Item 8, for geographic segment data. We are incorporating our segment information from that Note into this section of our Form 10-K.

CUSTOMERS AND DISTRIBUTION

Products we sell to industrial or commercial users or distributors for use in the production of other products constitute a major part of our total sales. We sell some of our products, such as epoxy resins, caustic soda and sporting ammunition, to a large number of users or distributors, while we sell other products, such as chlorine and chlorinated organics, in substantial quantities to a relatively small number of industrial users. During 2022, no single customer accounted for more than 10% of sales.

We market most of our products and services primarily through our sales force and sell directly to various industrial customers, mass merchants, retailers, wholesalers, other distributors and the U.S. Government and its prime contractors.

Sales to all U.S. Government agencies and sales under U.S. Government contracting activities in total accounted for approximately 4% of sales in 2022. Because we engage in some government contracting activities and make sales to the U.S. Government, we are subject to extensive and complex U.S. Government procurement laws and regulations. These laws and regulations provide for ongoing government audits and reviews of contract procurement, performance and administration. Failure to comply, even inadvertently, with these laws and regulations and with laws governing the export of munitions and other controlled products and commodities could subject us or one or more of our businesses to civil and criminal penalties, and under certain circumstances, suspension and debarment from future government contracts and the exporting of products for a specified period of time.

BACKLOG

The total amount of estimated backlog was approximately \$838 million and \$1,928 million as of January 31, 2023 and 2022, respectively. The backlog orders are associated with contractual orders in our Winchester business. Backlogs in our other businesses are not significant. Backlog is comprised of all open customer orders which have been received, but not yet shipped. The backlog was estimated based on expected volume to be shipped from firm contractual orders, which are subject to customary terms and conditions, including cancellation and modification provisions. During 2021, consumer purchases of ammunition increased significantly above historic demand levels. Approximately 95% of contracted backlog as of January 31, 2023 is expected to be fulfilled during 2023, with the remainder expected to be fulfilled during 2024.

COMPETITION

We are in active competition with businesses producing or distributing the same or similar products, as well as, in some instances, with businesses producing or distributing different products designed for the same uses.

Chlor alkali manufacturers in North America, with approximately 16 million tons of chlorine and 17 million tons of caustic soda capacity, account for approximately 16% of worldwide chlor alkali production capacity. In 2022, we have the largest chlor alkali capacity in North America and globally. While the technologies to manufacture and transport chlorine and caustic soda are widely available, the production facilities require large capital investments, and are subject to significant regulatory and permitting requirements. There is a worldwide market for caustic soda, which attracts imports and allows exports depending on market conditions. This industry includes large diversified producers in North America and abroad, including multiple producers located in China. Other large chlor alkali producers in North America include The Occidental Petroleum Corporation (Oxy), Westlake Chemical Corporation (Westlake), Formosa USA, and Shintech Inc., a subsidiary of Shin-Etsu Chemical Co., Ltd (Shintech). We are also a leading integrated global producer of chlorinated organic products with a strong cost position due to our scale and access to chlor alkali feedstocks. This industry also includes large diversified producers such as Oxy, Westlake, Nobian Industrial Chemicals B.V. (Nobian), Inovyn (an Ineos company), and KEM ONE Group SAS, as well as multiple producers located in China and India.

We are a major global fully integrated epoxy producer, with access to key low cost feedstocks and a cost advantaged infrastructure. With its advantaged cost position, the Epoxy segment is among the lowest cost producers in the world. The markets in which our Epoxy segment operates are highly competitive and are dependent on significant capital investment, the development of proprietary technology and maintenance of product research and development. Among our competitors are Huntsman Corporation (Huntsman), Westlake, Kukdo Chemical Co. Ltd. (Kukdo) and Kumho P&B Chemicals (Kumho) as well as multiple other producers located in Asia.

We believe our Winchester business is one of the largest global manufacturers of commercial small caliber ammunition. Our Winchester business and Vista Outdoor Inc. (Vista) are among the largest commercial ammunition manufacturers in the U.S. The ammunition industry is highly competitive with Olin, Vista and numerous smaller domestic manufacturers and

foreign producers competing for sales to the commercial ammunition customers. Many factors influence our ability to compete successfully, including price, delivery, service, performance, product innovation and product recognition and quality, depending on the product involved.

HUMAN CAPITAL

At Olin, we believe that our employees are critical to our success. Our established Lifting Olin People core principles fuel the actions that our Lifting People pillars - Opportunity & Fulfillment, Communication & Connection, and Trust - take during the year to enhance the engagement of our employees. Lifting People is about creating work environments for our global workforce that are inclusive, supportive, and empowering while encouraging and incentivizing the highest level of performance. We support our global workforce through a variety of factors, including benefits and compensation, recognition and rewards, a focus on diversity and inclusion, workplace flexibility, community engagement and volunteerism, and professional development, all of which are included in the overall employee value proposition. We commit to provide our employees with a safe and supportive environment and maintain a steadfast commitment to safely producing and distributing our products, which we believe is fundamental to the achievement of our goals.

Olin senior management provides oversight for the benefits programs and compensation of our workforce. This includes conducting periodic compensation benchmarking, implementing health and other employee benefit programs and reviewing certain employee post-retirement benefits and accessibility of employee assistance programs. Our human resources department manages and administers these programs to ensure our total rewards programs are competitive. We have both salaried and hourly employee structures in place to compensate employees. Our benefits and compensation structures allow Olin to attract and retain a talented workforce which fosters achievement of Olin's goals and objectives. Separately, our Board of Directors maintains a Compensation Committee which sets policies, develops and monitors strategies for and administers the programs that are used to compensate our CEO and other senior executives.

Olin is committed to lifting people through diversity and inclusion and maintaining work environments where all employees are comfortable bringing their authentic selves to work each day. We believe the insights provided by our workforce through their unique skills, backgrounds and experiences will lead us to future innovations that will reduce costs, reduce our environmental footprint, improve our ability to serve the world and keep our employees healthy and safe. We encourage our employees to be creative and to participate in the dialogue taking place across the company to help develop innovative solutions that lead to lasting, positive impacts for our customers, employees, communities, and shareholders. Our largest concentration of employees is located in the U.S., of which 30% are minorities. In our support of diversity and inclusion objectives, approximately 26% of our global workforce is comprised of women, and approximately 27% of our management roles are held by women, and 13% by minority employees in the U.S. Our goal is to expand women in leadership positions to approximately 30% by 2025, an increase of approximately 10% against a 2018 baseline.

We also strive for continued professional development of our workforce. We never stop learning and Olin provides a wide range of employee development and productivity programs, that include assignment based opportunities, job shadowing, mentoring and foundational programs for employees new in their Olin careers. These programs help our employees improve and grow, and reinforce our values, in particular of Lifting Olin People. Our learning platform focuses on providing a variety of educational opportunities that support career and professional development for our employees, including undergraduate and graduate tuition assistance to eligible employees up to a maximum of \$10,000 per year. We regularly review talent development and succession plans to identify and develop a pipeline of talent to maintain and continuously improve business operations. We make purposeful moves to accelerate the development of high potential employees. We also have a well-established performance management process, which encourages ongoing feedback throughout the year and includes, at a minimum, annual year-end reviews and development discussions.

As of December 31, 2022, we had approximately 7,780 employees, with 6,600 working in the U.S., and approximately 1,180 working in foreign countries. Of our total global workforce, approximately 9% are located in Europe, Middle East, Africa, and India, 3% in Asia Pacific, 2% in Canada, and 1% in Latin America. Approximately 48% of our total employees are employed in our Chlor Alkali Products and Vinyls and Epoxy businesses, 49% are employed in our Winchester business, including approximately 1,566 employees at the Lake City Army Ammunition Plant, which is a Government Owned Contractor Operated (GOCO) facility, and 3% are employed in Corporate functions. Various labor unions represent a significant number of our hourly-paid employees for collective bargaining purposes. In the U.S., bargaining unit employees comprise 34% of the total workforce. In 2023, we have labor agreements that are due to expire in the U.S., representing approximately 6% of our global workforce.

RESEARCH ACTIVITIES; PATENTS

Our research activities are conducted on a product-group basis at a number of facilities. Company-sponsored research expenditures were \$18.3 million, \$20.4 million and \$16.6 million in 2022, 2021 and 2020, respectively.

We own or license a number of patents, patent applications and trade secrets covering our products and processes. We believe that, in the aggregate, the rights under our patents and licenses are important to our operations, but we do not consider any individual patent, license or group of patents and licenses related to a specific process or product to be of material importance to our total business.

SEASONALITY

Our sales are affected by economic downturns and the seasonality of several industries we serve, including building and construction, coatings, oil and gas, infrastructure, electronics, automotive, water treatment, refrigerants and ammunition. The seasonality of the ammunition business is typically driven by the U.S. fall hunting season. Our chlor alkali businesses generally experience their highest level of activity during the spring and summer months, particularly when construction, refrigerants, coatings and infrastructure activity is higher. Our Epoxy segment also serves a number of applications which experience their highest level of activity during the spring and summer months, particularly civil engineering and protective coatings and other construction materials, including composites and flooring.

RAW MATERIALS AND ENERGY

Basic raw materials are processed through an integrated manufacturing process to produce a number of products that are sold at various points throughout the process. We purchase a portion of our raw material requirements and also utilize internal resources and finished goods as raw materials for downstream products. We believe we have reliable sources of supply for our raw materials under normal market conditions. However, we cannot predict the likelihood or impact of any future raw material shortages.

The principal basic raw materials for our production of Chlor Alkali Products and Vinyls' products are electricity, salt, ethylene and methanol. Electricity is the predominant energy source for our manufacturing facilities. Approximately 68% of our electricity is generated from natural gas or hydroelectric sources. We satisfy our electricity needs through a combination of market power, long-term contracts and the operation of our own power assets, which allow for cost differentiation at specific U.S. manufacturing sites. A portion of our purchases of raw materials, including ethylene, are made under long-term supply agreements, while approximately 73% of the salt used in our Chlor Alkali Products and Vinyls segment is produced from internal resources. Methanol is sourced domestically and internationally primarily from large producers.

The Epoxy segment's principal raw materials are chlorine, caustic soda, benzene, propylene and aromatics, which consist of cumene, phenol, acetone and BisA. A portion of our purchases of raw materials, including benzene, propylene and a portion of our aromatics requirements, are made under long-term supply agreements, while a portion of our aromatics requirements are produced from our integrated production chain. Chlorine and caustic soda is predominately sourced from our Chlor Alkali Products and Vinyls segment.

Lead, brass and propellant are the principal raw materials used in the Winchester business. We typically purchase our ammunition cartridge case cups and copper-based strip, and propellants pursuant to multi-year contracts.

We provide additional information with respect to specific raw materials in the tables set forth under "Products and Services."

ENVIRONMENTAL AND TOXIC SUBSTANCES CONTROLS

As is common in our industry, we are subject to environmental laws and regulations related to the use, storage, handling, generation, transportation, emission, discharge, disposal and remediation of, and exposure to, hazardous and non-hazardous substances and wastes in all of the countries in which we do business.

The establishment and implementation of national, state or provincial and local standards to regulate air, water and land quality affect substantially all of our manufacturing locations around the world. Laws providing for regulation of the manufacture, transportation, use and disposal of hazardous and toxic substances, and remediation of contaminated sites have imposed additional regulatory requirements on industry, particularly the chemicals industry. In addition, implementation of environmental laws has required and will continue to require new capital expenditures and will increase operating costs.

We are a party to various government and private environmental actions associated with former waste disposal sites and past manufacturing facilities. Charges to income for investigatory and remedial efforts were \$24.2 million, \$16.2 million and \$20.9 million for the years ended December 31, 2022, 2021 and 2020, respectively. These charges may be material to operating results in future years. These charges do not include insurance recoveries for costs incurred and expensed in prior periods.

See our discussion of our environmental matters contained in Note 20 "Environmental" of the notes to consolidated financial statements contained in Item 8 and under the heading "Environmental Matters" in Item 7—"Management's Discussion and Analysis of Financial Condition and Results of Operations."

CORPORATE RESPONSIBILITY

At Olin, we are committed to corporate responsibility to ensure the long-term success of our business, our collective global society and the well-being of our environment. We focus our corporate responsibility efforts on the areas of: (1) environment, health, safety and security stewardship, (2) sustainability and governance and (3) product stewardship. We value collaboration and commit to working with other organizations to encourage collective action for improving corporate responsibility. Additional information related to our corporate responsibility initiatives, practices, activities, goals and related information, as well as future updates, can be found in the Corporate Responsibility section of our website at www.olin.com, including our Sustainability Report under the section Sustainability Success. Our progress against environmental, social and governance (ESG) and sustainability targets is included within our ESG Scorecard, found in the Sustainability section of our website. The contents of our website referenced in this section are not, and should not be considered to be, part of this report.

Environment, Health, Safety and Security Stewardship

Olin is strongly committed to excellence in protecting the environment, health, safety and security of our employees and those who live and work around our plants. Our operations worldwide comply with all local requirements and implement additional standards as required to protect the environment, health, safety and security of our operations. We use our management system to drive continuous improvement and achieve excellence in environmental, health, safety, process safety and security performance. Our safety, health and environmental strategy and goals are designed to sustain our drive to zero incidents. Relentlessly and responsibly, we constantly emphasize the importance of monitoring the safety, security and environmental impact of our plants and processes. Through our day-to-day vigilance, Olin strives to continue to be recognized as one of the industry's best performers.

Our corporate values — Act with Integrity, Drive Innovation and Improvement and Lift Olin People — are part of our culture. These values are also reflected in our Environment, Health, Safety and Security (EHS&S) policy and practice. Olin leadership visibly performs and guides the organization to conduct business in a manner that protects and increasingly benefits our employees, business partners and the communities in which we live. All employees have responsibilities within our management systems necessary to sustain our drive to zero incidents. Olin continues its downward trend in personnel and process safety incidents.

Sustainability and Governance

We strongly believe in meeting the needs of the present without compromising the needs of future generations. We recognize the impact our company has on our natural resources and our responsibility to stewardship of people and the planet. This means striving for a company culture responsible to the ongoing ESG ideals of our employees and shareholders.

At Olin, we integrate sustainability into everything we do as a responsible corporate citizen. We value and respect our people, the communities in which we operate, our customers and the environment. We commit to making a contribution to protecting the world and its future condition through the safety and efficiency of our business practices - from supply to manufacturing to delivery and ultimately the end-use of our products. Executing on our sustainability strategy, we believe Olin will increase value for our investors, employees, and customers by enhancing our strategic operating model through focused ESG actions. These actions include:

- Protecting our employees and communities through our industry-leading occupational and process safety programs
- Proudly strengthening United States defense, international defense, law enforcement, and conservation through our Winchester ammunition brand
- Significantly reducing our environmental impact by taking concrete steps through technology and commercial innovation to lower our carbon footprint, net water usage, and resource consumption
- Developing and enabling sustainable solutions within the value chain through our product and service offerings
- Consistently upholding our values and governance standards as we amplify our culture of inclusion and cultivate our diverse workforce

We believe Olin's industry leadership, focused ESG actions, and our engaged workforce will create a positive, long-lasting impact on our communities and the environment.

Product Responsibility

We take great pride in distributing and handling our products safely and enabling our customers to do the same. Our product stewardship and quality practices are aligned with our core values and other globally recognized standards. We apply these standards to our chemical business segments and relevant subsidiaries to ensure compliance with applicable global regulations, evaluation, continuous improvement and transparency of relevant production and product or formulation information. Additionally, Winchester ammunition is designed and manufactured in accordance with the voluntary industry standards published by the Sporting Arms and Ammunition Manufacturers' Institute. Our goal is to meet or exceed guidelines in every instance. Olin leadership demonstrates its commitment to these standards through active participation and communication concerning product safety, within our organization and to external stakeholders. We are deeply committed to ammunition education and advocate strongly for owners and participants to take the necessary steps to be trained and educated when handling, storing or using a firearm for recreational purposes, both for experienced and novice participants. Winchester dedicates an increasing share of its online content to safety education materials for all to responsibly and confidently own and use Winchester products.

Item 1A. RISK FACTORS

In addition to the other information in this Form 10-K, the following factors should be considered in evaluating Olin and our business. All of our forward-looking statements should be considered in light of these factors. Additional risks and uncertainties that we are unaware of or that we currently deem immaterial also may become important factors that affect us.

Business, Industry and Operational Risks

Sensitivity to Global Economic Conditions—Our operating results could be negatively affected during economic and industry downturns.

Our industries and the businesses of most of our customers have historically experienced periodic downturns. These economic, seasonal and industry downturns have been characterized by diminished product demand, excess manufacturing capacity and, in some cases, lower average selling prices. Therefore, any significant downturn in our customers' businesses, industry conditions, or in global economic conditions could result in a reduction in demand for our products and could adversely affect our results of operations or financial condition.

Although a majority of our sales are within North America, a large part of our financial performance is dependent upon a healthy economy beyond North America because we have a significant amount of sales abroad and our customers sell their products abroad. As a result, our business is and will continue to be affected by general economic conditions and other factors in Europe, Asia Pacific, particularly China, and Latin America, including fluctuations in interest rates, customer demand, labor and energy costs, currency changes and other factors beyond our control, such as public health epidemics. The demand for our products and our customers' products is directly affected by such fluctuations. In addition, our customers could decide to move some or all of their production to locations that are more remote from our facilities, and this could reduce demand for our

products. We cannot assure you that events having an adverse effect on the industries in which we operate will not occur or continue, such as a downturn in the European, Asian Pacific, particularly Chinese, Latin American, or other world economies, increases in interest rates, unfavorable currency fluctuations or prolonged effects of global public health crises, particularly the 2019 Novel Coronavirus (COVID-19) pandemic. Economic conditions in other regions of the world, predominantly Asia and Europe, can adversely impact the balance between global supply and demand for our chemical products and increase the amount of products produced and made available for export to North America and other jurisdictions which we sell into. Any significant increased product supply could put downward pressure on our product pricing, negatively impacting our profitability.

Pricing Pressure—Our profitability could be reduced by declines in average selling prices of our products.

Our industries and each of our business segments experience fluctuating supply and demand, particularly in our Chlor Alkali Products and Vinyls segment, which can result in changes in selling prices. Periods of high demand, tight supply and increasing operating margins tend to result in increases in capacity and production until supply exceeds demand, generally followed by periods of oversupply and declining prices. We believe our strategic operating model will mitigate pricing pressure historically experienced during periods of supply exceeding demand. Nevertheless, we cannot assure you that increased pricing pressure will not impact our operating results in the future during these periods. Another factor influencing demand and pricing for chemical products is the price of energy. Higher natural gas prices increase our customers' and competitors' manufacturing costs, and depending on the ratio of crude oil to natural gas prices, could make our customers less competitive in world markets negatively impacting the demand and pricing for our chemical products.

In the chemical industries in which we operate, price is one of the major supplier selection criterion. Pricing is subject to a variety of factors, some of which are outside of our control. Decreases in the average selling prices of our products could have a material adverse effect on our profitability. While we strive to maintain or increase our profitability by executing our strategic operating model and by reducing costs through improving production efficiency, emphasizing higher margin products and by controlling transportation, selling and administration expenses, we cannot assure you that these efforts will be sufficient to fully offset the effect of possible decreases in pricing on operating results.

Chlorine and caustic soda are produced simultaneously and in a fixed ratio of 1.0 ton of chlorine to 1.1 tons of caustic soda. An imbalance in customer demand may require Olin to reduce production of both chlorine and caustic soda or take other steps to correct the imbalance. Since we cannot store large quantities of chlorine, we may not be able to respond to an imbalance in customer demand for these products quickly or efficiently. To mitigate exposure and maximize value from the entire ECU, we continually take a number of actions, including, managing our production rates to the prevailing weaker side of the ECU, leveraging our portfolio of chlorine and chlorine derivatives outlets and entering into purchase for re-sale transactions. If our efforts are not successful and a substantial imbalance occurred, we might need to take actions that could have a material adverse impact on our business, results of operations and financial condition.

Our Epoxy segment is also subject to changes in operating results as a result of pricing pressures. Selling prices of epoxy materials are affected by changes in raw material costs, including energy, propylene and benzene, customer demand, and global fluctuations in supply and demand. Periods of supply/demand imbalances, particularly changes in trade flows within Asia Pacific markets, particularly China, can result in increased pricing pressure on our epoxy products. Declines in average selling prices of products of our Epoxy segment could adversely affect our business, financial condition, and results of operations.

Our Winchester segment is also subject to pricing pressures. Selling prices of ammunition are affected by changes in raw material costs and availability, customer demand and industry production capacity. Declines in average selling prices of products of our Winchester segment could adversely affect our business, financial condition, and results of operations.

We cannot assure you that pricing or profitability in the future will be comparable to any particular historical period, including the most recent period shown in our operating results. We cannot assure you that the chemical industry or ammunition industry will not experience adverse trends in the future, or that our business, financial condition, and results of operations will not be adversely affected by them.

Strategic Operating Model—Our operating results could be negatively impacted if we do not successfully execute our operating model in our chemicals businesses.

Our strategic operating model in our chemicals businesses prioritizes ECU margins over sales volume. Adopted in late 2020, this model represents a change to how our Chlor Alkali Products and Vinyls and Epoxy businesses traditionally operated over the years. To mitigate exposure and maximize value from the entire ECU, the model necessitates managing production rates to the weaker side of the ECU. The execution of the model may not be successful over time. For example, we may not be able to consistently achieve higher margins or the margin improvement achieved might be more than offset by the impact from lower sales volumes, either of which could have a material adverse effect on our operating results and cash flows. In addition, we take actions from time to time designed to complement our operating model, such as purchase for re-sale transactions

(which we sometimes refer to as "parlaying activities") that may not improve our operating results and could adversely impact our business if these activities are not successfully implemented.

Some of our assets were designed to operate at consistently high operating rates. If we operate at lower operating rates for extended periods or make frequent changes to operating rates, our assets may become less reliable or may require additional maintenance or capital investment, which could have a material adverse impact on our operating results and cash flows. Additionally, we may not be able to attract, develop, or retain the skills necessary to effectively execute the strategic operating model. Our model is dependent on implementing changes to the way we transact business with customers and other third parties. Customers or third parties may not be willing to transact with us on terms acceptable to us or at all. If we fail to effectively execute our strategic operating model, our operating results may fail to meet expectations and our business, financial condition, and results of operations could be adversely impacted.

Cost Control—Our profitability could be reduced if we experience increasing raw material, utility, transportation or logistics costs, or if we fail to achieve targeted cost reductions.

Our operating results and profitability are dependent upon our continued ability to control, and in some cases reduce, our costs. If we are unable to do so, or if costs outside of our control, particularly our costs of raw materials, utilities, transportation and similar costs, increase beyond anticipated levels, our profitability will decline. In addition, an increase in costs generally as a result of rising inflation, or in a particular sector such as the energy or transportation sector, could result in rising costs which we cannot fully mitigate through product price increases or cost reductions, which could also adversely affect our profitability.

For example, if our feedstock and energy costs increase, and we are unable to pass the increased costs on to customers, our profitability in our Chlor Alkali Products and Vinyls and Epoxy segments would be negatively affected. Similarly, costs of commodity metals and other materials used in our Winchester business, such as copper and lead, can vary. If we experience significant increases in these costs and are unable to raise our prices to offset the higher costs, the profitability in our Winchester business would be negatively affected.

Suppliers—We rely on a limited number of third-party suppliers for specified feedstocks and services.

We obtain a significant portion of our raw materials from a few key suppliers. If any of these suppliers fail to meet their obligations under present or any future supply agreements, we may be forced to pay higher prices or incur higher costs to obtain the necessary raw materials. Any interruption of supply or any price increase of raw materials could have a material adverse effect on our business, financial condition and results of operations. Certain of our facilities are dependent on feedstocks, services, and related infrastructure provided by third parties, which are provided pursuant to long-term contracts. Any failure of those third parties to perform their obligations under those agreements or disagreements regarding the performance under those agreements or inability to renew such agreements at acceptable terms could adversely affect the operation of the affected facilities and our business, financial condition and results of operations, or result in diversion of management's attention or our resources from other business matters. If we are required to obtain an alternate source for these feedstocks or services, we may not be able to obtain equally favorable pricing and terms. Additionally, we may be forced to pay additional transportation costs or to invest in capital projects for pipelines or alternate facilities to accommodate railcar or other delivery methods or to replace other services.

A vendor may choose, subject to existing contracts, to modify its relationship with us due to general economic concerns or concerns relating to the vendor or us, at any time. Any significant change in the terms that we have with our key suppliers could materially and adversely affect our business, financial condition and results of operations, as could significant additional requirements from suppliers that we provide them additional security in the form of prepayments or posting letters of credit.

Production Hazards—Our facilities are subject to operating hazards, which may disrupt our business.

We are dependent upon the continued safe and reliable operation of our production facilities. Our production facilities are subject to hazards associated with the manufacture, handling, storage and transportation of chemical materials and products and ammunition, including leaks and ruptures, explosions, fires, inclement weather and natural disasters, unexpected utility disruptions or outages, unscheduled downtime, equipment failure, information technology systems interruptions or failures, terrorism, transportation interruptions, transportation incidents involving our chemical products, chemical spills and other discharges or releases of toxic or hazardous substances or gases and environmental hazards. Due to the integrated nature of our large chemical sites, an event at one plant could impact production across multiple plants at a facility. From time to time in the past, we have had incidents that have temporarily shut down or otherwise disrupted our manufacturing, causing production delays and resulting in liability for workplace injuries and fatalities. Some of our operations involve the manufacture and/or handling of a variety of explosive and flammable materials. Use of our products by our customers could also result in liability if an explosion, fire, spill or other accident were to occur. We cannot assure you that we will not experience these types of incidents in the future or that these incidents will not result in production delays or otherwise have a material adverse effect on our business, financial condition or results of operations.

We have a substantial presence near the U.S. Gulf Coast and a significant portion of our manufacturing facilities, similar to our competitors and customers, are structured near major bodies of water. Major hurricanes, or other weather-related events, have caused significant disruption in our operations on the U.S. Gulf Coast, logistics across the region and the supply of certain raw materials, which have had an adverse impact on volume and cost for some of our products. Additionally, we are exposed to increasing climate-related risks and uncertainties, many of which are outside of our control. Climate change could result in more frequent severe weather events, potential changes in precipitation patterns and extreme variability in weather patterns, which could disrupt our operations as well as those of our customers and suppliers. Severe weather conditions or other natural phenomena in the future, including those resulting from climate change, could negatively affect our results of operations.

We maintain risk management strategies, including but not limited to levels of insurance associated with property, casualty and business interruption. Such insurance may not cover all of the risks associated with the hazards of our business and is subject to limitations, including deductibles and maximum liabilities covered. We may incur losses beyond the limits, or outside the coverage, of our insurance policies. We may also be unable to continue to maintain our existing insurance or obtain comparable insurance at a reasonable cost.

Third-Party Transportation—We rely heavily on third-party transportation, which subjects us to risks and costs that we cannot control, and which risks and costs may have a material adverse effect on our financial position or results of operations.

We rely heavily on railroad, truck, marine vessel, barge and other shipping companies to transport finished products to customers and to transport raw materials to the manufacturing facilities used by each of our businesses. These transport operations are subject to various hazards and risks, including extreme weather conditions, work stoppages and operating hazards, as well as domestic and international transportation and maritime regulations. In addition, the methods of transportation we utilize, including shipping chlorine and other chemicals by railroad and by barge, may be subject to additional, more stringent and more costly regulations in the future. If we are delayed or unable to ship finished products or unable to obtain raw materials as a result of any such new or modified regulations or public policy changes related to transportation safety, or these transportation companies' failure to operate properly, or if there are significant changes in the cost of these services due to new additional regulations, or otherwise, we may not be able to arrange efficient alternatives and timely means to obtain raw materials or ship goods, which could result in a material adverse effect on our business, financial position or results of operations. If any third-party railroad that we utilize to transport chlorine and other chemicals ceases to transport certain hazardous materials, or if there are significant changes in the cost of shipping hazardous materials by rail or otherwise, we may not be able to arrange efficient alternatives and timely means to deliver our products or at all, which could result in a material adverse effect on our business, financial position or results of operations.

Raw Materials—Availability of purchased feedstocks and energy, and the volatility of these costs, impact our operating costs and add variability to earnings.

Purchased feedstock, including propylene and benzene, and energy costs account for a substantial portion of our total production costs and operating expenses. We purchase certain raw materials as feedstocks.

Feedstock and energy costs generally follow price trends in crude oil and natural gas, which are sometimes volatile. Ultimately, the ability to pass on underlying cost increases in a timely manner or at all is partially dependent on market conditions. Conversely, when feedstock and energy costs decline, selling prices generally decline as well. As a result, volatility in these costs could impact our business, financial condition and results of operations.

If the availability of any of our principal feedstocks is limited or we are unable to obtain natural gas or energy from any of our energy sources, we may be unable to produce some of our products in the quantities demanded by our customers, which could have a material adverse effect on plant utilization and our sales of products requiring such raw materials. We have long-term supply contracts with various third parties for certain raw materials, including ethylene, electricity, propylene and benzene. As these contracts expire, we may be unable to renew these contracts or obtain new long-term supply agreements on terms comparable or as favorable to us, depending on market conditions, which may have a material adverse effect on our business, financial condition and results of operations. In addition, many of our long-term contracts contain provisions that allow our suppliers to limit the amount of raw materials shipped to us below the contracted amount in force majeure or similar circumstances. If we are required to obtain alternate sources for raw materials because our suppliers are unwilling or unable to perform under raw material supply agreements or if a supplier terminates or is unwilling to renew its agreements with us, we may not be able to obtain these raw materials from alternative suppliers or obtain new long-term supply agreements on terms comparable or as favorable to us.

Information Security—A failure of our information technology systems, or an interruption in their operation due to internal or external factors including cyber-attacks, could have a material adverse effect on our business, financial condition or results of operations.

Our operations are dependent on our ability to protect our information systems, computer equipment and information databases from systems failures. We rely on both internal information technology systems and certain external services and service providers to manage the day-to-day operation of our business, operate elements of our manufacturing facilities, manage relationships with our employees, customers and suppliers, fulfill customer orders and maintain our financial and accounting records. Failure of any one or more than one of our information technology systems could be caused by internal or external events, such as incursions by intruders or hackers, computer viruses, cyber-attacks, failures in hardware or software, or power or telecommunication fluctuations or failures. The failure of our information technology systems to perform as anticipated for any reason or any significant breach of security could disrupt our business and result in numerous adverse consequences, including reduced effectiveness and efficiency of operations, increased costs or loss of important information, or loss of sales, any of which could have a material adverse effect on our business, financial condition or results of operations. We have technology and information security processes, periodic external service and service provider reviews, insurance policies and disaster recovery plans in place to mitigate our risk to these vulnerabilities. However, these measures may not be adequate to ensure that our operations will not be disrupted or our financial impact minimized, should such an event occur.

Ability to Attract and Retain Qualified Employees—We must attract, retain and motivate key employees, and the failure to do so may adversely affect our business, financial condition or results of operations.

We believe our success depends on hiring, retaining and motivating key employees, including executive officers. Our future success depends in part on our ability to identify and develop talent throughout the organization who adopt and successfully execute our strategic operating model. The development and retention of key personnel and appropriate senior management succession planning will continue to be important to the successful execution of our strategies. We may have difficulty locating and hiring qualified personnel. In addition, we may have difficulty retaining such personnel once hired, and key people may leave and compete against us. The loss of key personnel or our failure to attract and retain other qualified and experienced personnel could disrupt or materially adversely affect our business, financial condition or results of operations. In addition, our operating results could be adversely affected by increased costs due to increased competition for employees or higher employee turnover, which may result in the loss of significant customer business or increased costs.

Acquisitions and Joint Ventures—We may not be able to complete future acquisitions or joint venture transactions or successfully integrate them into our business, which could adversely affect our business or results of operations.

As part of our growth strategy, we intend to pursue acquisitions and joint venture opportunities consistent with or complementary to our existing business strategies. Successful accomplishment of this objective may be limited by the availability and suitability of acquisition candidates, the ability to obtain regulatory approvals necessary to complete a planned transaction, and by our financial resources. Acquisitions and joint venture transactions involve numerous risks, including difficulty determining appropriate valuation, integrating operations, technologies, services and products of the acquired businesses, personnel turnover and the diversion of management's attention from other business matters. The nature of a joint venture requires us to work cooperatively with unaffiliated third parties. Differences in views among joint venture participants may result in delayed decisions or failure to agree on major decisions. If these differences cause the joint ventures to deviate from their business plans or fail to achieve their desired operating performance, our results of operations could be adversely affected. In addition, we may be unable to achieve anticipated benefits from these transactions in the time frame that we anticipate, or at all, which could adversely impact our business, financial condition and results of operations.

International Sales and Operations—We are subject to risks associated with our international sales and operations that could have a material adverse effect on our business or results of operations.

Olin has an international presence, including the geographic regions of Europe, Asia Pacific, Latin America and Canada. In 2022, approximately 39% of our sales were generated outside of the United States. These international sales and operations expose us to risks, including:

- difficulties and costs associated with complying with complex and varied laws, treaties, and regulations;
- tariffs and trade barriers;
- outbreaks of serious disease, such as COVID-19, which could cause us and our suppliers and/or customers to temporarily suspend operations in affected areas, restrict the ability of Olin to distribute our products or cause economic downturns that could affect demand for our products;
- changes in laws and regulations, including the imposition of economic or trade sanctions affecting international commercial transactions;
- risk of non-compliance with anti-bribery laws and regulations, such as the U.S. Foreign Corrupt Practices Act;
- restrictions on, or difficulties and costs associated with, the repatriation of cash from foreign countries to the United States;
- unfavorable currency fluctuations;
- changes in local economic conditions, including inflation levels exceeding that of the U.S.;

- unexpected changes in political or regulatory environments;
- labor compliance and costs associated with a global workforce;
- data privacy regulations;
- difficulties in maintaining overseas subsidiaries and international operations; and
- challenges in protecting intellectual property rights.

Any one or more of the above factors could have a material adverse effect on our business, financial condition or results of operations.

Public Health Crisis—A pandemic, epidemic, or other outbreak of infectious disease, including the COVID-19 pandemic and the global response to the pandemic, including without limitation complying with governmental mandates, could have a material adverse impact on our business, financial condition, or results of operations.

The COVID-19 global pandemic, and the various governmental, business, and consumer responses to this pandemic, have caused significant disruptions in the U.S. and global economies, which negatively impacted the demand for several of the products produced by our Chlor Alkali Products and Vinyls and Epoxy businesses. The COVID-19 pandemic has significantly impacted our results of operations and could continue to have negative impacts on our business. These impacts could include plant closures or operating reductions, volatility and decrease in demand for our products, and supply chain interruptions. These impacts could become more widespread or prolonged as the pandemic continues or evolves over time. The extent to which the COVID-19 pandemic impacts our results will depend on future developments that are outside of our control and highly uncertain, including the severity and duration of the pandemic, emerging variants, vaccine and booster effectiveness, the domestic and international actions that are taken in response, including mandates implemented at the local, state and federal levels, and the extent and severity of any resulting economic or industry downturn. Other public health crises, including but not limited to pandemics, including additional COVID-19 variants, epidemics or other outbreaks of infectious diseases, and the various governmental, business, and consumer responses to the public health crisis could have a material adverse effect on our business, financial condition or results of operations.

Indebtedness—Our indebtedness could adversely affect our financial condition.

As of December 31, 2022, we had \$2,580.7 million of indebtedness outstanding. Outstanding indebtedness does not include amounts that could be borrowed under our \$1,200.0 million Senior Revolving Credit Facility. As of December 31, 2022, our indebtedness represented 50.4% of our total capitalization and \$9.7 million of our indebtedness was due within one year. Despite our level of indebtedness, we expect to continue to have the ability to borrow additional debt, but we cannot be certain that additional debt will be available on terms acceptable to us or at all.

Our indebtedness could have important consequences, including but not limited to:

- limiting our ability to fund working capital, capital expenditures, and other general corporate purposes;
- limiting our ability to accommodate growth by reducing funds otherwise available for other corporate purposes, which in turn could prevent us from fulfilling our obligations under our indebtedness;
- limiting our operational flexibility due to the covenants contained in our debt agreements;
- to the extent that our debt is subject to floating interest rates, increasing our vulnerability to fluctuations in market interest rates;
- limiting our ability to pay cash dividends;
- limiting our ability to approve or execute share repurchase programs;
- limiting our flexibility for, or reacting to, changes in our business or industry or economic conditions, thereby limiting our ability to compete with companies that are not as highly leveraged; and
- increasing our vulnerability to economic downturns.

Our ability to generate sufficient cash flow from operations to make scheduled payments on our debt will depend on a range of economic, competitive and business factors, many of which are outside our control. There can be no assurance that our business will generate sufficient cash flow from operations to make these payments. If we are unable to meet our expenses and debt obligations, we may need to refinance all or a portion of our indebtedness before maturity, sell assets or issue additional equity. We may not be able to refinance any of our indebtedness, sell assets or issue additional equity on commercially reasonable terms or at all, which could cause us to default on our obligations and impair our liquidity. Our inability to generate sufficient cash flow to satisfy our debt obligations, or to refinance our debt obligations on commercially reasonable terms, would have a material adverse effect on our business, financial condition and results of operations, as well as on our ability to satisfy our debt obligations.

Credit Facility—Weak industry conditions could affect our ability to comply with the financial maintenance covenants in our senior credit facility.

Our senior credit facility includes certain financial maintenance covenants requiring us to not exceed a maximum leverage ratio and to maintain a minimum coverage ratio.

Depending on the magnitude and duration of economic or industry downturns affecting our businesses, including deterioration in prices and volumes, there can be no assurance that we will continue to be in compliance with these ratios. If we fail to comply with either of these covenants in a future period and are not able to obtain waivers from the lenders, we would need to refinance our current senior credit facility. However, there can be no assurance that such refinancing would be available to us on terms that would be acceptable to us or at all.

Credit and Capital Market Conditions—Adverse conditions in the credit and capital markets may limit or prevent our ability to borrow or raise capital.

While we believe we have facilities in place that should allow us to borrow funds as needed to meet our ordinary course business activities, adverse conditions in the credit and financial markets could prevent us from obtaining financing, if the need arises, or result in our creditors terminating their funding commitments. Our ability to invest in our businesses and refinance or repay maturing debt obligations could require access to the credit and capital markets and sufficient bank credit lines to support cash requirements. Our ability to access credit and capital markets can also depend on our credit rating as determined by reputable credit rating agencies. A significant downgrade in our credit rating could affect our ability to refinance or repay maturing debt obligations, result in increased borrowing costs, decrease the availability of capital from financial institutions or require our subsidiaries to post letters of credit, cash or other assets as collateral with certain counterparties. If we are unable to access the credit and capital markets on commercially reasonable terms, we could experience a material adverse effect on our business, financial position or results of operations.

Pension Plans—The impact of declines in global equity and fixed income markets on asset values and any declines in interest rates and/or improvements in mortality assumptions used to value the liabilities in our pension plans may result in higher pension costs and the need to fund the pension plans in future years in material amounts.

We sponsor domestic and foreign defined benefit pension plans for eligible employees and retirees. Substantially all domestic defined benefit pension plan participants are no longer accruing benefits. However, a portion of our bargaining hourly employees continue to participate in our domestic qualified defined benefit pension plans under a flat-benefit formula. Our funding policy for the qualified defined benefit pension plans is consistent with the requirements of federal laws and regulations. Our foreign subsidiaries maintain pension and other benefit plans, which are consistent with local statutory practices. The determinations of pension expense and pension funding are based on a variety of rules and regulations along with economic factors which are outside of our control. These factors include returns on invested assets, the level of certain market interest rates, the discount rates used to determine pension obligations and mortality assumptions used to value liabilities in our pension plans. Changes in these rules and regulations or unfavorable changes to the factors which are used to value the assets and liabilities in our pension plans could impact the calculation of funded status of our pension plans. They may also result in higher pension costs and the need for additional pension plan funding. See "Pension and Postretirement Benefits" contained in Item 7—"Management's Discussion and Analysis of Financial Condition and Results of Operations."

Asset Impairment—If our goodwill, other intangible assets or property, plant and equipment become impaired in the future, we may be required to record non-cash charges to earnings, which could be significant.

The process of impairment testing for our goodwill involves a number of judgments and estimates made by management including future cash flows, discount rates, profitability assumptions and terminal growth rates with regards to our reporting units. Our internally generated long-range plan includes assumptions regarding pricing and operating forecasts for the chlor alkali industry. If the judgments and estimates used in our analysis are not realized or are affected by external factors, then actual results may not be consistent with these judgments and estimates, and we may be required to record a goodwill impairment charge in the future, which could be significant and have an adverse effect on our financial position and results of operations. During 2020, the carrying values of our Chlor Alkali Products and Vinyls and Epoxy reporting units exceeded the fair values which resulted in pre-tax goodwill impairment charges of \$557.6 million and \$142.2 million, respectively. The goodwill impairment charge was calculated as the amount that the carrying value of the reporting unit, including any goodwill, exceeded its fair value and therefore the carrying value of our reporting units equal their fair value upon completion of the goodwill impairment test.

We review long-lived assets, including property, plant and equipment and identifiable amortizing intangible assets, for impairment whenever changes in circumstances or events may indicate that the carrying amounts are not recoverable. If the fair value is less than the carrying amount of the asset, an impairment is recognized for the difference. Factors which may cause an impairment of long-lived assets include significant changes in the manner of use of these assets, negative industry or market trends, a significant underperformance relative to historical or projected future operating results, extended period of idleness or a likely sale or disposal of the asset before the end of its estimated useful life. If our property, plant and equipment and identifiable amortizing intangible assets are determined to be impaired in the future, we may be required to record non-cash charges to earnings during the period in which the impairment is determined, which could be significant and have an adverse effect on our financial position and results of operations.

Legal, Environmental and Regulatory Risks

Effects of Regulation—Changes in or failure to comply with applicable laws or government regulations or policies could have a material adverse effect on our financial position or results of operations.

Legislation or regulations that may be adopted or modified by U.S. or foreign governments, including legislation or regulations intended to address climate change, the environment, antitrust and competition, tax, international trade matters through import and export duties and quotas and anti-dumping measures and related tariffs could significantly affect the sales, costs and profitability of our business.

The chemical and ammunition industries are subject to extensive legislative and regulatory actions, which could have a material adverse effect on our business, financial position or results of operations. Many of our 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 U.S. Toxic Substances Control Act of 1976 (TSCA) in the U.S. and the Registration, Evaluation and Authorization of Chemicals (REACH) regulation in Europe.

TSCA was amended in 2016, and the U.S. Environmental Protection Agency (EPA) is currently evaluating several of our products and manufacturing processes for additional regulation under the amended law. Certain of our products, or inputs into our manufacturing process, are subject to regulation under current TSCA regulations, and other chemicals or ingredients may be regulated under the law in the future. In 2022, the EPA proposed a regulation that would ban the use of asbestos, a principal material used in diaphragm-based chlorine manufacturing in as soon as two years following publication of a final rule. Diaphragm technology-based chlorine production makes up a significant part of Olin's capacity and this proposed government regulation could significantly increase the cost of production that would have negative consequences on our business. The EPA has found "unreasonable risk" associated with several of Olin's chlorinated organics products under the new TSCA law and we anticipate proposed rules from the EPA on these products also present risk to these businesses. Olin also anticipates future regulatory action related to EDC under the amended TSCA law that could significantly affect the sales, costs and profitability of that product line.

Additionally, the U.S. Congress has proposed legislation that would restrict our ability to import, process and use asbestos in our chlorine manufacturing. While final passage of the legislation is not anticipated, congressional action on this issue could have a material adverse impact our business, financial condition and results of operations. Likewise, Congress and government agencies routinely consider legislation and regulation related to the ammunition business, and legislative or regulatory actions could impact our ability to manufacture and sell certain types of ammunition.

Under REACH, additional testing requirements, documentation, risk assessments and registrations are occurring and will continue to occur and may adversely affect our costs of products produced in or imported into the European Union. The European Union is currently considering regulations related to the use of bisphenol (BisA), or BPA, in chemical manufacturing, which is a critical component of the epoxy resins we manufacture and sell in the region.

Compliance with current or future TSCA, REACH, or other regulations may limit or hinder our ability to manufacture our products and/or cause us to incur expenditures that are material to our business, financial condition or results of operations. Additionally, changes to government regulations and laws, including TSCA and REACH, or changes in their interpretation may reduce the demand for our products, impact our ability to use or manufacture certain products, or limit our ability to implement our strategies, any of which could have a material adverse effect on our business, financial condition and results of operations. A material change in tax laws, treaties or regulations in the jurisdictions in which we operate or a change in their interpretation or application could have a material adverse effect on our business, financial condition and results of operations.

Security and Chemicals Transportation—New regulations on the transportation of hazardous chemicals and/or the security of chemical manufacturing facilities and public policy changes related to transportation safety could result in significantly higher operating costs.

The transportation of our products and feedstocks, including transportation by pipeline, and the security of our chemical manufacturing facilities are subject to extensive regulation. Government authorities at the local, state and federal levels could implement new or stricter regulations, or change their interpretations of existing regulations, that would impact the security of chemical plant locations and the transportation of hazardous chemicals. Our Chlor Alkali Products and Vinyls and Epoxy segments could be adversely impacted by the cost of complying with any new regulations. Our business also could be adversely affected if an incident were to occur at one of our facilities or while transporting products. The extent of the impact would depend on the requirements of future regulations and the nature of an incident, which are unknown at this time.

Legal and Regulatory Claims and Proceedings—We are subject to legal and regulatory claims and proceedings, which could cause us to incur significant expenses.

We are subject to legal and regulatory claims and proceedings relating to our present and former operations and could become subject to additional claims in the future, some of which could be material. These proceedings may be brought by the government or private parties and may arise out of a number of matters, including, antitrust claims, contract disputes, product liability claims, including ammunition and firearms, and proceedings alleging injurious exposure of plaintiffs to various chemicals and other substances (including proceedings based on alleged exposures to asbestos). Frequently, the proceedings alleging injurious exposure involve claims made by numerous plaintiffs against many defendants. Defense of these claims can be costly and time-consuming even if ultimately successful. Because of the inherent uncertainties of legal proceedings, we are unable to predict their outcome and therefore cannot determine whether the financial impact, if any, will be material to our financial position, cash flows or results of operations. We have included additional information with respect to pending legal and regulatory proceedings in Part II, Item 8, under the heading of "Legal Matters" within Note 22, "Commitments and Contingencies," of our Notes to Consolidated Financial Statements.

Environmental Costs—We have ongoing environmental costs, which could have a material adverse effect on our financial position or results of operations.

Our operations and assets are subject to extensive environmental, health and safety regulations, including laws and regulations related to air emissions, water discharges, waste disposal and remediation of contaminated sites. The nature of our operations and products, including the raw materials we handle, exposes us to the risk of liabilities, obligations or claims under these laws and regulations due to the production, storage, use, transportation and sale of materials that can adversely impact the environment or cause personal injury, including, in the case of chemicals, unintentional releases into the environment. Environmental laws may have a significant effect on the costs of use, transportation, handling and storage of raw materials and finished products, as well as the costs of storage, handling, treatment, transportation and disposal of wastes. In addition, we are party to various government and private environmental actions associated with past manufacturing facilities and former waste disposal sites. We have incurred, and expect to incur, significant costs and capital expenditures in complying with environmental laws and regulations.

The ultimate costs and timing of environmental liabilities are difficult to predict. Liabilities under environmental laws relating to contaminated sites can be imposed retroactively and on a joint and several basis. One liable party could be held responsible for all costs at a site, regardless of fault, percentage of contribution to the site or the legality of the original disposal. We could incur significant costs, including clean-up costs, natural resource damages, civil or criminal fines and sanctions and third-party lawsuits claiming, for example, personal injury and/or property damage, as a result of past or future violations of, or liabilities under, environmental or other laws.

In addition, future events, such as changes to environmental laws, changes in the interpretation or implementation of current environmental laws or new information about the extent of remediation required, could require us to make additional expenditures, modify or curtail our operations and/or install additional pollution control equipment. It is possible that regulatory agencies may identify new chemicals of concern or enact new or more stringent clean-up standards for existing chemicals of concern. This could lead to expenditures for environmental remediation in the future that are additional to existing estimates.

Accordingly, it is possible that some of the matters in which we are involved or may become involved may be resolved unfavorably to us, which could materially and adversely affect our business, financial position, cash flows or results of operations. See "Environmental Matters" contained in Item 7—"Management's Discussion and Analysis of Financial Condition and Results of Operations."

Labor Matters—We cannot assure that we can conclude future labor contracts or any other labor agreements without work stoppages.

Various labor unions represent a significant number of our hourly paid employees for collective bargaining purposes. The following significant labor contract will be required to be negotiated in 2023:

<i>Location</i>	<i>Percent of Global Workforce</i>	<i>Expiration Date</i>
Freeport, TX	5%	May 2023
Niagara Falls, NY	1%	July 2023

In addition, a large number of our employees are located in countries in which employment laws provide greater bargaining or other rights to employees than the laws of the U.S. Such employment rights require us to work collaboratively with the legal representatives of those employees to effect any changes to labor arrangements. For example, most of our employees in Europe are represented by works councils that must approve any changes in conditions of employment, including salaries and benefits and staff changes, and may impede efforts to restructure our workforce. While we believe our relations with our employees and their various representatives are generally satisfactory, we cannot assure that we can conclude any labor agreements without work stoppages and cannot assure that any work stoppages will not have a material adverse effect on our business, financial condition or results of operations.

Governmental Contract Compliance and Deliverables—Various risks associated with our Lake City contract and performance under other government contracts could adversely affect our business, financial condition and results of operations.

Our Winchester business currently operates and manages the Lake City Army Ammunition Plant in Independence, MO under a multi-year contract with the United States Army. The contract has an initial term of seven years, starting on October 1, 2020, and may be extended for up to three additional years. Additionally, our Winchester business is engaged to perform various deliverables under other government contract arrangements. The Lake City facility also allows, under certain conditions, for Winchester to utilize the facility to produce commercial ammunition. The operation of the Lake City facility and our other U.S. government contracts require compliance with numerous contract provisions and government regulations. U.S. government contracts often reserve the right to audit our contract costs and conduct inquiries and investigations of our business practices and compliance with government contract requirements. Our failure to comply with any one of these contract provisions and regulations could have a material adverse impact on our business, financial position, and results of operations.

A large portion of our government contracts contain fixed-price deliverables while a smaller portion are performed under cost-plus arrangements. While certain of these contracts contain price escalation and other price adjustment provisions, if we are unable to control costs related to these contracts or if our assumptions regarding the fixed pricing on one or multiple of these contracts is incorrect, we may experience lower profitability, adversely affecting our business, financial condition and results of operations.

Environmental, Social and Governance (ESG)—ESG issues and related regulation, including those related to climate change and sustainability, may have an adverse effect on our business, financial condition and results of operations and damage our reputation.

Companies across all industries are facing increased scrutiny related to their ESG policies and practices. Increased focus and activism related to ESG may hinder our access to credit and capital markets, as investors may reconsider their investment as a result of their assessment of our ESG policies and practices. In particular, customers, consumers, investors and other stakeholders are increasingly focusing on environmental issues, including climate change, energy and water use, greenhouse gas (GHG) emissions and other sustainability concerns. Change in public sentiment may result in changing demands for our customers' products and the products which we produce in light of their perceived environmental impacts or other related issues. These demand changes could cause changes in the market dynamics of our existing products, impacting pricing, or we may incur additional costs to make changes to our operations to comply with such demand changes.

Concern over climate change, GHG emissions in particular, may result in new or increased legal and regulatory requirements to reduce or mitigate impacts to the environment. Increased regulatory requirements or demands for enhanced mitigation of environmental impacts may result in increased compliance costs, including capital expenditures, higher energy and raw materials input costs or compliance with more stringent emissions standards, which may cause disruptions in the manufacture of our products or an increase in operating costs. Any failure to achieve our ESG goals, or a perception of our failure to act responsibly with respect to the environment or to effectively respond to new, or updated, legal or regulatory requirements concerning environmental or other ESG matters, or increased operating or manufacturing costs due to increased regulation or efforts to mitigate environmental impacts could adversely affect our business, financial condition, results of operations and reputation.

Item 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

Item 2. PROPERTIES

Information concerning our principal locations from which our products and services are manufactured, distributed or marketed are included in the tables set forth under the caption "Products and Services" contained in Item 1—"Business." Generally, these facilities are well maintained, in good operating condition, and suitable and adequate for their use. Our two largest facilities are co-located with a site partner. The land on which these facilities are located is leased with a 99-year initial term that commenced in 2015. Additionally, we lease warehouses, terminals and distribution offices and space for executive and branch sales offices and service departments. We believe our current facilities are adequate to meet the requirements of our present operations.

On October 1, 2020, Winchester assumed full management and operational control of the Lake City Army Ammunition Plant in Independence, MO, which is a government-owned, contractor operated facility. The contract is for the production of small caliber military ammunition, including 5.56mm, 7.62mm, and .50 caliber rounds, as well as certain cartridges and casings. The contract also allows for the production of certain ammunition for commercial customers. The contract has an initial term of seven years and may be extended by the United States Army for up to three additional years.

Item 3. LEGAL PROCEEDINGS

Discussion of legal matters is incorporated by reference from Part II, Item 8, under the heading of "Legal Matters" within Note 22, "Commitments and Contingencies," and should be considered an integral part of Part I, Item 3, "Legal Proceedings."

On April 18, 2022, our Plaquemine, LA site experienced a release of chlorine and a fire. It is possible that we will incur monetary fines or penalties as a result of the incident.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

As of January 31, 2023, we had 3,005 record holders of our common stock.

Our common stock is traded on the NYSE under the "OLN" ticker symbol.

A dividend of \$0.20 per common share was paid during each of the four quarters in 2022 and 2021.

<i>Period</i>	Issuer Purchases of Equity Securities			<i>Maximum Dollar Value of Shares (or Units) that May Yet Be Purchased Under the Plans or Programs</i>
	<i>Total Number of Shares (or Units) Purchased⁽¹⁾</i>	<i>Average Price Paid per Share (or Unit)</i>	<i>Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs</i>	
October 1-31, 2022	2,146,933	\$ 46.60	2,146,933	
November 1-30, 2022	1,206,561	56.99	1,206,561	
December 1-31, 2022	1,513,053	53.73	1,513,053	
Total				\$ 1,701,506,254 (1)

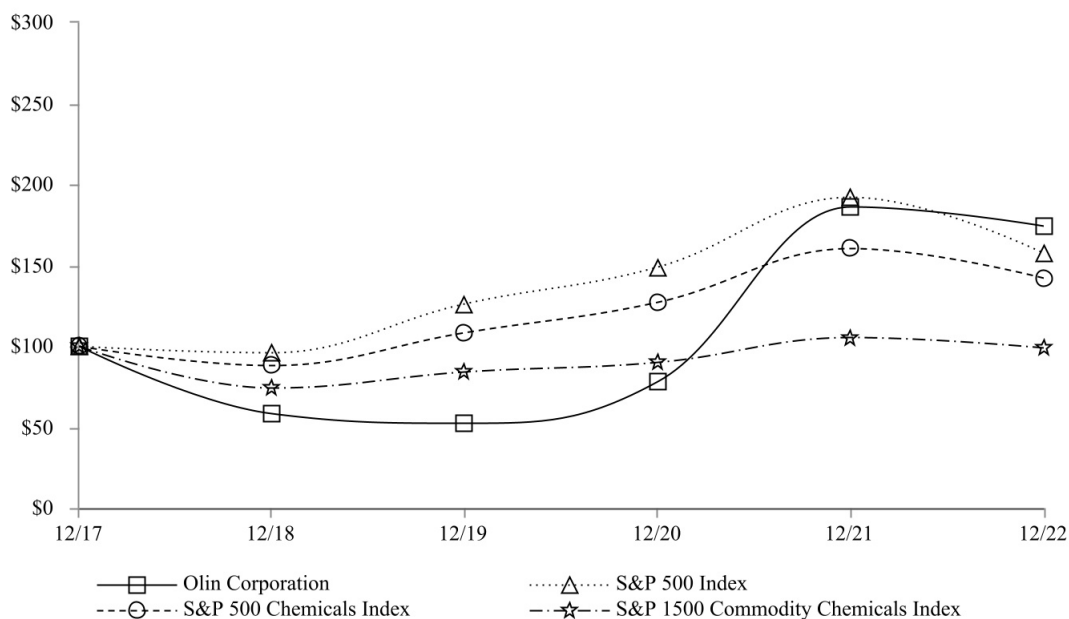
- (1) On July 28, 2022, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$2.0 billion (the 2022 Repurchase Authorization). This program will terminate upon the purchase of \$2.0 billion of common stock. On November 1, 2021, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$1.0 billion (the 2021 Repurchase Authorization). This program terminated upon the purchase of \$1.0 billion of our common stock during the third quarter of 2022. On April 26, 2018, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$500.0 million (the 2018 Repurchase Authorization). This program terminated upon the purchase of \$500.0 million of our common stock during the first quarter of 2022. Through December 31, 2022, 5,937,998 shares of common stock had been repurchased and retired at a total value of \$298.5 million and \$1,701.5 million of common stock remained available for purchase under the 2022 Repurchase Authorization.

Performance Graph

This graph compares the total shareholder return on our common stock with the cumulative total return of the Standard & Poor's (S&P) 500 Index, S&P 500 Chemicals Index and S&P Composite 1500 Commodity Chemicals Index (S&P 1500 Commodity Chemicals Index).

COMPARISON OF FIVE YEAR CUMULATIVE TOTAL RETURN

Among Olin Corporation, the S&P 500 Index,
S&P 500 Chemicals Index and the S&P 1500 Commodity Chemicals Index



	12/17	12/18	12/19	12/20	12/21	12/22
Olin Corporation	100	58	52	78	186	174
S&P 500 Index	100	96	126	149	192	157
S&P 500 Chemicals Index	100	88	108	127	160	142
S&P 1500 Commodity Chemicals Index	100	74	84	90	105	99

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Data is for the five-year period from December 31, 2017 through December 31, 2022. The cumulative return includes reinvestment of dividends. The performance graph assumes an investment of \$100 on December 31, 2017.

FIVE-YEAR SUMMARY OF SELECTED FINANCIAL DATA

	2022	2021	2020	2019	2018
<i>(\$ and shares in millions, except per share data)</i>					
Operations					
Sales	\$ 9,376	\$ 8,911	\$ 5,758	\$ 6,110	\$ 6,946
Cost of goods sold	7,194	6,616	5,375	5,439	5,822
Selling and administration	394	417	422	417	431
Restructuring charges	25	28	9	76	22
Acquisition-related costs	—	—	—	—	1
Goodwill impairment	—	—	700	—	—
Other operating income	16	1	1	—	6
Losses of non-consolidated affiliates	—	—	—	—	(20)
Interest expense	144	348	293	243	243
Interest income and other income	2	—	1	12	2
Non-operating pension income	39	36	19	16	22
Income (loss) before taxes	1,676	1,539	(1,020)	(37)	437
Income tax provision (benefit)	349	242	(50)	(26)	109
Net income (loss)	<u>\$ 1,327</u>	<u>\$ 1,297</u>	<u>\$ (970)</u>	<u>\$ (11)</u>	<u>\$ 328</u>
Financial position					
Cash and cash equivalents	\$ 194	\$ 181	\$ 190	\$ 221	\$ 179
Working capital, excluding cash and cash equivalents	401	386	329	411	410
Property, plant and equipment, net	2,674	2,914	3,171	3,324	3,482
Total assets	8,044	8,518	8,271	9,188	8,997
Capitalization:					
Short-term debt	10	201	26	2	126
Long-term debt	2,571	2,578	3,838	3,339	3,104
Shareholders' equity	2,544	2,652	1,451	2,418	2,832
Total capitalization	<u>\$ 5,125</u>	<u>\$ 5,431</u>	<u>\$ 5,315</u>	<u>\$ 5,759</u>	<u>\$ 6,062</u>
Total debt to total capitalization	50.4 %	51.2 %	72.7 %	58.0 %	53.3 %
Per share data					
Net income (loss):					
Basic	<u>\$ 9.16</u>	<u>\$ 8.15</u>	<u>\$ (6.14)</u>	<u>\$ (0.07)</u>	<u>\$ 1.97</u>
Diluted	<u>\$ 8.94</u>	<u>\$ 7.96</u>	<u>\$ (6.14)</u>	<u>\$ (0.07)</u>	<u>\$ 1.95</u>
Cash dividends paid per common share	\$ 0.80	\$ 0.80	\$ 0.80	\$ 0.80	\$ 0.80
Other					
Capital expenditures	\$ 237	\$ 201	\$ 299	\$ 386	\$ 385
Depreciation and amortization	599	583	568	597	601
Common stock dividends paid	116	128	126	129	134
Repurchases of common stock	1,351	252	—	146	50
Current ratio	1.4	1.3	1.4	1.6	1.5
Effective tax rate	20.8 %	15.7 %	4.9 %	69.4 %	25.0 %
Average common shares outstanding - diluted	148.5	163.0	157.9	162.3	168.4
Employees ⁽¹⁾	7,780	7,750	8,000	6,500	6,500

(1) Beginning October 1, 2020, total employees include employees at Lake City which is a government-owned, contractor-operated facility.

Item 6. [RESERVED]

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

Olin Corporation (Olin) is a Virginia corporation, incorporated in 1892, having its principal executive offices in Clayton, MO. We are a leading vertically-integrated global manufacturer and distributor of chemical products and a leading U.S. manufacturer of ammunition. Our operations are concentrated in three business segments: Chlor Alkali Products and Vinyls, Epoxy and Winchester. All of our business segments are capital intensive manufacturing businesses. The Chlor Alkali Products and Vinyls segment manufactures and sells chlorine and caustic soda, ethylene dichloride and vinyl chloride monomer, methyl chloride, methylene chloride, chloroform, carbon tetrachloride, perchloroethylene, hydrochloric acid, hydrogen, bleach products and potassium hydroxide. The Epoxy segment produces and sells a full range of epoxy materials and precursors, including aromatics (acetone, bisphenol, cumene and phenol), allyl chloride, epichlorohydrin, liquid epoxy resins, solid epoxy resins and systems and growth products such as converted epoxy resins and additives. The Winchester segment produces and sells sporting ammunition, reloading components, small caliber military ammunition and components, and industrial cartridges.

RECENT DEVELOPMENTS AND HIGHLIGHTS***2022 Overview***

Net income was \$1,326.9 million for 2022 compared to \$1,296.7 million for 2021, an increase of \$30.2 million, or 2%. The increase in results from the prior year was primarily due to improved operating results in our Chlor Alkali Products and Vinyls segment and lower interest expense, partially offset by a decline in the operating results of our Epoxy and Winchester business segments. Diluted net income per share was \$8.94 for 2022 compared to \$7.96 for 2021, an increase of \$0.98 per share, or 12%. The increase in diluted net income per share was positively impacted by share repurchases throughout 2022.

Chlor Alkali Products and Vinyls reported segment income of \$1,181.3 million for 2022 compared to \$997.8 million for 2021. Chlor Alkali Products and Vinyls segment results were higher than in the prior year due to higher pricing across all products except vinyls intermediates, partially offset by higher raw materials and operating costs and lower volumes across all products.

Epoxy reported segment income of \$388.5 million for 2022 compared to \$616.5 million for 2021. Epoxy segment results were lower than in the prior year primarily due to lower volumes across all products and higher raw materials costs, primarily benzene and propylene, and higher operating costs, partially offset by higher product prices.

Winchester reported segment income of \$372.9 million for 2022 compared to \$412.1 million for 2021. Winchester segment results were lower than in the prior year primarily due to lower commercial volumes and higher commodity and operating costs, partially offset by increased commercial ammunition pricing. During 2022, Winchester experienced a transition in its commercial ammunition business from refilling depleted supply chains to filling inventories at the rate of its customers' sales. In some cases, customers inventories became too high so Winchester chose to preserve value by manufacturing and selling less commercial ammunition.

Liquidity and Share Repurchases

In July 2022, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$2.0 billion. This program will terminate upon the purchase of \$2.0 billion of common stock. During 2022, we repurchased and retired 25.7 million shares of common stock at a total value of \$1,350.7 million, most of which were repurchased under prior authorized share repurchase programs. As of December 31, 2022, we have \$1,701.5 million of remaining authorized common stock to be repurchased under the 2022 Repurchase Authorization program.

During 2022, we repaid \$201.1 million of long-term debt which became due utilizing cash on hand.

During 2022, we entered into a new \$1,550.0 million senior credit facility (Senior Credit Facility) that replaced our existing senior credit facility. Pursuant to the agreement, the aggregate commitments under our senior revolving credit facility were increased from \$800.0 million to \$1,200.0 million and the aggregate principal amount under our senior term loan facility remained at \$350.0 million. The Senior Credit Facility will mature in October 2027.

During 2022, we also amended our existing Receivables Financing Agreement which increased the aggregate borrowing capacity from \$300.0 million to \$425.0 million and extended the maturity to October 2025.

Other Events

The invasion of Ukraine by Russia and the sanctions imposed in response to this crisis have increased the level of economic and political uncertainty. Russia sales represented less than 0.5% of our total sales for the full year 2021. During the first quarter of 2022, we ceased all sales to and purchases from Russia. Additionally, sanctions from the U.S. and the European Union continue to evolve, along with the overall impact the invasion has on the global economic and political environment. We continue to closely monitor the changing environment, including the increased volatility and heightened degree of uncertainty resulting from the invasion. As of now, the direct impact on our operations has not been significant, but we are unable to fully determine the future impact the invasion and the corresponding global response will have on our business.

CONSOLIDATED RESULTS OF OPERATIONS

	<i>Years ended December 31,</i>		
	2022	2021	2020
	<i>(\$ in millions, except per share data)</i>		
Sales	\$ 9,376.2	\$ 8,910.6	\$ 5,758.0
Cost of goods sold	7,194.3	6,616.4	5,374.6
Gross margin	2,181.9	2,294.2	383.4
Selling and administration	393.9	416.9	422.0
Restructuring charges	25.3	27.9	9.0
Goodwill impairment	—	—	699.8
Other operating income	16.3	1.4	0.7
Operating income (loss)	1,779.0	1,850.8	(746.7)
Interest expense	143.9	348.0	292.7
Interest income	2.2	0.2	0.5
Non-operating pension income	38.7	35.7	18.9
Income (loss) before taxes	1,676.0	1,538.7	(1,020.0)
Income tax provision (benefit)	349.1	242.0	(50.1)
Net income (loss)	\$ 1,326.9	\$ 1,296.7	\$ (969.9)
Net income (loss) per common share:			
Basic	\$ 9.16	\$ 8.15	\$ (6.14)
Diluted	\$ 8.94	\$ 7.96	\$ (6.14)

2022 Compared to 2021

Sales for 2022 were \$9,376.2 million compared to \$8,910.6 million in 2021, an increase of \$465.6 million, or 5%. Chlor Alkali Products and Vinyls sales increased by \$944.2 million, primarily due to higher pricing across all products, except vinyls intermediates, partially offset by lower volumes. Winchester sales increased by \$16.9 million, primarily due to increased commercial ammunition pricing partially offset by lower volumes. Epoxy sales decreased by \$495.5 million, primarily due to lower volumes partially offset by higher product prices.

Gross margin in 2022 decreased \$112.3 million from 2021. Epoxy gross margin decreased by \$238.4 million and Winchester gross margin decreased by \$36.2 million, primarily due to lower volumes and higher raw material and operating costs, partially offset by higher product pricing. Chlor Alkali Products and Vinyls gross margin increased by \$185.2 million, primarily due to higher pricing, partially offset by higher raw material and operating costs and lower volumes. Gross margin as a percentage of sales decreased to 23% in 2022 from 26% in 2021.

Selling and administration expenses in 2022 decreased \$23.0 million, or 6%, from 2021. The decrease was primarily due to lower variable incentive compensation expense of \$35.4 million, which includes mark-to-market adjustments on stock-based compensation expense, partially offset by higher legal and legal-related settlement expense of \$7.1 million and an unfavorable foreign currency impact of \$7.5 million. Selling and administration expenses as a percentage of sales decreased to 4% in 2022 from 5% in 2021.

Restructuring charges for 2022 were \$25.3 million compared to \$27.9 million in 2021. The decrease in charges was primarily due to a productivity initiative to align the organization with our new operating model and improve efficiencies, which was completed during the second quarter of 2021, which resulted in pretax restructuring charges of \$10.1 million for 2021. Partially offsetting this action, during the fourth quarter 2022, we committed and completed a plan to close down one of our BisA production lines at our Stade, Germany site. This action resulted in pretax restructuring charges of \$8.0 million for 2022.

Other operating income for 2022 included \$13.0 million of gains for the sale of two former manufacturing facilities.

Interest expense in 2022 decreased \$204.1 million from 2021. Interest expense for 2021 included \$137.7 million of bond redemption premiums and \$14.5 million for write-off of deferred debt issuance costs, write-off of bond original issue discount, and recognition of deferred fair value interest rate swap losses. Interest expense for 2022 and 2021 was reduced by capitalized interest of \$3.1 million and \$3.2 million, respectively. Without these items, interest expense decreased by \$52.0 million, primarily due to a lower level of debt outstanding and lower average interest rates.

Non-operating pension income includes all components of pension and other postretirement income (costs) other than service costs.

The effective tax rate for 2022 included a benefit associated with a legal entity liquidation, prior year tax positions and stock-based compensation, a benefit from remeasurement of deferred taxes due to a decrease in our state effective tax rates, an expense associated with a net increase in the valuation allowance related to state tax credits and an expense from a change in tax contingencies. These factors resulted in a net \$60.2 million tax benefit. After giving consideration to these items, the effective tax rate for 2022 of 24.4% was higher than the 21% U.S. federal statutory rate primarily due to state taxes, an increase in the valuation allowance related to losses in foreign jurisdictions and foreign income taxes, partially offset by foreign income exclusions and favorable permanent salt depletion deductions. The effective tax rate for 2021 included benefits from a net decrease in the valuation allowance related to deferred tax assets in foreign jurisdictions and domestic tax credits, a benefit associated with prior year tax positions, a benefit associated with stock-based compensation, an expense from remeasurement of deferred taxes due to an increase in our state effective tax rates and an expense from a change in tax contingencies. These factors resulted in a net \$103.6 million tax benefit. After giving consideration to these items, the effective tax rate for 2021 of 22.5% was higher than the 21% U.S. federal statutory rate primarily due to state taxes, foreign income inclusions and foreign income taxes, partially offset by a net decrease in the valuation allowance related to utilization of losses in foreign jurisdictions and favorable permanent salt depletion deductions.

2021 Compared to 2020

Sales for 2021 were \$8,910.6 million compared to \$5,758.0 million in 2020, an increase of \$3,152.6 million, or 55%. Chlor Alkali Products and Vinyls sales increased by \$1,180.9 million, primarily due to higher pricing across all products. Epoxy sales increased by \$1,315.5 million, primarily due to higher product prices. Winchester sales increased by \$656.2 million, primarily due to increased commercial ammunition pricing and higher commercial and military sales volumes, which included ammunition produced at Lake City.

Gross margin increased \$1,910.8 million from 2020. Chlor Alkali Products and Vinyls gross margin increased by \$986.1 million, primarily due to higher pricing and the effect of Winter Storm Uri. Epoxy gross margin increased by \$578.6 million, primarily due to higher product prices, partially offset by higher raw material costs and the effect of Winter Storm Uri. Winchester gross margin increased by \$336.1 million, primarily due to increased commercial ammunition pricing and higher sales volumes, which included ammunition produced at Lake City. Gross margin as a percentage of sales increased to 26% in 2021 from 7% in 2020.

Selling and administration expenses in 2021 decreased \$5.1 million, or 1%, from 2020. The decrease was primarily due to the absence of \$73.9 million of costs associated with a multi-year implementation of new enterprise resource planning, manufacturing and engineering systems, and related infrastructure (collectively, the Information Technology Project), which was completed in late 2020. This decrease was partially offset by higher variable incentive compensation expense \$49.4 million, which includes mark-to-market adjustments on stock-based compensation expense, and inclusion of a full year of selling and administration expenses associated with Lake City operations of \$18.6 million. Selling and administration expenses as a percentage of sales decreased to 5% in 2021 from 7% in 2020.

Restructuring charges for 2021 were \$27.9 million compared to \$9.0 million in 2020. The increase in charges were primarily due to a productivity initiative to align the organization with our new operating model and improve efficiencies, which was completed during the second quarter of 2021, and the 2021 decisions to permanently close our diaphragm-grade chlor alkali capacity, representing 400,000 tons, at our McIntosh, AL facility.

Goodwill impairment includes non-cash pretax impairment charges of \$557.6 million related to the Chlor Alkali Products and Vinyls segment and \$142.2 million related to the Epoxy segment recorded during the third quarter of 2020.

Interest expense increased by \$55.3 million for the year ended December 31, 2021. Interest expense for 2021 included \$137.7 million of bond redemption premiums and \$14.5 million for write-off of deferred debt issuance costs, write-off of bond original issue discount, and recognition of deferred fair value interest rate swap losses. Interest expense for 2020 included \$14.6 million of bond redemption premiums, \$5.8 million for write-off of deferred debt issuance costs and \$4.0 million of accretion expense related to the 2020 ethylene payment discount. Interest expense for 2021 and 2020 was reduced by capitalized interest of \$3.2 million and \$6.4 million, respectively. Without these items, interest expense decreased by \$75.7 million, primarily due to a lower level of debt outstanding and lower average interest rates.

Non-operating pension income includes all components of pension and other postretirement income (costs) other than service costs. Non-operating pension income was higher for the year ended December 31, 2021 primarily due to a decrease in the discount rate used to determine interest costs.

The effective tax rate for 2021 included benefits from a net decrease in the valuation allowance related to deferred tax assets in foreign jurisdictions and domestic tax credits, a benefit associated with prior year tax positions, a benefit associated with stock-based compensation, an expense from remeasurement of deferred taxes due to an increase in our state effective tax rates and an expense from a change in tax contingencies. These factors resulted in a net \$103.6 million tax benefit. After giving consideration to these items, the effective tax rate for 2021 of 22.5% was higher than the 21% U.S. federal statutory rate primarily due to state taxes, foreign income inclusions and foreign income taxes, partially offset by a net decrease in the valuation allowance related to utilization of losses in foreign jurisdictions and favorable permanent salt depletion deductions. The effective tax rate for 2020 included expenses associated with a net increase in the valuation allowance related to foreign and domestic tax credits and deferred tax assets in foreign jurisdictions, a remeasurement of deferred taxes due to an increase in our state effective tax rates and a change in tax contingencies, and stock-based compensation, partially offset by a benefit associated with prior year tax positions. These factors resulted in a net \$27.9 million tax expense. For 2020, a tax benefit of \$10.8 million was recognized associated with the \$699.8 million goodwill impairment charge. After giving consideration to these items, including the goodwill impairment charge on Olin's loss before taxes, the effective tax rate for 2020 of 21.0% was equal to the 21.0% U.S. federal statutory rate as foreign income taxes, foreign income inclusions and a net increase in the valuation allowance related to losses in foreign jurisdictions were offset by state taxes and favorable permanent salt depletion deductions.

SEGMENT RESULTS

We define segment results as income (loss) before interest expense, interest income, goodwill impairment charges, other operating income (expense), non-operating pension income, other income and income taxes. We have three operating segments: Chlor Alkali Products and Vinyls, Epoxy and Winchester. The three operating segments reflect the organization used by our management for purposes of allocating resources and assessing performance. Chlorine and caustic soda used in our Epoxy segment is transferred at cost from the Chlor Alkali Products and Vinyls segment.

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
Sales:	<i>(\$ in millions)</i>		
Chlor Alkali Products and Vinyls	\$ 5,085.0	\$ 4,140.8	\$ 2,959.9
Epoxy	2,690.5	3,186.0	1,870.5
Winchester	1,600.7	1,583.8	927.6
Total sales	<u>\$ 9,376.2</u>	<u>\$ 8,910.6</u>	<u>\$ 5,758.0</u>
Income (loss) before taxes:			
Chlor Alkali Products and Vinyls	\$ 1,181.3	\$ 997.8	\$ 3.5
Epoxy	388.5	616.5	40.8
Winchester	372.9	412.1	92.3
Corporate/Other:			
Environmental expense ⁽¹⁾	(23.2)	(14.0)	(20.9)
Other corporate and unallocated costs ⁽²⁾	(131.5)	(135.1)	(154.3)
Restructuring charges	(25.3)	(27.9)	(9.0)
Goodwill impairment	—	—	(699.8)
Other operating income ⁽³⁾	16.3	1.4	0.7
Interest expense ⁽⁴⁾	(143.9)	(348.0)	(292.7)
Interest income	2.2	0.2	0.5
Non-operating pension income	38.7	35.7	18.9
Income (loss) before taxes	<u>\$ 1,676.0</u>	<u>\$ 1,538.7</u>	<u>\$ (1,020.0)</u>

(1) Environmental expense for the years ended December 31, 2022 and 2021 included \$1.0 million and \$2.2 million, respectively, of insurance recoveries for environmental costs incurred and expensed in prior periods. Environmental expense is included in cost of goods sold in the consolidated statements of operations.

(2) Other corporate and unallocated costs for the year ended December 31, 2020 included costs associated with the implementation of the Information Technology Project of \$73.9 million.

(3) Other operating income for the year ended December 31, 2022 included \$13.0 million of gains for the sale of two former manufacturing facilities. Other operating income for the year ended December 31, 2021 included a \$1.4 million gain on the sale of a terminal facility.

(4) Interest expense for the year ended December 31, 2021 included a loss on extinguishment of debt of \$152.2 million which includes bond redemption premiums, write-off of deferred debt issuance costs, bond original issue discount, and recognition of deferred fair value interest rate swap losses associated with the optional prepayment of existing debt. Interest expense for the year ended December 31, 2020 included a loss on extinguishment of debt of \$20.4 million which includes bond redemption premiums and write-off of deferred debt issuance costs. Interest expense for the year ended 2020 included \$4.0 million of accretion expense related to the ethylene payment discount. Interest expense was reduced by capitalized interest of \$3.1 million, \$3.2 million and \$6.4 million for the years ended December 31, 2022, 2021 and 2020, respectively.

Chlor Alkali Products and Vinyls

2022 Compared to 2021

Chlor Alkali Products and Vinyls sales for 2022 were \$5,085.0 million compared to \$4,140.8 million for 2021, an increase of \$944.2 million, or 23%. The sales increase was primarily due to higher pricing across all products except vinyls intermediates partially offset by lower volumes.

Chlor Alkali Products and Vinyls reported segment income of \$1,181.3 million for 2022 compared to \$997.8 million for 2021, an increase of \$183.5 million. Chlor Alkali Products and Vinyls 2021 operating results were favorably impacted by Winter Storm Uri (\$121.4 million), which includes a net one-time benefit associated with Olin's customary financial hedges and contracts maintained to provide protection from rapid and dramatic changes in energy costs, partially offset by unabsorbed fixed manufacturing costs and storm-related maintenance costs. Without the impact of Winter Storm Uri, the increase in segment results of \$304.9 million was due to higher prices across all products, except vinyls intermediates (\$1,495.9 million), partially offset by higher raw material and operating costs (\$491.4 million), primarily increased natural gas and electrical power costs, lower volumes across all products (\$479.2 million) and increased costs associated with product purchased from other parties (\$220.4 million). Chlor Alkali Products and Vinyls segment results included depreciation and amortization expense of \$482.2 million and \$466.4 million in 2022 and 2021, respectively.

2021 Compared to 2020

Chlor Alkali Products and Vinyls sales for 2021 were \$4,140.8 million compared to \$2,959.9 million for 2020, an increase of \$1,180.9 million, or 40%. The sales increase was primarily due to higher pricing across all product lines. Chlor Alkali Products and Vinyls sales increase was also due to higher VCM sales as a result of our primary VCM contract transitioning from a toll manufacturing arrangement to a direct customer sale agreement beginning on January 1, 2021.

Chlor Alkali Products and Vinyls reported segment income of \$997.8 million for 2021 compared to \$3.5 million for 2020, an increase of \$994.3 million. The increase in Chlor Alkali Product and Vinyls segment results was due to higher product prices (\$1,128.0 million) and the favorable impact of Winter Storm Uri (\$121.4 million), partially offset by higher raw material and operating costs (\$132.8 million) and increased costs associated with product purchased from other parties (\$122.3 million). The impact of Winter Storm Uri includes a net one-time benefit associated with Olin's customary financial hedges and contracts maintained to provide protection from rapid and dramatic changes in energy costs, partially offset by unabsorbed fixed manufacturing costs and storm-related maintenance costs. Chlor Alkali Products and Vinyls segment results included depreciation and amortization expense of \$466.4 million and \$451.4 million in 2021 and 2020, respectively.

Epoxy

2022 Compared to 2021

Epoxy sales were \$2,690.5 million for 2022 compared to \$3,186.0 million for 2021, a decrease of \$495.5 million, or 16%. The sales decrease was due to lower volumes (\$942.1 million) and an unfavorable effect of foreign currency translation (\$144.1 million), partially offset by higher product prices (\$590.7 million).

Epoxy reported segment income of \$388.5 million for 2022 compared to \$616.5 million for 2021, a decrease of \$228.0 million. Epoxy 2021 operating results were unfavorably impacted by Winter Storm Uri (\$21.5 million), which included unabsorbed fixed manufacturing costs and storm-related maintenance costs. Without the impact of Winter Storm Uri, the decrease in segment results of \$249.5 million was due to lower volumes (\$460.5 million), higher raw material costs (\$260.3 million), primarily benzene and propylene, higher operating costs (\$106.5 million), primarily increased natural gas and electrical power costs, and a net unfavorable foreign currency impact (\$12.9 million). These decreases were partially offset by higher product prices (\$590.7 million). A significant percentage of our Euro denominated sales are of products manufactured within Europe. As a result, the impact of foreign currency translation on revenue is primarily offset by the impact of foreign currency translation on raw materials and manufacturing costs also denominated in Euros. Epoxy segment results included depreciation and amortization expense of \$83.3 million and \$86.1 million in 2022 and 2021, respectively.

2021 Compared to 2020

Epoxy sales were \$3,186.0 million for 2021 compared to \$1,870.5 million for 2020, an increase of \$1,315.5 million, or 70%. The sales increase was due to higher product prices (\$1,211.0 million), a favorable effect of foreign currency translation (\$74.9 million), and higher volumes (\$29.6 million).

Epoxy reported segment income of \$616.5 million for 2021 compared to \$40.8 million for 2020, an increase of \$575.7 million. The increase in segment results was due to higher product prices (\$1,211.0 million) and increased volumes (\$11.5 million), partially offset by higher raw material costs (\$554.4 million), primarily benzene and propylene, higher operating and maintenance turnaround costs (\$70.9 million) and the unfavorable impact of Winter Storm Uri (\$21.5 million). A significant percentage of our Euro denominated sales are of products manufactured within Europe. As a result, the impact of foreign currency translation on revenue is primarily offset by the impact of foreign currency translation on raw materials and manufacturing costs also denominated in Euros. Epoxy segment results included depreciation and amortization expense of \$86.1 million and \$90.7 million in 2021 and 2020, respectively.

Winchester

2022 Compared to 2021

Winchester sales were \$1,600.7 million for 2022 compared to \$1,583.8 million for 2021, an increase of \$16.9 million, or 1%. The increase was due to higher sales to military customers (\$23.7 million) and law enforcement agencies (\$18.2 million) partially offset by lower commercial sales (\$25.0 million). The lower commercial sales were primarily due to lower volumes, partially offset by higher pricing. During 2022, Winchester experienced a transition in its commercial ammunition business from refilling depleted supply chains to filling inventories at the rate of its customers' sales. In some cases, customers inventories became too high so Winchester chose to preserve value by manufacturing and selling less commercial ammunition.

Winchester reported segment income of \$372.9 million for 2022 compared to \$412.1 million for 2021, a decrease of \$39.2 million. The decrease in segment results was due to higher commodity and operating costs (\$86.9 million) and lower volumes (\$80.8 million), partially offset by higher product pricing (\$128.4 million). Winchester segment results included depreciation and amortization expense of \$24.6 million and \$23.3 million in 2022 and 2021, respectively.

2021 Compared to 2020

Winchester sales were \$1,583.8 million for 2021 compared to \$927.6 million for 2020, an increase of \$656.2 million, or 71%. The increase was due to higher ammunition sales to commercial customers (\$463.6 million) and military customers (\$179.2 million), both of which include ammunition produced at Lake City, and law enforcement agencies (\$13.4 million).

Winchester reported segment income of \$412.1 million for 2021 compared to \$92.3 million for 2020, an increase of \$319.8 million. The increase in segment results was due to higher product pricing (\$221.6 million) and increased sales volumes (\$134.1 million), which includes ammunition produced at Lake City, partially offset by higher commodity and operating costs (\$49.4 million). Segment results in 2020 were also impacted by transition costs relating to the Lake City contract (\$13.5 million). Winchester segment results included depreciation and amortization expense of \$23.3 million and \$20.1 million in 2021 and 2020, respectively.

Corporate/Other

2022 Compared to 2021

For the year ended December 31, 2022 and 2021, environmental expense included \$1.0 million and \$2.2 million, respectively, of insurance recoveries for environmental costs incurred and expensed in prior periods. Without these recoveries, charges to income for environmental investigatory and remedial activities for the year ended December 31, 2022 would have been \$24.2 million, compared to \$16.2 million for the year ended December 31, 2021. These charges related primarily to expected future investigatory and remedial activities associated with past manufacturing operations and former waste disposal sites.

For 2022, other corporate and unallocated costs were \$131.5 million compared to \$135.1 million for 2021, a decrease of \$3.6 million, or 3%. The decrease was primarily due to lower variable incentive compensation costs (\$27.9 million), which

includes mark-to-market adjustments on stock-based compensation expense, partially offset by higher legal and legal-related settlement expenses (\$7.6 million) and an unfavorable foreign currency impact (\$7.1 million).

2021 Compared to 2020

For the year ended December 31, 2021, environmental expense were \$14.0 million, which includes \$2.2 million of insurance recoveries for environmental costs incurred and expensed in prior periods. Without these recoveries, charges to income for environmental investigatory and remedial activities for the year ended December 31, 2021 would have been \$16.2 million, compared to \$20.9 million for the year ended December 31, 2020. These charges related primarily to expected future investigatory and remedial activities associated with past manufacturing operations and former waste disposal sites.

For 2021, other corporate and unallocated costs were \$135.1 million compared to \$154.3 million for 2020, a decrease of \$19.2 million, or 12%. The decrease was primarily due to the absence of costs associated with the implementation of the Information Technology Project (\$73.9 million), which was completed in late 2020, partially offset by higher variable incentive compensation costs (\$45.7 million), which includes mark-to-market adjustments on stock-based compensation expense, and an unfavorable foreign currency impact (\$7.0 million).

Restructurings

As a result of weak global resin demand and higher cost structures within the European region, we began a review of our global Epoxy asset footprint to optimize the most productive and cost effective assets to support our strategic operating model. We committed to and completed a plan during the fourth quarter of 2022 to close down one of our BisA production lines at our Stade, Germany site. For the year ended December 31, 2022, we recorded pretax restructuring charges of \$8.0 million for employee severance and related benefit costs and the write-off of equipment and facility costs related to this action. We expect to incur additional restructuring charges through 2024 of approximately \$10 million related to this action.

On March 15, 2021, we announced that we had made the decision to permanently close approximately 50% of our diaphragm-grade chlor alkali capacity, representing 200,000 tons, at our McIntosh, AL facility. The closure was completed in the first quarter of 2021. On October 21, 2021, we announced that we had made a decision to permanently cease operations of the remaining 50% of our diaphragm-grade chlor alkali capacity, representing an additional 200,000 tons, at our McIntosh, AL facility. The closure was completed during third quarter of 2022. For the years ended December 31, 2022 and 2021, we recorded pretax restructuring charges of \$8.3 million and \$5.6 million, respectively, for write-off of equipment and facility costs, lease and other contract termination costs and for facility exit costs related to this action. We expect to incur additional restructuring charges through 2027 of approximately \$30 million related to these actions.

On January 18, 2021, we announced we had made the decision to permanently close our trichloroethylene and anhydrous hydrogen chloride liquefaction facilities in Freeport, TX, which were completed in the fourth quarter of 2021. For the years ended December 31, 2022 and 2021, we recorded pretax restructuring charges of \$2.6 million and \$6.5 million, respectively, for facility exit costs related to these actions. We expect to incur additional restructuring charges through 2024 of approximately \$15 million related to these actions.

On December 11, 2019, we announced that we had made the decision to permanently close a chlor alkali plant with a capacity of 230,000 tons and our VDC production facility, both in Freeport, TX. The VDC facility and related chlor alkali plant were closed during the fourth quarter of 2020 and second quarter of 2021, respectively. For the years ended December 31, 2022 and 2021, we recorded pretax restructuring charges of \$6.0 million and \$3.9 million, respectively, for facility exit costs related to these actions. We expect to incur additional restructuring charges through 2026 of approximately \$30 million related to these actions.

Olin committed to a productivity initiative to align the organization with our strategic operating model and improve efficiencies. These actions and related activities were completed during the second quarter of 2021. For the year ended December 31, 2021, we recorded pretax restructuring charges of \$10.3 million for employee severance and related benefit costs related to these actions. We do not expect to incur additional restructuring charges related to these actions.

2023 OUTLOOK

In 2023, we expect the challenging global economic conditions to continue as we expect operating results to decline across all our business segments compared to 2022. We expect our chemical businesses to continue to be tested by European and North American epoxy demand weakness and vinyls intermediates demand weakness. As a result, we expect the first quarter 2023 operating results from our Chemical businesses to be slightly lower than fourth quarter 2022 levels. We expect our Winchester business first quarter 2023 results to increase sequentially from fourth quarter 2022 but to be lower than first quarter 2022 levels due to lower commercial ammunition shipments. Overall, we expect Olin's first quarter 2023 operating results to slightly decline from fourth quarter 2022 levels.

Other Corporate and Unallocated costs in 2023 are expected to be comparable with the \$131.5 million in 2022.

During 2023, we anticipate environmental expenses in the \$25 million to \$30 million range, compared to \$23.2 million in 2022.

We expect non-operating pension income in 2023 to be in the \$25 million to \$30 million range compared to \$38.7 million in 2022. Based on our plan assumptions and estimates, we will not be required to make any cash contributions to our domestic qualified defined benefit pension plan in 2023. We have several international qualified defined benefit pension plans for which we anticipate cash contributions of less than \$5 million in 2023.

In 2023, we currently expect our capital spending to be in the \$200 million to \$250 million range and we expect to make payments under other long-term supply contracts in the \$50 million to \$100 million range for energy modernization on the U.S. Gulf Coast. We expect 2023 depreciation and amortization expense to be in the \$550 million to \$575 million range.

We currently believe the 2023 effective tax rates will be in the 25% to 30% range and our cash tax rate to be in the 30% to 35% range as a result of previously deferred international tax payments expected to be made in 2023.

PENSION AND POSTRETIREMENT BENEFITS

We recorded an after-tax benefit of \$46.8 million (\$72.1 million pretax) to shareholders' equity as of December 31, 2022 for our pension and other postretirement plans. This benefit primarily reflected a 260-basis point increase in the domestic pension plans' discount rate and a 230-basis point increase in the international defined benefit pension plans' discount rate, partially offset by unfavorable performance on plan assets during 2022. In 2021, we recorded an after-tax benefit of \$188.5 million (\$249.7 million pretax) to shareholders' equity as of December 31, 2021 for our pension and other postretirement plans. This benefit primarily reflected a 50-basis point increase in the domestic pension plans' discount rate and favorable performance on plan assets during 2021. In 2020, we recorded an after-tax charge of \$14.8 million (\$26.6 million pretax) to shareholders' equity as of December 31, 2020 for our pension and other postretirement plans. This benefit primarily reflected favorable performance on plan assets during 2020, partially offset by an 80-basis point decrease in the domestic pension plans' discount rate. These non-cash charges to shareholders' equity do not affect our ability to borrow under our senior credit facility.

Based on our plan assumptions and estimates, we will not be required to make any cash contributions to the domestic qualified defined benefit pension plan at least through 2023.

In connection with international qualified defined benefit pension plans, we made cash contributions of \$1.3 million, \$1.1 million and \$2.1 million in 2022, 2021 and 2020, respectively, and we anticipate less than \$5 million of cash contributions to international qualified defined benefit pension plans in 2023.

At December 31, 2022, the projected benefit obligation of \$2,115.3 million exceeded the market value of assets in our qualified defined benefit pension plans by \$227.1 million, as calculated under Accounting Standards Codification (ASC) 715 "Compensation—Retirement Benefits".

Components of net periodic benefit (income) costs were:

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Pension benefits	\$ (33.0)	\$ (27.5)	\$ (11.7)
Other postretirement benefit costs	3.8	4.5	4.9

The service cost component of net periodic benefit (income) costs related to employees of the operating segments are allocated to the operating segments based on their respective estimated census data.

We have included additional information with respect our defined benefit pension plans and other postretirement benefit plans within Note 12 "Pension Plans" and Note 13 "Postretirement Benefits" of our Notes to Consolidated Financial Statements.

ENVIRONMENTAL MATTERS

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Cash outlays:			
Remedial and investigatory spending (charged to reserve)	\$ 24.6	\$ 16.4	\$ 12.8
Capital spending	1.5	4.1	3.8
Plant operations (charged to cost of goods sold)	178.8	194.9	182.8
Total cash outlays	<u>\$ 204.9</u>	<u>\$ 215.4</u>	<u>\$ 199.4</u>

Cash outlays for remedial and investigatory activities associated with former waste sites and past operations were not charged to income but instead were charged to reserves established for such costs identified and expensed to income in prior years. Cash outlays for normal plant operations for the disposal of waste and the operation and maintenance of pollution control equipment and facilities to ensure compliance with mandated and voluntarily imposed environmental quality standards were charged to income.

Total environmental-related cash outlays for 2023 are estimated to be approximately \$215 million, of which approximately \$25 million to \$30 million is expected to be spent on investigatory and remedial efforts, approximately \$5 million on capital projects and approximately \$185 million on normal plant operations. Historically, we have funded our environmental capital expenditures through cash flow from operations and expect to do so in the future.

Annual environmental-related cash outlays for site investigation and remediation, capital projects and normal plant operations are expected to range between \$200 million to \$220 million over the next several years, \$20 million to \$30 million of which is for investigatory and remedial efforts, which are expected to be charged against reserves recorded on our consolidated balance sheet. While we do not anticipate a material increase in the projected annual level of our environmental-related cash outlays for site investigation and remediation, there is always the possibility that such an increase may occur in the future in view of the uncertainties associated with environmental exposures.

Our liabilities for future environmental expenditures were as follows:

	<i>December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Beginning balance	\$ 147.3	\$ 147.2	\$ 139.0
Charges to income	24.2	16.2	20.9
Remedial and investigatory spending	(24.6)	(16.4)	(12.8)
Foreign currency translation adjustments	(0.3)	0.3	0.1
Ending balance	<u>\$ 146.6</u>	<u>\$ 147.3</u>	<u>\$ 147.2</u>

As is common in our industry, we are subject to environmental laws and regulations related to the use, storage, handling, generation, transportation, emission, discharge, disposal and remediation of, and exposure to, hazardous and non-hazardous substances and wastes in all of the countries in which we do business.

The establishment and implementation of national, state or provincial and local standards to regulate air, water and land quality affect substantially all of our manufacturing locations around the world. Laws providing for regulation of the manufacture, transportation, use and disposal of hazardous and toxic substances, and remediation of contaminated sites, have imposed additional regulatory requirements on industry, particularly the chemicals industry. In addition, implementation of environmental laws has required and will continue to require new capital expenditures and will increase plant operating costs. We employ waste minimization and pollution prevention programs at our manufacturing sites.

We are party to various government and private environmental actions associated with past manufacturing facilities and former waste disposal sites. Associated costs of investigatory and remedial activities are provided for in accordance with generally accepted accounting principles governing probability and the ability to reasonably estimate future costs. Our ability to estimate future costs depends on whether our investigatory and remedial activities are in preliminary or advanced stages. With respect to unasserted claims, we accrue liabilities for costs that, in our experience, we expect to incur to protect our interests against those unasserted claims. Our accrued liabilities for unasserted claims amounted to \$9.0 million at December 31, 2022. With respect to asserted claims, we accrue liabilities based on remedial investigation, feasibility study, remedial action and operation, maintenance and monitoring (OM&M) expenses that, in our experience, we expect to incur in connection with the asserted claims. Required site OM&M expenses are estimated and accrued in their entirety for required periods not exceeding 30 years, which reasonably approximates the typical duration of long-term site OM&M.

Environmental provisions charged to income, which are included in cost of goods sold, were as follows:

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Provisions charged to income	\$ 24.2	\$ 16.2	\$ 20.9
Insurance recoveries for costs incurred and expensed	(1.0)	(2.2)	—
Environmental expense	<u>\$ 23.2</u>	<u>\$ 14.0</u>	<u>\$ 20.9</u>

These charges relate primarily to remedial and investigatory activities associated with past manufacturing operations and former waste disposal sites and may be material to operating results in future years.

Environmental expense for the years ended December 31, 2022 and 2021 included \$1.0 million and \$2.2 million, respectively, of insurance recoveries for environmental costs incurred and expensed in prior periods. Environmental expense is included in cost of goods sold in the consolidated statement of operations.

We have included additional information with respect to environmental matters within Note 20, "Environmental," of our Notes to Consolidated Financial Statements.

LEGAL MATTERS AND CONTINGENCIES

Please see the discussion of legal matters and contingencies within Item 8, under the heading of "Legal Matters" within Note 22 "Commitments and Contingencies."

LIQUIDITY AND CAPITAL RESOURCES
Cash Flow Data

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
<i>Provided by (used for)</i>			
Net operating activities	\$ 1,921.9	\$ 1,741.0	\$ 433.0
Capital expenditures	(236.9)	(200.6)	(298.9)
Payments under long-term supply contracts	(37.7)	—	(536.8)
Net investing activities	(259.7)	(197.4)	(835.7)
Long-term debt (repayments) borrowings, net	(201.1)	(1,103.1)	520.3
Debt early redemption premium	—	(137.7)	(14.6)
Common stock repurchased and retired	(1,350.7)	(251.9)	—
Stock options exercised	25.7	72.4	1.9
Dividends paid	(116.2)	(127.8)	(126.3)
Net financing activities	(1,646.7)	(1,552.0)	371.0

Operating Activities

For 2022, cash provided by operating activities increased by \$180.9 million from 2021, primarily due to a decrease in working capital compared with the prior year. For 2022, working capital decreased \$65.2 million, compared to an increase of \$243.1 million in 2021. Receivables decreased by \$160.8 million from December 31, 2021, primarily as a result of lower sales in the fourth quarter of 2022 compared to fourth quarter of 2021. Inventories increased by \$86.3 million from December 31, 2021 primarily as a result of increased raw material costs and increased inventory quantities within our Winchester and Epoxy businesses.

For 2021, cash provided by operating activities increased by \$1,308.0 million from 2020, primarily due to an increase in operating results, partially offset by working capital increases to support operations. For 2021, working capital increased \$243.1 million, compared to a decrease of \$141.6 million in 2020. The working capital increase primarily reflects a higher sales level. Receivables increased by \$360.0 million from December 31, 2020, primarily as a result of higher sales in the fourth quarter of 2021. For the year ended December 31, 2021, our days sales outstanding (DSO), which was calculated by dividing period end accounts receivable by average daily sales for the period, improved from the comparable prior year period. Inventories increased by \$206.0 million from December 31, 2020 and accounts payable and accrued liabilities increased \$240.1 million, which were both primarily as a result of increased raw material costs.

Investing Activities

Capital spending was \$236.9 million and \$200.6 million in 2022 and 2021, respectively. In 2023, we expect our capital spending to be in the \$200 million to \$250 million range.

For the year ended December 31, 2022, payments of \$37.7 million were made under other long-term supply contracts for energy modernization projects on the U.S. Gulf Coast and we expect to make payments in the \$50 million to \$100 million range in 2023.

For the year ended December 31, 2022, we received proceeds of \$14.9 million for the sale of two former manufacturing facilities.

Financing Activities

During 2022 and 2021, activity of our outstanding debt included:

<i>Debt Instrument</i>	<i>Year Ended December 31, 2022</i>		<i>Year Ended December 31, 2021</i>	
	<i>Long-term Debt Borrowings (Repayments)</i>		<i>Long-term Debt Borrowings (Repayments)</i>	
			<i>Debt Early Redemption Premiums Paid</i>	
	<i>(\$ in millions)</i>			
Borrowings:				
Senior Revolving Credit Facility	\$	320.0	\$	—
Senior Term Loans		—		315.0
Receivables Financing Agreement		95.0		225.0
Total borrowings	\$	415.0	\$	540.0
Repayments:				
10.00% senior notes, due 2025 (Blue Cube 2025 Notes)	\$	—	\$	(500.0)
9.50% senior notes, due 2025 (2025 Notes)		—		(391.4)
9.75% senior notes, due 2023 (2023 Notes)		—		(120.0)
5.625% senior notes, due 2029 (2029 Notes)		—		(80.7)
5.00% senior notes, due 2030 (2030 Notes)		—		(34.7)
5.50% senior notes, due 2022 (2022 Notes)		(200.0)		—
Senior Revolving Credit Facility		(320.0)		—
Senior Term Loans		—		(465.0)
Receivables Financing Agreement		(95.0)		(50.0)
Finance leases		(1.1)		(1.3)
Total repayments	\$	(616.1)	\$	(1,643.1)
Long-term debt repayments, net	\$	(201.1)	\$	(1,103.1)

In 2022 and 2021, we paid debt issuance costs of \$4.4 million and \$3.9 million, respectively, primarily for the refinancing of our senior credit facilities.

In 2022 and 2021, we repurchased and retired 25.7 million and 4.7 million shares, respectively, of common stock with a total value of \$1,350.7 million and \$251.9 million, respectively.

In 2022 and 2021, we issued 1.1 million and 3.4 million shares, respectively, with a total value of \$25.7 million and \$72.4 million, respectively, representing stock options exercised.

The percent of total debt to total capitalization decreased to 50.4% at December 31, 2022 compared to 51.2% at December 31, 2021, as a result of a lower level of debt outstanding, partially offset by lower shareholders' equity, primarily due to common stock repurchases partially offset by our operating results.

Dividends per common share were \$0.80 in 2022 and 2021. Total dividends paid on common stock amounted to \$116.2 million and \$127.8 million in 2022 and 2021, respectively. On February 22, 2023, our board of directors declared a dividend of \$0.20 per share on our common stock, payable on March 13, 2023 to shareholders of record on March 6, 2023.

The payment of cash dividends is subject to the discretion of our board of directors and will be determined in light of then-current conditions, including our earnings, our operations, our financial condition, our capital requirements and other factors deemed relevant by our board of directors. In the future, our board of directors may change our dividend policy, including the frequency or amount of any dividend, in light of then-existing conditions.

Liquidity and Other Financing Arrangements

Our principal sources of liquidity are from cash and cash equivalents, cash flow from operations and borrowings under our Senior Revolving Credit Facility, Receivables Financing Agreement and AR Facilities. Additionally, we believe that we have access to the high yield debt and equity markets.

In 2022, we repaid approximately \$201.1 million of our outstanding debt using cash generated from operations. During 2022, activity of our outstanding debt included:

Debt Instrument	Long-term Debt Borrowings (Repayments)	
	Year Ended December 31, 2022	
	<i>(\$ in millions)</i>	
Borrowings:		
Senior Revolving Credit Facility	\$	320.0
Receivables Financing Agreement		95.0
Total borrowings	\$	415.0
Repayments:		
5.50% senior notes, due 2022		(200.0)
Senior Revolving Credit Facility		(320.0)
Receivables Financing Agreement		(95.0)
Finance leases		(1.1)
Total repayments	\$	(616.1)
Long-term debt repayments, net	\$	(201.1)

On October 11, 2022, we entered into a new \$1,550.0 million senior credit facility (Senior Credit Facility) that replaced our existing senior credit facility (2021 Senior Credit Facility) which included outstanding senior term loans of \$350.0 million and a senior revolving credit facility with aggregate commitments in an amount equal to \$800.0 million. The Senior Credit Facility includes a senior term loan facility with aggregate commitments of \$350.0 million (Term Loan Facility) and a senior revolving credit facility with aggregate commitments of \$1,200.0 million (Senior Revolving Credit Facility). The Term Loan Facility was fully drawn on the closing date with the proceeds of the Term Loan Facility used to refinance the loans and commitments outstanding under the 2021 Senior Credit Facility. The Term Loan Facility will require principal amortization amounts payable beginning March 31, 2023 at a rate of 0.625% per quarter through the end of 2024, increasing to 1.250% per quarter thereafter until maturity. The maturity date for the Senior Credit Facility is October 11, 2027.

The Senior Revolving Credit Facility includes a \$100.0 million letter of credit subfacility. At December 31, 2022, we had \$1,199.6 million available under our \$1,200.0 million Senior Revolving Credit Facility because we had issued \$0.4 million of letters of credit.

We were in compliance with all covenants and restrictions under all our outstanding credit agreements as of December 31, 2022, and no event of default had occurred that would permit the lenders under our outstanding credit agreements to accelerate the debt if not cured. In the future, our ability to generate sufficient operating cash flows, among other factors, will determine the amounts available to be borrowed under these facilities. As a result of our restrictive covenant related to the net leverage ratio, the maximum additional borrowings available to us could be limited in the future. The limitation, if an amendment or waiver from our lenders is not obtained, could restrict our ability to borrow the maximum amounts available under the Senior Revolving Credit Facility and the Receivables Financing Agreement. As of December 31, 2022, there were no covenants or other restrictions that limited our ability to borrow.

The overall cash increase of \$13.5 million in 2022 primarily reflects our operating results, partially offset by our share repurchases, capital spending, debt repayments and dividends paid. We believe, based on current and projected levels of cash flow from our operations, together with our cash and cash equivalents on hand and the availability to borrow under our Senior Revolving Credit Facility, Receivables Financing Agreement and AR Facilities, we have sufficient liquidity to meet our short-term and long-term needs to make required payments of interest on our debt, fund our operating needs, working capital, and capital expenditure requirements and comply with the financial ratios in our debt agreements.

On July 28, 2022, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$2.0 billion. This program will terminate upon the purchase of \$2.0 billion of common stock. On November 1, 2021, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$1.0 billion. This program terminated upon the purchase of \$1.0 billion of our common stock during the third quarter of 2022. On April 26, 2018, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$500.0 million. This program terminated upon the purchase of \$500.0 million of our common stock during the first quarter of 2022.

For the years ended December 31, 2022 and 2021, 25.7 million and 4.7 million shares, respectively, of common stock have been repurchased and retired at a total value of \$1,350.7 million and \$251.9 million, respectively. As of December 31, 2022, a cumulative total of 5.9 million shares were repurchased and retired at a cost of \$298.5 million and \$1,701.5 million of common stock remained authorized to be repurchased under the 2022 Repurchase Authorization program.

On October 11, 2022, we amended our existing \$300 million Receivables Financing Agreement which increased the facility limit to \$425.0 million and extended the maturity to October 14, 2025 (Receivables Financing Agreement). Under the Receivables Financing Agreement, our eligible trade receivables are used for collateralized borrowings and continue to be serviced by us. In addition, the Receivables Financing Agreement incorporates the net leverage ratio covenant that is contained in the Senior Credit Facility. As of both December 31, 2022 and 2021, we had \$300.0 million drawn under the agreement. As of December 31, 2022, \$654.0 million of our trade receivables were pledged as collateral and we had \$125.0 million additional borrowing capacity under the Receivables Financing Agreement.

Olin also has trade accounts receivable factoring arrangements (AR Facilities) and pursuant to the terms of the AR Facilities, certain of our domestic subsidiaries may sell their accounts receivable up to a maximum of \$207.7 million and certain of our foreign subsidiaries may sell their accounts receivable up to a maximum of €42.9 million. We will continue to service the outstanding accounts sold. These receivables qualify for sales treatment under ASC 860 "Transfers and Servicing" and, accordingly, the proceeds are included in net cash provided by operating activities in the consolidated statements of cash flows. The gross amount of receivables sold for the years ended December 31, 2022 and 2021 totaled \$1,049.7 million and \$876.4 million, respectively. The factoring discount paid under the AR Facilities is recorded as interest expense on the consolidated statements of operations. The factoring discount for the years ended December 31, 2022 and 2021 was \$3.1 million and \$1.1 million, respectively. The agreements are without recourse and therefore no recourse liability has been recorded as of December 31, 2022. As of December 31, 2022 and 2021, \$111.8 million and \$83.3 million, respectively, of receivables qualifying for sales treatment were outstanding and will continue to be serviced by us.

We have registered an undetermined amount of securities with the SEC, so that, from time-to-time, we may issue debt securities, preferred stock and/or common stock and associated warrants in the public market under that registration statement.

Credit Ratings

We receive ratings from three independent credit rating agencies: Fitch Ratings (Fitch), Moody's Investor Service (Moody's) and Standard & Poor's (S&P). The following table summarizes our credit ratings as of January 31, 2023:

Credit Ratings	Long-term Rating	Outlook
Fitch Ratings	BBB-	Stable
Moody's Investors Service	Ba1	Stable
Standard & Poor's	BB+	Positive

On January 12, 2023, Fitch assigned a first-time inaugural rating of BBB- and a stable outlook. On June 10, 2022, Moody's upgraded Olin to Ba1 from Ba2, and changed its outlook from Positive to Stable. On March 31, 2022, S&P affirmed Olin's BB+ rating, and revised its outlook from stable to positive.

Contractual Obligations

Our current debt structure is used to fund our business operations. As of December 31, 2022, we had long-term borrowings, including the current installment and finance lease obligations, of \$2,580.7 million, of which \$805.9 million was at variable rates. We expect to meet our contractual obligations through our normal sources of liquidity and believe we have the financial resources to satisfy these contractual obligations.

We have several defined benefit pension and defined contribution plans, as described in Note 12 "Pension Plans" and Note 16 "Contributing Employee Ownership Plan" in the notes to consolidated financial statements contained in Item 8. We fund the defined benefit pension plans based on the minimum amounts required by law plus such amounts we deem appropriate. Given the inherent uncertainty as to actual minimum funding requirements for qualified defined benefit pension plans, no amounts are included in this table for any period beyond one year. Based on the current funding requirements, we will not be required to make any cash contributions to the domestic qualified defined benefit pension plan at least through 2023. We also have postretirement healthcare plans that provide health and life insurance benefits to certain retired employees and their beneficiaries, as described in Note 13 "Postretirement Benefits" in the notes to consolidated financial statements contained in Item 8. The defined contribution and other postretirement plans are not pre-funded and expenses are paid by us as incurred. Our long-term contractual commitments associated with debt, contingent tax liabilities, pension and other postretirement benefits consisted of the following:

	<i>Payments Due by Period</i>				
	<i>Less than 1 Year</i>	<i>1-3 Years</i>	<i>3-5 Years</i>	<i>More than 5 Years</i>	<i>Total</i>
	<i>(\$ in millions)</i>				
Debt obligations, including finance lease obligations ⁽¹⁾	\$ 9.7	\$ 508.7	\$ 898.0	\$ 1,184.6	\$ 2,601.0
Interest payments under debt obligations ⁽²⁾	143.9	274.1	209.3	113.5	740.8
Contingent tax liability	18.3	14.9	14.0	4.4	51.6
International qualified pension plan payments ⁽³⁾	6.4	8.9	11.9	158.5	185.7
Non-qualified pension plan payments	0.7	0.6	1.4	1.5	4.2
Postretirement benefit payments	2.9	5.3	4.8	21.9	34.9
Total	\$ 181.9	\$ 812.5	\$ 1,139.4	\$ 1,484.4	\$ 3,618.2

- (1) Excludes unamortized debt issuance costs and unamortized bond original issue discount of \$20.3 million at December 31, 2022. All debt obligations are assumed to be held until maturity.
- (2) For the purposes of this table, we have assumed for all periods presented that there are no changes in the rates from those in effect at December 31, 2022 which ranged from 4.55% to 9.5%.
- (3) These amounts are only estimated payments assuming for our foreign qualified pension plans a weighted average annual expected rate of return on pension plan assets of 3.8% and a discount rate on pension plan obligations of 3.7%. These estimated payments are subject to significant variation and the actual payments may be more than the amounts estimated. In connection with international qualified defined benefit pension plans we made cash contributions of \$1.3 million, \$1.1 million and \$2.1 million in 2022, 2021 and 2020, respectively, and we anticipate less than \$5 million of cash contributions to international qualified defined benefit pension plans in 2023.

Non-cancelable operating leases and purchasing commitments are utilized in our normal course of business for our projected needs. Our operating lease commitments as described in Note 21 "Leases" are primarily for railcars, but also include logistics, manufacturing, storage, real estate, and information technology assets. Virtually none of our lease agreements contain escalation clauses or step rent provisions. We also have supply contracts with various third parties for certain raw materials, including ethylene, electricity, propylene and benzene. These contracts have initial terms ranging from several to 20 years. Our long-term contractual commitments associated with operating leases and purchasing commitments consisted of the following:

	<i>Payments Due by Period</i>				
	<i>Less than 1 Year</i>	<i>1-3 Years</i>	<i>3-5 Years</i>	<i>More than 5 Years</i>	<i>Total</i>
	<i>(\$ in millions)</i>				
Operating leases	\$ 81.8	\$ 126.5	\$ 80.7	\$ 138.3	\$ 427.3
Purchasing commitments:					
Raw materials	949.7	1,776.1	631.1	3,088.8	6,445.7
Capital expenditures	8.1	—	—	—	8.1
Long-term energy supply contracts	75.0	76.4	—	—	151.4
Utilities	11.9	23.7	12.2	8.6	56.4
Total Purchasing Commitments	\$ 1,044.7	\$ 1,876.2	\$ 643.3	\$ 3,097.4	\$ 6,661.6

Other Guarantees

We also have standby letters of credit of \$89.8 million of which \$0.4 million have been issued under our Senior Revolving Credit Facility. The letters of credit were used to support certain long-term debt, certain workers compensation insurance policies, certain plant closure and post-closure obligations, certain international payment obligations and certain international pension funding requirements. At December 31, 2022, we had \$1,199.6 million available under our Senior Revolving Credit Facility because we had issued \$0.4 million of letters of credit.

CRITICAL ACCOUNTING ESTIMATES

Our discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, sales and expenses, and related disclosure of contingent assets and liabilities. Significant estimates in our consolidated financial statements include goodwill recoverability, environmental, restructuring and other unusual items, litigation, income tax reserves including deferred tax asset valuation allowances, pension, postretirement and other benefits and allowance for doubtful accounts. We base our estimates on prior experience, current facts and circumstances and other assumptions. Actual results may differ from these estimates.

We believe the following critical accounting estimates are the more significant judgments used in the preparation of the consolidated financial statements.

Goodwill

Goodwill is not amortized, but is reviewed for impairment annually in the fourth quarter and/or when circumstances or other events indicate that impairment may have occurred. ASC 350 "Intangibles—Goodwill and Other" permits entities to make a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying amount before applying a quantitative goodwill impairment test. Circumstances that are considered as part of the qualitative assessment and could trigger a quantitative impairment test include, but are not limited to: a significant adverse change in the business climate; a significant adverse legal judgment; adverse cash flow trends; an adverse action or assessment by a government agency; unanticipated competition; sustained decline in our stock price; and a significant restructuring charge within a reporting unit. We define reporting units at the business segment level or one level below the business segment level. For purposes of testing goodwill for impairment, goodwill has been allocated to our reporting units to the extent it relates to each reporting unit.

It is our practice, at a minimum, to perform a quantitative goodwill impairment test in the fourth quarter every three years. We use a discounted cash flow approach to develop the estimated fair value of a reporting unit when a quantitative review is performed. Management judgment is required in developing the assumptions for the discounted cash flow model. We also corroborate our discounted cash flow analysis by evaluating a market-based approach that considers earnings before interest, taxes, depreciation and amortization (EBITDA) multiples from a representative sample of comparable public companies. As a further indicator that each reporting unit has been valued appropriately using a discounted cash flow model, the aggregate fair value of all reporting units is reconciled to the total market value of Olin. An impairment would be recorded if the carrying amount of a reporting unit exceeded the estimated fair value.

Fair value determinations require considerable judgment and are sensitive to changes in underlying assumptions, estimates and market factors. The discount rate, profitability assumptions and terminal growth rate of our reporting units and the supply and demand fundamentals of the chlor alkali industry are material assumptions utilized in the discounted cash flow model used to estimate the fair value of each reporting unit. The discount rate reflects a weighted-average cost of capital, which is calculated, in part based on observable market data. Some of this data (such as the risk free or treasury rate and the pretax cost of debt) are based on the market data at a point in time. Other data (such as the equity risk premium) are based upon market data over time for a peer group of companies in the chemical manufacturing or distribution industries with a market capitalization premium added, as applicable. Also factoring into the discount rate is a market participant's perceived risk (such as the company specific risk premium) in the valuation implied by the sustained reduction in our stock price.

The discounted cash flow analysis requires estimates, assumptions and judgments about future events. Our analysis uses our internally generated long-range plan. Specifically, the assumptions in our long-range plan about terminal growth rates, forecasted capital expenditures and changes in future working capital requirements are used to determine the estimated fair value of each reporting unit. The long-range plan reflects management judgment, supplemented by independent chemical industry analyses which provide multi-year chlor alkali industry operating and pricing forecasts.

As a further indicator that each reporting unit has been valued appropriately using a discounted cash flow model, the aggregate fair value of all reporting units is reconciled to the total market value of Olin. We believe the assumptions used in our goodwill impairment analysis are appropriate and result in reasonable estimates of the implied fair value of each reporting unit. However, given the economic environment and the uncertainties regarding the impact on our business, there can be no assurance that our estimates and assumptions, made for purposes of our goodwill impairment testing, will prove to be an accurate prediction of the future.

Environmental

Accruals (charges to income) for environmental matters are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated, based on current law and existing technologies. These amounts, which are not discounted and are exclusive of claims against third parties, are adjusted periodically as assessments and remediation efforts progress or additional technical or legal information becomes available. Environmental costs are capitalized if the costs increase the value of the property and/or mitigate or prevent contamination from future operations. Environmental costs and recoveries are included in costs of goods sold.

Environmental exposures are difficult to assess for numerous reasons, including the identification of new sites, developments at sites resulting from investigatory studies, advances in technology, changes in environmental laws and regulations and their application, changes in regulatory authorities, the scarcity of reliable data pertaining to identified sites, the difficulty in assessing the involvement and financial capability of other potentially responsible parties (PRPs) and our ability to obtain contributions from other parties and the lengthy time periods over which site remediation occurs. It is possible that some of these matters (the outcomes of which are subject to various uncertainties) may be resolved unfavorably to us, which could materially adversely affect our financial position, cash flows or results of operations.

NEW ACCOUNTING PRONOUNCEMENTS

Discussion of new accounting pronouncements can be referred to under Item 8, within Note 3, "Recent Accounting Pronouncements."

DERIVATIVE FINANCIAL INSTRUMENTS

We are exposed to market risk in the normal course of our business operations due to our purchases of certain commodities, our ongoing investing and financing activities and our operations that use foreign currencies. The risk of loss can be assessed from the perspective of adverse changes in fair values, cash flows and future earnings. We have established policies and procedures governing our management of market risks and the use of financial instruments to manage exposure to such risks. ASC 815 "Derivatives and Hedging" (ASC 815) requires an entity to recognize all derivatives as either assets or liabilities in the consolidated balance sheets and measure those instruments at fair value. In accordance with ASC 815, we designate derivative contracts as cash flow hedges of forecasted purchases of commodities and forecasted interest payments related to variable-rate borrowings and designate certain interest rate swaps as fair value hedges of fixed-rate borrowings. We do not enter into any derivative instruments for trading or speculative purposes.

Energy costs, including electricity and natural gas, and certain raw materials used in our production processes are subject to price volatility. Depending on market conditions, we may enter into futures contracts, forward contracts, commodity swaps

and put and call option contracts in order to reduce the impact of commodity price fluctuations. The majority of our commodity derivatives expire within one year.

For derivative instruments that are designated and qualify as a cash flow hedge, the change in fair value of the derivative is recognized as a component of other comprehensive income (loss) until the hedged item is recognized in earnings.

We use cash flow hedges for certain raw material and energy costs such as copper, zinc, lead, ethane, electricity and natural gas to provide a measure of stability in managing our exposure to price fluctuations associated with forecasted purchases of raw materials and energy used in our manufacturing process. Settlements on commodity derivative contracts resulted in gains (losses) of \$58.2 million, \$180.1 million, and \$(14.9) million in 2022, 2021, and 2020, respectively which were included in cost of goods sold. At December 31, 2022, we had open derivative notional contract positions through 2027 totaling \$261.2 million (2021—\$224.3 million). If all open futures contracts had been settled on December 31, 2022, we would have recognized a pretax loss of \$43.5 million.

If commodity prices were to remain at December 31, 2022 levels, approximately \$30.5 million of deferred losses, net of tax, would be reclassified into earnings during the next twelve months. The actual effect on earnings will be dependent on actual commodity prices when the forecasted transactions occur.

We use interest rate swaps as a means of minimizing cash flow fluctuations that may arise from volatility in interest rates of our variable-rate borrowings. We also use interest rate swaps as a means of managing interest expense and floating interest rate exposure to optimal levels. For derivative instruments that are designated and qualify as a fair value hedge, the gain or loss on the derivative as well as the offsetting loss or gain on the hedged item attributable to the hedged risk are recognized in current earnings. We include the gain or loss on the hedged items (fixed-rate borrowings) in the same line item, interest expense, as the offsetting loss or gain on the related interest rate swaps.

In 2021, we redeemed the 2025 Notes which resulted in recognition of the outstanding deferred swap loss. For the year ended December 31, 2021, \$1.8 million of expense was recorded to interest expense on the accompanying consolidated statements of operations related to these swap agreements.

We actively manage currency exposures that are associated with net monetary asset positions, currency purchases and sales commitments denominated in foreign currencies and foreign currency denominated assets and liabilities created in the normal course of business. We enter into forward sales and purchase contracts to manage currency risk to offset our net exposures, by currency, related to the foreign currency denominated monetary assets and liabilities of our operations. At December 31, 2022, we had outstanding forward contracts to buy foreign currency with a notional value of \$275.8 million and to sell foreign currency with a notional value of \$110.7 million. All of the currency derivatives expire within one year and are for U.S. dollar (USD) equivalents. The counterparties to the forward contracts are large financial institutions; however, the risk of loss to us in the event of nonperformance by a counterparty could impact our financial position or results of operations. At December 31, 2021, we had outstanding forward contracts to buy foreign currency with a notional value of \$199.0 million and to sell foreign currency with a notional value of \$124.4 million.

Our foreign currency forward contracts and certain commodity derivatives did not meet the criteria to qualify for hedge accounting. The effect on operating results of items not qualifying for hedge accounting was a (loss) gain of \$(27.3) million, \$(22.0) million and \$17.7 million in 2022, 2021 and 2020, respectively.

The fair value of our derivative asset and liability balances were:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Other current assets	\$ 1.8	\$ 26.8
Other assets	4.0	7.9
Total derivative asset	<u>\$ 5.8</u>	<u>\$ 34.7</u>
Accrued liabilities	\$ 42.5	\$ 3.5
Other liabilities	7.4	0.3
Total derivative liability	<u>\$ 49.9</u>	<u>\$ 3.8</u>

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risk in the normal course of our business operations due to our purchases of certain commodities, our ongoing investing and financing activities and our operations that use foreign currencies. The risk of loss can be assessed from the perspective of adverse changes in fair values, cash flows and future earnings. We have established policies and procedures governing our management of market risks and the use of financial instruments to manage exposure to such risks.

Energy costs, including electricity and natural gas, and certain raw materials used in our production processes are subject to price volatility. Depending on market conditions, we may enter into futures contracts, forward contracts, commodity swaps and put and call option contracts in order to reduce the impact of commodity price fluctuations. As of December 31, 2022, we maintained open positions on commodity contracts with a notional value totaling \$261.2 million (\$224.3 million at December 31, 2021). Assuming a hypothetical 10% increase in commodity prices, which are currently hedged, as of December 31, 2022, we would experience a \$26.1 million (\$22.4 million at December 31, 2021) increase in our cost of inventory purchased, which would be substantially offset by a corresponding increase in the value of related hedging instruments.

We transact business in various foreign currencies other than the USD which exposes us to movements in exchange rates which may impact revenue and expenses, assets and liabilities and cash flows. Our significant foreign currency exposure is denominated with European currencies, primarily the Euro, although exposures also exist in other currencies of Asia Pacific, Latin America, Middle East and Africa. For all derivative positions, we evaluated the effects of a 10% shift in exchange rates between those currencies and the USD, holding all other assumptions constant. Unfavorable currency movements of 10% would negatively affect the fair values of the derivatives held to hedge currency exposures by \$38.6 million. These unfavorable changes would generally have been offset by favorable changes in the values of the underlying exposures.

We are exposed to changes in interest rates primarily as a result of our investing and financing activities. Our current debt structure is used to fund business operations, and commitments from banks under our Senior Revolving Credit Facility, Receivables Financing Agreement and AR Facilities are sources of liquidity. As of December 31, 2022, we had long-term borrowings, including current installments of long-term debt and finance lease obligations, of \$2,580.7 million (\$2,779.3 million at December 31, 2021) of which \$805.9 million (\$805.9 million at December 31, 2021) was issued at variable rates. Included within long-term borrowings on the consolidated balance sheets were deferred debt issuance costs and unamortized bond original issue discount.

Assuming no changes in the \$805.9 million of variable-rate debt levels from December 31, 2022, we estimate that a hypothetical change of 100-basis points in the secured overnight financing rate (SOFR) from 2022 would impact annual interest expense by \$8.1 million.

If the actual changes in commodities, foreign currency or interest pricing is substantially different than expected, the net impact of commodity risk, foreign currency risk or interest rate risk on our cash flow may be materially different than that disclosed above.

We do not enter into any derivative financial instruments for speculative purposes.

CAUTIONARY STATEMENT ABOUT FORWARD-LOOKING STATEMENTS

This report includes forward-looking statements. These statements relate to analyses and other information that are based on management's beliefs, certain assumptions made by management, forecasts of future results and current expectations, estimates and projections about the markets and economy in which we and our various segments operate. The statements contained in this report that are not statements of historical fact may include forward-looking statements that involve a number of risks and uncertainties.

We have used the words "anticipate," "intend," "may," "expect," "believe," "outlook," "should," "plan," "project," "estimate," "forecast," "optimistic," "target," and variations of such words and similar expressions in this annual report to identify such forward-looking statements. These statements are not guarantees of future performance and involve certain risks, uncertainties and assumptions, which are difficult to predict and many of which are beyond our control. These forward-looking statements include, but are not limited to, statements regarding the Company's intent to repurchase, from time to time, the Company's common stock. Therefore, actual outcomes and results may differ materially from those matters expressed or implied in such forward-looking statements. We undertake no obligation to update publicly any forward-looking statements, whether as a result of future events, new information or otherwise. The payment of cash dividends is subject to the discretion of our board of directors and will be determined in light of then-current conditions, including our earnings, our operations, our

financial conditions, our capital requirements and other factors deemed relevant by our board of directors. In the future, our board of directors may change our dividend policy, including the frequency or amount of any dividend, in light of then-existing conditions.

The risks, uncertainties and assumptions involved in our forward-looking statements include those discussed under Item 1A—"Risk Factors." You should consider all of our forward-looking statements in light of these factors. In addition, other risks and uncertainties not presently known to us or that we consider immaterial could affect the accuracy of our forward-looking statements.

Item 8. CONSOLIDATED FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

MANAGEMENT REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Olin Corporation is responsible for establishing and maintaining adequate internal control over financial reporting. Olin's internal control system was designed to provide reasonable assurance to the company's management and board of directors regarding the preparation and fair presentation of published financial statements.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation, and may not prevent or detect all misstatements.

The management of Olin Corporation has assessed the effectiveness of the company's internal control over financial reporting as of December 31, 2022. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control - Integrated Framework (2013)* to guide our analysis and assessment. Based on our assessment as of December 31, 2022, the company's internal control over financial reporting was effective based on those criteria.

Our independent registered public accountants, KPMGLLP, have audited and issued a report on our internal control over financial reporting, which appears in this Form 10-K.

/s/ Scott Sutton
Chairman, President and Chief Executive Officer

/s/ Todd A. Slater
Senior Vice President and Chief Financial Officer

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors
Olin Corporation:

Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting

We have audited the accompanying consolidated balance sheets of Olin Corporation and subsidiaries (the Company) as of December 31, 2022 and 2021, the related consolidated statements of operations, comprehensive income (loss), shareholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2022, and the related notes (collectively, the consolidated financial statements). We also have audited the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022 based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the Company's consolidated financial statements and an opinion on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control Over Financial Reporting

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

Critical Audit Matter

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of a critical audit matter 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 matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Evaluation of environmental obligations

As discussed in Notes 2 and 20 to the consolidated financial statements, the Company has recorded liabilities for future environmental expenditures of \$146.6 million as of December 31, 2022. The Company accrues a liability for environmental matters when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated based upon current law and existing technologies. The liability is adjusted periodically as assessment and remediation efforts progress or as additional technical or legal information becomes available.

We identified the evaluation of the environmental liabilities as a critical audit matter. This required challenging auditor judgment due to the nature of the estimate and assumptions, including judgments in determining required remediation activities designed to consider future events and uncertainties and the time period over which remediation activities will occur.

The following are the primary procedures that we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Company's process to estimate environmental obligations, including controls related to the monitoring of the liability as compared to remedial activities required by regulatory authorities. We involved an environmental professional with specialized skills and knowledge who assisted in evaluating the Company's planned remediation activities for certain sites, the time period over which remediation will occur, and changes in the liability and assumptions from those used in the prior period, including comparing the Company's planned remediation activities to those communicated to regulatory authorities and to those commonly observed in conducting remediation.

/s/ KPMG LLP

We have served as the Company's auditor since 1954.

St. Louis, Missouri
February 23, 2023

CONSOLIDATED BALANCE SHEETS
December 31
(In millions, except per share data)

Assets	2022	2021
Current assets:		
Cash and cash equivalents	\$ 194.0	\$ 180.5
Receivables, net	924.6	1,106.5
Income taxes receivable	43.2	0.3
Inventories, net	941.9	868.3
Other current assets	52.7	92.7
Total current assets	2,156.4	2,248.3
Property, plant and equipment, net	2,674.1	2,913.6
Operating lease assets, net	356.0	372.4
Deferred income taxes	60.5	99.3
Other assets	1,102.5	1,131.8
Intangible assets, net	273.8	331.7
Goodwill	1,420.9	1,420.6
Total assets	\$ 8,044.2	\$ 8,517.7
Liabilities and Shareholders' Equity		
Current liabilities:		
Current installments of long-term debt	\$ 9.7	\$ 201.1
Accounts payable	837.7	847.7
Income taxes payable	133.4	98.4
Current operating lease liabilities	71.8	76.8
Accrued liabilities	508.8	458.1
Total current liabilities	1,561.4	1,682.1
Long-term debt	2,571.0	2,578.2
Operating lease liabilities	292.5	302.0
Accrued pension liability	234.5	381.9
Deferred income taxes	507.3	558.9
Other liabilities	333.9	362.4
Total liabilities	5,500.6	5,865.5
Commitments and contingencies		
Shareholders' equity:		
Common stock, \$1.00 par value per share:		
Authorized, 240.0 shares; issued and outstanding, 132.3 and 156.8 shares	132.3	156.8
Additional paid-in capital	682.7	1,969.6
Accumulated other comprehensive loss	(495.9)	(488.0)
Retained earnings	2,224.5	1,013.8
Total shareholders' equity	2,543.6	2,652.2
Total liabilities and shareholders' equity	\$ 8,044.2	\$ 8,517.7

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

CONSOLIDATED STATEMENTS OF OPERATIONS**Years ended December 31***(In millions, except per share data)*

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Sales	\$ 9,376.2	\$ 8,910.6	\$ 5,758.0
Operating expenses:			
Cost of goods sold	7,194.3	6,616.4	5,374.6
Selling and administration	393.9	416.9	422.0
Restructuring charges	25.3	27.9	9.0
Goodwill impairment	—	—	699.8
Other operating income	16.3	1.4	0.7
Operating income (loss)	1,779.0	1,850.8	(746.7)
Interest expense	143.9	348.0	292.7
Interest income	2.2	0.2	0.5
Non-operating pension income	38.7	35.7	18.9
Income (loss) before taxes	1,676.0	1,538.7	(1,020.0)
Income tax provision (benefit)	349.1	242.0	(50.1)
Net income (loss)	<u>\$ 1,326.9</u>	<u>\$ 1,296.7</u>	<u>\$ (969.9)</u>
Net income (loss) per common share:			
Basic	<u>\$ 9.16</u>	<u>\$ 8.15</u>	<u>\$ (6.14)</u>
Diluted	<u>\$ 8.94</u>	<u>\$ 7.96</u>	<u>\$ (6.14)</u>
Average common shares outstanding:			
Basic	<u>144.9</u>	<u>159.1</u>	<u>157.9</u>
Diluted	<u>148.5</u>	<u>163.0</u>	<u>157.9</u>

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

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)**Years ended December 31***(In millions)*

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Net income (loss)	\$ 1,326.9	\$ 1,296.7	\$ (969.9)
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustments	(27.7)	(30.3)	27.8
Unrealized (losses) gains on derivative contracts, net	(55.3)	1.4	35.0
Pension and postretirement liability adjustments, net	46.8	188.5	14.8
Amortization of prior service costs and actuarial losses, net	28.3	42.3	35.9
Total other comprehensive (loss) income, net of tax	(7.9)	201.9	113.5
Comprehensive income (loss)	<u>\$ 1,319.0</u>	<u>\$ 1,498.6</u>	<u>\$ (856.4)</u>

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

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
Years ended December 31
(In millions, except per share data)

	<u>2022</u>	<u>2021</u>	<u>2020</u>
Common Stock			
Balance at beginning of year	\$ 156.8	\$ 158.0	\$ 157.7
Common stock repurchased and retired	(25.7)	(4.7)	—
Common stock issued for:			
Stock options exercised	1.1	3.4	0.1
Other transactions	0.1	0.1	0.2
Balance at end of year	<u>\$ 132.3</u>	<u>\$ 156.8</u>	<u>\$ 158.0</u>
Additional Paid-In Capital			
Balance at beginning of year	\$ 1,969.6	\$ 2,137.8	\$ 2,122.1
Common stock repurchased and retired	(1,325.0)	(247.2)	—
Common stock issued for:			
Stock options exercised	24.6	69.0	1.8
Other transactions	3.0	3.3	3.6
Stock-based compensation	10.5	6.7	10.3
Balance at end of year	<u>\$ 682.7</u>	<u>\$ 1,969.6</u>	<u>\$ 2,137.8</u>
Accumulated Other Comprehensive Loss			
Balance at beginning of year	\$ (488.0)	\$ (689.9)	\$ (803.4)
Other comprehensive (loss) income	(7.9)	201.9	113.5
Balance at end of year	<u>\$ (495.9)</u>	<u>\$ (488.0)</u>	<u>\$ (689.9)</u>
Retained Earnings (Accumulated Deficit)			
Balance at beginning of year	\$ 1,013.8	\$ (155.1)	\$ 941.1
Net income (loss)	1,326.9	1,296.7	(969.9)
Common stock dividends paid	(116.2)	(127.8)	(126.3)
Balance at end of year	<u>\$ 2,224.5</u>	<u>\$ 1,013.8</u>	<u>\$ (155.1)</u>
Total Shareholders' Equity	<u>\$ 2,543.6</u>	<u>\$ 2,652.2</u>	<u>\$ 1,450.8</u>
Dividends declared per share of common stock	\$ 0.80	\$ 0.80	\$ 0.80

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

CONSOLIDATED STATEMENTS OF CASH FLOWS
Years ended December 31
(In millions)

	2022	2021	2020
Operating Activities			
Net income (loss)	\$ 1,326.9	\$ 1,296.7	\$ (969.9)
Adjustments to reconcile net income (loss) to net cash and cash equivalents provided by (used for) operating activities:			
Goodwill impairment	—	—	699.8
Gains on disposition of property, plant and equipment	(13.0)	(1.4)	—
Stock-based compensation	14.1	8.3	13.6
Loss on debt extinguishment	—	152.2	20.4
Depreciation and amortization	598.8	582.5	568.4
Deferred income taxes	(32.4)	(42.7)	(18.4)
Qualified pension plan contributions	(1.3)	(1.1)	(2.1)
Qualified pension plan income	(33.1)	(27.8)	(11.4)
Change in assets and liabilities:			
Receivables	160.8	(360.0)	(0.3)
Income taxes receivable/payable	(2.9)	105.1	(11.2)
Inventories	(86.3)	(206.0)	28.6
Other current assets	15.9	(22.3)	(24.8)
Accounts payable and accrued liabilities	(22.3)	240.1	149.3
Other assets	(2.6)	(13.3)	(20.2)
Other noncurrent liabilities	(0.7)	26.2	8.6
Other operating activities	—	4.5	2.6
Net operating activities	1,921.9	1,741.0	433.0
Investing Activities			
Capital expenditures	(236.9)	(200.6)	(298.9)
Payments under ethylene long-term supply contracts	—	—	(461.0)
Payments under other long-term supply contracts	(37.7)	—	(75.8)
Proceeds from disposition of property, plant and equipment	14.9	3.2	—
Net investing activities	(259.7)	(197.4)	(835.7)
Financing Activities			
Long-term debt:			
Borrowings	415.0	540.0	1,827.5
Repayments	(616.1)	(1,643.1)	(1,307.2)
Debt early redemption premiums	—	(137.7)	(14.6)
Common stock repurchased and retired	(1,350.7)	(251.9)	—
Stock options exercised	25.7	72.4	1.9
Dividends paid	(116.2)	(127.8)	(126.3)
Debt issuance costs	(4.4)	(3.9)	(10.3)
Net financing activities	(1,646.7)	(1,552.0)	371.0
Effect of exchange rate changes on cash and cash equivalents	(2.0)	(0.8)	0.5
Net increase (decrease) in cash and cash equivalents	13.5	(9.2)	(31.2)
Cash and cash equivalents, beginning of year	180.5	189.7	220.9
Cash and cash equivalents, end of year	\$ 194.0	\$ 180.5	\$ 189.7
Cash paid (received) for interest and income taxes:			
Interest, net	\$ 141.7	\$ 345.2	\$ 286.4
Income taxes, net of refunds	\$ 356.6	\$ 169.6	\$ (9.6)

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1. DESCRIPTION OF BUSINESS

Olin Corporation (Olin) is a Virginia corporation, incorporated in 1892, having its principal executive offices in Clayton, MO. We are a leading vertically-integrated global manufacturer and distributor of chemical products and a leading U.S. manufacturer of ammunition. Our operations are concentrated in three business segments: Chlor Alkali Products and Vinyls, Epoxy and Winchester. All of our business segments are capital intensive manufacturing businesses. The Chlor Alkali Products and Vinyls segment manufactures and sells chlorine and caustic soda, ethylene dichloride and vinyl chloride monomer, methyl chloride, methylene chloride, chloroform, carbon tetrachloride, perchloroethylene, hydrochloric acid, hydrogen, bleach products and potassium hydroxide. The Epoxy segment produces and sells a full range of epoxy materials and precursors, including aromatics (acetone, bisphenol, cumene and phenol), allyl chloride, epichlorohydrin, liquid epoxy resins, solid epoxy resins and systems and growth products such as converted epoxy resins and additives. The Winchester segment produces and sells sporting ammunition, reloading components, small caliber military ammunition and components, and industrial cartridges.

NOTE 2. ACCOUNTING POLICIES

The preparation of the consolidated financial statements requires estimates and assumptions that affect amounts reported and disclosed in the financial statements and related notes. Actual results could differ from those estimates.

Basis of Presentation

The consolidated financial statements include the accounts of Olin and all majority-owned subsidiaries. Investment in our affiliates are accounted for on the equity method. Accordingly, we include only our share of earnings or losses of these affiliates in consolidated net income (loss).

Revenue Recognition

We derive our revenues primarily from the manufacturing and delivery of goods to customers. Revenues are recognized on sales of goods at the time when control of those goods is transferred to our customers at an amount that reflects the consideration to which we expect to be entitled in exchange for those goods. We primarily sell our goods directly to customers, and to a lesser extent, through distributors. Payment terms are typically 30 to 90 days from date of invoice. Our contracts do not typically have a significant financing component. Right to payment is determined at the point in time in which control has transferred to the customer.

A performance obligation is a promise in a contract to transfer a distinct good to the customer. At contract inception, we assess the goods promised in our contracts with customers and identify a performance obligation for each promise to transfer to the customer a good (or bundle of goods) that is distinct. A contract's transaction price is based on the price stated in the contract and allocated to each distinct performance obligation and revenue is recognized when the performance obligation is satisfied. Substantially all of our contracts have a single distinct performance obligation or multiple performance obligations which are distinct and represent individual promises within the contract. Substantially all of our performance obligations are satisfied at a single point in time, when control is transferred, which is generally upon shipment or delivery as stated in the contract terms.

All taxes assessed by governmental authorities that are both imposed on and concurrent with our revenue-producing transactions and collected from our customers are excluded from the measurement of the transaction price. Shipping and handling fees billed to customers are included in revenue and are considered activities to fulfill the promise to transfer the good. Allowances for estimated returns, discounts and rebates are considered variable consideration, which may be constrained, and are estimated and recognized when sales are recorded. The estimates are based on various market data, historical trends and information from customers. Actual returns, discounts and rebates have not been materially different from estimates. For all contracts that have a duration of one year or less at contract inception, we do not adjust the promised amount of consideration for the effects of a significant financing component.

Substantially all of our revenue is derived from contracts with an original expected length of time of one year or less and for which we recognize revenue for the amount in which we have the right to invoice at the point in time in which control has transferred to the customer. However, a portion of our revenue is derived from long-term contracts which have contract periods that vary between one to multi-year. Certain of these contracts represent contracts with minimum purchase obligations, which can be substantially different than the actual revenue recognized. Such contracts consist of varying types of products across our

chemical businesses. Certain contracts include variable volumes and/or variable pricing with pricing provisions tied to commodity, consumer price or other indices. The transaction price allocated to the remaining performance obligations related to our contracts was excluded from the disclosure of our remaining performance obligations based on the following practical expedients that we elected to apply: (i) contracts with index-based pricing or variable volume attributes in which such variable consideration is allocated entirely to a wholly unsatisfied performance obligation; and (ii) contracts with an original expected duration of one year or less.

Cost of Goods Sold and Selling and Administration Expenses

Cost of goods sold includes the costs of inventory sold, related purchasing, distribution and warehousing costs, costs incurred for shipping and handling, depreciation and amortization expense related to these activities and environmental remediation costs and recoveries. Selling and administration expenses include personnel costs associated with sales, marketing and administration, research and development, legal and legal-related costs, consulting and professional services fees, advertising expenses, depreciation expense related to these activities, foreign currency translation and other similar costs.

Acquisition-related Costs

Acquisition-related costs include advisory, legal, accounting and other professional fees incurred in connection with the purchase and integration of our acquisitions. Acquisition-related costs also may include costs which arise as a result of acquisitions, including contractual change in control provisions, contract termination costs, compensation payments related to the acquisition or pension and other postretirement benefit plan settlements.

Other Operating Income (Expense)

Other operating income (expense) consists of miscellaneous operating income items, which are related to our business activities, and gains (losses) on disposition of property, plant and equipment. Other operating income for the year ended December 31, 2022 included \$13.0 million of gains for the sale of two former manufacturing facilities. Other operating income for the year ended December 31, 2021 included an \$1.4 million gain on the sale of a terminal facility.

Other Income (Expense)

Other income (expense) consists of non-operating income and expense items which are not related to our primary business activities.

Foreign Currency Translation

Our worldwide operations utilize the U.S. dollar (USD) or local currency as the functional currency, where applicable. For foreign entities where the USD is the functional currency, gains and losses resulting from balance sheet remeasurement are included in selling and administration. For foreign entities where the local currency is the functional currency, assets and liabilities denominated in local currencies are translated into USD at end-of-period exchange rates and the resultant translation adjustments are included in accumulated other comprehensive loss. Assets and liabilities denominated in other than the local currency are remeasured into the local currency prior to translation into USD and the resultant exchange gains or losses are included in income in the period in which they occur. Income and expenses are translated into USD using an approximation of the average rate prevailing during the period. We change the functional currency of our separate and distinct foreign entities only when significant changes in economic facts and circumstances indicate clearly that the functional currency has changed.

Cash and Cash Equivalents

All highly liquid investments, with a maturity of three months or less at the date of purchase, are considered to be cash equivalents.

Short-Term Investments

We classify our marketable securities as available-for-sale, which are reported at fair market value with unrealized gains and losses included in accumulated other comprehensive loss, net of applicable taxes. The fair value of marketable securities is determined by quoted market prices. Realized gains and losses on sales of investments, as determined on the specific identification method, and declines in value of securities judged to be other-than-temporary are included in other income (expense) in the consolidated statements of operations. Interest and dividends on all securities are included in interest income and other income (expense), respectively. As of December 31, 2022 and 2021, we had no short-term investments recorded on our consolidated balance sheets.

Allowance for Doubtful Accounts Receivable

We evaluate the collectibility of financial instruments based on our current estimate of credit losses expected to be incurred over the life of the financial instrument. The only significant financial instrument which creates exposure to credit losses are customer accounts receivables. We measure credit losses on uncollected accounts receivable through an allowance for doubtful accounts receivable which is based on a combination of factors including both historical collection experience and reasonable estimates that affect the expected collectibility of the receivable. These factors include historical bad debt experience, industry conditions of the customer or group of customers, geographical region, credit ratings and general market conditions. We group receivables together for purposes of estimating credit losses when customers have similar risk characteristics; otherwise, the estimation is performed on the individual receivable.

This estimate is periodically adjusted when we become aware of a specific customer's inability to meet its financial obligations (e.g., bankruptcy filing) or as a result of changes in the overall aging of accounts receivable. While we have a large number of customers that operate in diverse businesses and are geographically dispersed, a general economic downturn in any of the industry segments in which we operate could result in higher than expected defaults, and, therefore, the need to revise estimates for the provision for doubtful accounts could occur.

Inventories

Inventories are valued at the lower of cost and net realizable value. For U.S. inventories, inventory costs are determined principally by the last-in, first-out (LIFO) method of inventory accounting while for international inventories, inventory costs are determined principally by the first-in, first-out (FIFO) method of inventory accounting. Costs for other inventories have been determined principally by the average-cost method (primarily operating supplies, spare parts and maintenance parts). Elements of costs in inventories include raw materials, direct labor and manufacturing overhead. See Note 7 "Inventories" for additional information.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost. Depreciation is computed on a straight-line basis over the estimated useful lives of the related assets. Interest costs incurred to finance expenditures for major long-term construction projects are capitalized as part of the historical cost and included in property, plant and equipment and are depreciated over the useful lives of the related assets. Leasehold improvements are amortized over the term of the lease or the estimated useful life of the improvement, whichever is shorter. Start-up costs are expensed as incurred. Expenditures for maintenance and repairs are charged to expense when incurred while the costs of significant improvements, which extend the useful life of the underlying asset, are capitalized.

Property, plant and equipment are reviewed for impairment when conditions indicate that the carrying values of the asset group may not be recoverable. Such impairment conditions include an extended period of idleness or a plan of disposal. If such impairment indicators are present or other factors exist that indicate that the carrying amount of an asset group may not be recoverable, we determine whether impairment has occurred through the use of an undiscounted cash flow analysis at the lowest level for which identifiable cash flows exist. For our Chlor Alkali Products and Vinyls, Epoxy and Winchester segments, the lowest level for which identifiable cash flows exist is the operating facility level or an appropriate grouping of operating facilities level, which represents the asset group. The amount of impairment loss, if any, is measured by the difference between the net book value of the assets and the estimated fair value of the related asset group. See Note 8 "Property, Plant and Equipment" for additional information.

Leases

We determine if an arrangement is a lease at inception of the contract. Operating lease assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease assets and liabilities are recognized at commencement date based on the present value of fixed lease payments over the lease term. Our lease commitments are primarily for railcars, but also include logistics, manufacturing, storage, real estate and information technology assets. Leases with an initial term of 12 months or less are not recorded on the balance sheet; instead, we recognize lease expense for these leases on a straight-line basis over the lease term. We do not account for lease components (e.g., fixed payments to use the underlying lease asset) separately from the non-lease components (e.g., fixed payments for common-area maintenance costs and other items that transfer a good or service). Some of our leases include variable lease payments, which primarily result from changes in consumer price and other market-based indices, which are generally updated annually, and maintenance and usage charges. These variable payments are excluded from the calculation of our lease assets and liabilities.

Most leases include one or more options to renew, with renewal terms that can extend the lease term from one to many years. The exercise of lease renewal options is typically at our sole discretion. Certain leases also include options to purchase the leased asset. We do not include options to renew or purchase leased assets in the measurement of lease liabilities unless those options are highly certain of exercise. The depreciable life of assets and leasehold improvements are limited by the expected lease term, unless there is a transfer of title or purchase option reasonably certain of exercise. We have operating leases with terms that require us to guarantee a portion of the residual value of the leased assets upon termination of the lease as well as other guarantees. These residual value guarantees consist primarily of leases for railcars. Residual value guarantee payments that become probable and estimable are accrued as part of the lease liability and recognized over the remaining life of the applicable lease. Our current expectation is that the likelihood of material residual guarantee payments is remote. We utilize the interest rate implicit in the lease to determine the lease liability when the interest rate can be determined. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at the lease commencement date in determining the present value of lease payments. We estimate the incremental borrowing rate based on the geographic region for which we would borrow, on a secured basis of the lease asset, at an amount equal to the lease payments over a similar time period as the lease term. We have no additional restrictions or covenants imposed by our lease contracts. See Note 21 "Leases" for additional information.

Asset Retirement Obligations

We record the fair value of an asset retirement obligation associated with the retirement of a tangible long-lived asset as a liability in the period incurred. The liability is measured at discounted fair value and is adjusted to its present value in subsequent periods as accretion expense is recorded. The corresponding asset retirement costs are capitalized as part of the carrying amount of the related long-lived asset and depreciated over the asset's useful life. Asset retirement obligations are reviewed annually in the fourth quarter and/or when circumstances or other events indicate that changes underlying retirement assumptions may have occurred.

The activities of our asset retirement obligations were as follows:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Beginning balance	\$ 70.2	\$ 65.0
Accretion	3.8	3.2
Spending	(8.7)	(8.1)
Adjustments	1.0	10.1
Ending balance	<u>\$ 66.3</u>	<u>\$ 70.2</u>

At December 31, 2022 and 2021, our consolidated balance sheets included an asset retirement obligation of \$52.6 million and \$56.8 million, respectively, which were classified as other noncurrent liabilities.

In 2022 and 2021, we had net adjustments that increased the asset retirement obligation by \$1.0 million and \$10.1 million, respectively, which were primarily comprised of increases in estimated costs for certain assets.

Comprehensive Income (Loss)

Accumulated other comprehensive loss consists of foreign currency translation adjustments, pension and postretirement liability adjustments, pension and postretirement amortization of prior service costs and actuarial losses and net unrealized gains (losses) on derivative contracts.

Goodwill

Goodwill is not amortized, but is reviewed for impairment annually in the fourth quarter and/or when circumstances or other events indicate that impairment may have occurred. Accounting Standards Codification (ASC) 350 "Intangibles—Goodwill and Other" (ASC 350) permits entities to make a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying amount before applying the goodwill impairment test. Circumstances that are considered as part of the qualitative assessment and could trigger a quantitative impairment test include, but are not limited to: a significant adverse change in the business climate; a significant adverse legal judgment; adverse cash flow trends; an adverse action or assessment by a government agency; unanticipated competition; sustained decline in our stock price; and a significant restructuring charge within a reporting unit. We define reporting units at the business segment level or one level below the business segment level. For purposes of testing goodwill for impairment, goodwill has been allocated to our reporting units to the extent it relates to each reporting unit.

It is our practice, at a minimum, to perform a quantitative goodwill impairment test in the fourth quarter every three years. We use a discounted cash flow approach to develop the estimated fair value of a reporting unit when a quantitative test is performed. Management judgment is required in developing the assumptions for the discounted cash flow model. We also corroborate our discounted cash flow analysis by evaluating a market-based approach that considers earnings before interest, taxes, depreciation and amortization (EBITDA) multiples from a representative sample of comparable public companies. As a further indicator that each reporting unit has been valued appropriately using a discounted cash flow model, the aggregate fair value of all reporting units is reconciled to the total market value of Olin. An impairment would be recorded if the carrying amount of a reporting unit exceeded the estimated fair value. See Note 10 "Goodwill and Intangible Assets" for additional information.

Intangible Assets

In conjunction with our acquisitions, we have obtained access to the customer contracts and relationships, trade names, acquired technology and other intellectual property of the acquired companies. These relationships are expected to provide economic benefit for future periods. Amortization expense is recognized on a straight-line basis over the estimated lives of the related assets. The amortization period of customer contracts and relationships, trade names, acquired technology and other intellectual property represents our best estimate of the expected usage or consumption of the economic benefits of the acquired assets, which is based on the company's historical experience.

Intangible assets with finite lives are reviewed for impairment when conditions indicate that the carrying values of the assets may not be recoverable. Circumstances that are considered as part of the qualitative assessment and could trigger a quantitative impairment test include, but are not limited to: a significant adverse change in the business climate; a significant adverse legal judgment including asset specific factors; adverse cash flow trends; an adverse action or assessment by a government agency; unanticipated competition; sustained decline in our stock price; and a significant restructuring charge within a reporting unit. See Note 10 "Goodwill and Intangible Assets" for additional information.

Environmental Liabilities and Expenditures

Accruals (charges to income) for environmental matters are recorded when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated, based upon current law and existing technologies. These amounts, which are not discounted and are exclusive of claims against third parties, are adjusted periodically as assessment and remediation efforts progress or additional technical or legal information becomes available. Environmental costs are capitalized if the costs increase the value of the property and/or mitigate or prevent contamination from future operations. See Note 20 "Environmental" for additional information.

Income Taxes

Deferred taxes are provided for differences between the financial statement and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. A valuation allowance is provided to

offset deferred tax assets if, based on the available evidence, it is more likely than not that some or all of the value of the deferred tax assets will not be realized. See Note 14 "Income Taxes" for additional information.

Derivative Financial Instruments

We are exposed to market risk in the normal course of our business operations due to our purchases of certain commodities, our ongoing investing and financing activities and our operations that use foreign currencies. The risk of loss can be assessed from the perspective of adverse changes in fair values, cash flows and future earnings. We have established policies and procedures governing our management of market risks and the use of financial instruments to manage exposure to such risks. We use hedge accounting treatment for a significant amount of our business transactions whose risks are covered using derivative instruments. The hedge accounting treatment provides for the deferral of gains or losses on derivative instruments until such time as the related transactions occur. See Note 23 "Derivative Financial Instruments" for additional information.

Concentration of Credit Risk

Accounts receivable is the principal financial instrument which subjects us to a concentration of credit risk. Credit is extended based upon the evaluation of a customer's financial condition and, generally, collateral is not required. Concentrations of credit risk with respect to receivables are somewhat limited due to our large number of customers, the diversity of these customers' businesses and the geographic dispersion of such customers. Our accounts receivable are predominantly derived from sales denominated in USD or the Euro. We maintain an allowance for doubtful accounts based upon the expected collectibility of all trade receivables.

Fair Value

Fair value is defined as the price at which an asset could be exchanged in a current transaction between knowledgeable, willing parties or the amount that would be paid to transfer a liability to a new obligor, not the amount that would be paid to settle the liability with the creditor. Where available, fair value is based on observable market prices or parameters or derived from such prices or parameters. Where observable prices or inputs are not available, valuation models are applied. These valuation techniques involve some level of management estimation and judgment, the degree of which is dependent on the price transparency for the instruments or market and the instruments' complexity.

Assets and liabilities recorded at fair value in the consolidated balance sheets are categorized based upon the level of judgment associated with the inputs used to measure their fair value. Hierarchical levels, defined by ASC 820 "Fair Value Measurement" (ASC 820), and directly related to the amount of subjectivity associated with the inputs to fair valuation of these assets and liabilities, are as follows:

Level 1 — Inputs were unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date.

Level 2 — Inputs (other than quoted prices included in Level 1) were either directly or indirectly observable for the asset or liability through correlation with market data at the measurement date and for the duration of the instrument's anticipated life.

Level 3 — Inputs reflected management's best estimate of what market participants would use in pricing the asset or liability at the measurement date. Consideration was given to the risk inherent in the valuation technique and the risk inherent in the inputs to the model.

See Note 24 "Fair Value Measurements" for additional information.

Retirement-Related Benefits

We account for our defined benefit pension plans and non-pension postretirement benefit plans using actuarial models required by ASC 715 "Compensation—Retirement Benefits" (ASC 715). These models use an attribution approach that generally spreads the financial impact of changes to the plan and actuarial assumptions over the average remaining service lives of the employees in the plan. Changes in liability due to changes in actuarial assumptions such as discount rate, rate of compensation increases and mortality, as well as annual deviations between what was assumed and what was experienced by the plan are treated as actuarial gains or losses. The principle underlying the required attribution approach is that employees render service over their average remaining service lives on a relatively smooth basis and, therefore, the accounting for benefits

earned under the pension or non-pension postretirement benefits plans should follow the same relatively smooth pattern. Substantially all domestic defined benefit pension plan participants are no longer accruing benefits; therefore, actuarial gains and losses are amortized based upon the remaining life expectancy of the inactive plan participants. For both the years ended December 31, 2022 and 2021, the average remaining life expectancy of the inactive participants in the domestic defined benefit pension plan were 17 years.

One of the key assumptions for the net periodic pension calculation is the expected long-term rate of return on plan assets, used to determine the "market-related value of assets." The "market-related value of assets" recognizes differences between the plan's actual return and expected return over a five year period. The required use of an expected long-term rate of return on the market-related value of plan assets may result in recognized pension income that is greater or less than the actual returns of those plan assets in any given year. Over time, however, the expected long-term returns are designed to approximate the actual long-term returns and, therefore, result in a pattern of income and expense recognition that more closely matches the pattern of the services provided by the employees. As differences between actual and expected returns are recognized over five years, they subsequently generate gains and losses that are subject to amortization over the average remaining life expectancy of the inactive plan participants, as described in the preceding paragraph.

We use long-term historical actual return information, the mix of investments that comprise plan assets, and future estimates of long-term investment returns and inflation by reference to external sources to develop the expected long-term rate of return on plan assets as of December 31.

The discount rate assumptions used for pension and non-pension postretirement benefit plan accounting reflect the rates available on high-quality fixed-income debt instruments on December 31 of each year. The rate of compensation increase is based upon our long-term plans for such increases. For retiree medical plan accounting, we review external data and our own historical trends for healthcare costs to determine the healthcare cost trend rates.

For our defined benefit pension and other postretirement benefit plans, we measure service and interest costs by applying the specific spot rates along the yield curve to the plans' estimated cash flows. We believe this approach provides a more precise measurement of service and interest costs by aligning the timing of the plans' liability cash flows to the corresponding spot rates on the yield curve.

Stock-Based Compensation

We measure the cost of employee services received in exchange for an award of equity instruments, such as stock options, performance shares and restricted stock, based on the grant-date fair value of the award. This cost is recognized over the period during which an employee is required to provide service in exchange for the award, the requisite service period (usually the vesting period). An initial measurement is made of the cost of employee services received in exchange for an award of liability instruments based on its current fair value and the value of that award is subsequently remeasured at each reporting date through the settlement date. Changes in fair value of liability awards during the requisite service period are recognized as compensation cost over that period. See Note 17 "Stock-based Compensation" for additional information.

Share Repurchases

Under our share repurchase programs, we may pursue various share repurchase strategies, which include open market transactions or through privately negotiated transactions, including under an accelerated share repurchase (ASR) agreement, or by other means, including through the use of trading plans intended to qualify under Rule 10b5-1 under the Securities Exchange Act of 1934, as amended. Under an ASR agreement, which is typically with a third-party financial institution to repurchase shares of Olin's common stock, Olin pays a specified amount to the financial institution and receives an initial delivery of shares. This initial delivery of shares represents the minimum number of shares that Olin may receive under the agreement. Upon settlement of the ASR agreement, the financial institution delivers additional shares, with the final number of shares delivered determined with reference to the volume weighted-average price of Olin's common stock over the term of the agreement, less an agreed-upon discount. The transactions are accounted for as liability or equity transactions and also as share retirements, similar to our other share repurchase activity, when the shares are received, at which time there is an immediate reduction in the weighted-average common shares calculation for basic and diluted earnings per share.

NOTE 3. RECENT ACCOUNTING PRONOUNCEMENTS

We do not believe that any recently issued effective pronouncements, or pronouncements issued but not yet effective, if adopted, would have a material effect on the accompanying consolidated financial statements.

NOTE 4. RESTRUCTURING CHARGES

As a result of weak global resin demand and higher cost structures within the European region, we began a review of our global Epoxy asset footprint to optimize the most productive and cost effective assets to support our strategic operating model. We committed to and completed a plan during the fourth quarter of 2022 to close down one of our bisphenol (Bis A) production lines at our Stade, Germany site (collectively, Stade Plan). For the year ended December 31, 2022, we recorded pretax restructuring charges of \$8.0 million for employee severance and related benefit costs and the write-off of equipment and facility costs related to this action. We expect to incur additional restructuring charges through 2024 of approximately \$10 million related to this action.

Olin committed to a productivity initiative to align the organization with our strategic operating model and improve efficiencies (collectively, Productivity Plan). These actions and related activities were completed during the second quarter of 2021. For the year ended December 31, 2021, we recorded pretax restructuring charges of \$10.3 million for employee severance and related benefit costs related to these actions. We do not expect to incur additional restructuring charges related to these actions.

On March 15, 2021, we announced that we had made the decision to permanently close approximately 50% of our diaphragm-grade chlor alkali capacity, representing 200,000 tons, at our McIntosh, AL facility. The closure was completed in the first quarter of 2021. On October 21, 2021, we announced that we had made a decision to permanently cease operations of the remaining 50% of our diaphragm-grade chlor alkali capacity, representing an additional 200,000 tons, at our McIntosh, AL facility (collectively, McIntosh Plan). The closure was completed during third quarter of 2022. For the years ended December 31, 2022 and 2021, we recorded pretax restructuring charges of \$8.3 million and \$5.6 million, respectively, for write-off of equipment and facility costs, lease and other contract termination costs and for facility exit costs related to this action. We expect to incur additional restructuring charges through 2027 of approximately \$30 million related to these actions.

On January 18, 2021, we announced we had made the decision to permanently close our trichloroethylene and anhydrous hydrogen chloride liquefaction facilities in Freeport, TX (collectively, Freeport 2021 Plan), which were completed in the fourth quarter of 2021. For the years ended December 31, 2022 and 2021, we recorded pretax restructuring charges of \$2.6 million and \$6.5 million, respectively, for facility exit costs related to these actions. We expect to incur additional restructuring charges through 2024 of approximately \$15 million related to these actions.

On December 11, 2019, we announced that we had made the decision to permanently close a chlor alkali plant with a capacity of 230,000 tons and our VDC production facility, both in Freeport, TX (collectively, Freeport 2019 Plan). The VDC facility and related chlor alkali plant were closed during the fourth quarter of 2020 and second quarter of 2021, respectively. For the years ended December 31, 2022, 2021 and 2020, we recorded pretax restructuring charges of \$6.0 million, \$3.9 million and \$3.8 million, respectively, for facility exit costs related to these actions. We expect to incur additional restructuring charges through 2026 of approximately \$30 million related to these actions.

On March 21, 2016, we announced that we had made the decision to close a combined total of 433,000 tons of chlor alkali capacity across three separate locations (collectively, Chlor Alkali 2016 Plan). Associated with this action, we have permanently closed our Henderson, NV chlor alkali plant with 153,000 tons of capacity and have reconfigured the site to manufacture bleach and distribute caustic soda and hydrochloric acid. Also, the capacity of our Niagara Falls, NY chlor alkali plant has been reduced from 300,000 tons to 240,000 tons and the chlor alkali capacity at our Freeport, TX facility was reduced by 220,000 tons. This 220,000 ton reduction was entirely from diaphragm cell capacity. For the years ended December 31, 2022, 2021 and 2020, we recorded pretax restructuring charges of \$0.4 million, \$1.6 million and \$5.2 million, respectively, for the lease and other contract termination costs and facility exit costs related to these actions. We do not expect to incur additional restructuring charges related to these capacity reductions.

The following table summarizes the 2022, 2021 and 2020 activities by major component of these restructuring actions and the remaining balances of accrued restructuring costs as of December 31, 2022, 2021 and 2020:

	<i>Employee severance and related benefit costs</i>	<i>Lease and other contract termination costs</i>	<i>Facility exit costs</i>	<i>Write-off of equipment and facility</i>	<i>Total</i>
	<i>(\$ in millions)</i>				
Balance at January 1, 2020	\$ —	\$ 3.1	\$ —	\$ —	\$ 3.1
Restructuring charges	2.2	1.4	5.4	—	9.0
Amounts utilized	(0.4)	(2.8)	(5.4)	—	(8.6)
Balance at December 31, 2020	1.8	1.7	—	—	3.5
Restructuring charges	10.3	6.0	11.6	—	27.9
Amounts utilized	(5.2)	(2.3)	(11.6)	—	(19.1)
Balance at December 31, 2021	6.9	5.4	—	—	12.3
Restructuring charges	7.4	1.1	13.5	3.3	25.3
Amounts utilized	(4.9)	(2.3)	(13.5)	(3.3)	(24.0)
Balance at December 31, 2022	\$ 9.4	\$ 4.2	\$ —	\$ —	\$ 13.6

The following table summarizes the cumulative restructuring charges of these restructuring actions by major component through December 31, 2022:

	<i>Chlor Alkali Products and Vinyls</i>				<i>Epoxy</i>	<i>Corporate/other</i>	
	<i>McIntosh Plan</i>	<i>Freeport 2021 Plan</i>	<i>Freeport 2019 Plan</i>	<i>Chlor Alkali 2016 Plan</i>	<i>Stade Plan</i>	<i>Productivity Plan</i>	<i>Total</i>
	<i>(\$ in millions)</i>						
Write-off of equipment and facility	\$ 2.7	\$ —	\$ 58.9	\$ 78.1	\$ 0.6	\$ —	\$ 140.3
Employee severance and related benefit costs	—	—	2.1	6.7	7.4	10.3	26.5
Facility exit costs	4.8	9.1	11.6	53.2	—	—	78.7
Employee relocation costs	—	—	—	1.7	—	—	1.7
Lease and other contract termination costs	6.4	—	—	43.0	—	—	49.4
Total cumulative restructuring charges	\$ 13.9	\$ 9.1	\$ 72.6	\$ 182.7	\$ 8.0	\$ 10.3	\$ 296.6

As of December 31, 2022, we have incurred cash expenditures of \$142.7 million and non-cash charges of \$140.3 million related to these restructuring actions. The remaining balance of \$13.6 million is expected to be paid out through 2028.

NOTE 5. EARNINGS PER SHARE

Basic and diluted net income (loss) per share are computed by dividing net income (loss) by the weighted-average number of common shares outstanding. Diluted net income (loss) per share reflects the dilutive effect of stock-based compensation.

	<i>Years ended December 31,</i>		
	2022	2021	2020
<i>(In millions, except per share data)</i>			
<i>Computation of Net Income (Loss) per Share</i>			
Net income (loss)	\$ 1,326.9	\$ 1,296.7	\$ (969.9)
Basic shares	144.9	159.1	157.9
Basic net income (loss) per share	\$ 9.16	\$ 8.15	\$ (6.14)
Diluted shares:			
Basic shares	144.9	159.1	157.9
Stock-based compensation	3.6	3.9	—
Diluted shares	148.5	163.0	157.9
Diluted net income (loss) per share	\$ 8.94	\$ 7.96	\$ (6.14)

The computation of dilutive shares from stock-based compensation does not include 0.8 million, 0.1 million and 10.0 million shares in 2022, 2021 and 2020, respectively, as their effect would have been anti-dilutive.

NOTE 6. ACCOUNTS RECEIVABLES

On October 11, 2022, we amended our existing \$300.0 million Receivables Financing Agreement which increased the facility limit to \$425.0 million and extended the maturity to October 14, 2025 (Receivables Financing Agreement). Under the Receivables Financing Agreement, our eligible trade receivables are used for collateralized borrowings and continue to be serviced by us. In addition, the Receivables Financing Agreement incorporates the net leverage ratio covenant that is contained in the \$1,550.0 million senior credit facility. As of both December 31, 2022 and 2021, we had \$300.0 million drawn under the agreement. As of December 31, 2022, \$654.0 million of our trade receivables were pledged as collateral and we had \$125.0 million of additional borrowing capacity under the Receivables Financing Agreement.

Olin also has trade accounts receivable factoring arrangements (AR Facilities) and pursuant to the terms of the AR Facilities, certain of our domestic subsidiaries may sell their accounts receivable up to a maximum of \$207.7 million and certain of our foreign subsidiaries may sell their accounts receivable up to a maximum of €42.9 million. We will continue to service the outstanding accounts sold. These receivables qualify for sales treatment under ASC 860 "Transfers and Servicing" and, accordingly, the proceeds are included in net cash provided by operating activities in the consolidated statements of cash flows. The following table summarizes the AR Facilities activity:

	<i>December 31,</i>	
	2022	2021
<i>(\$ in millions)</i>		
Beginning Balance	\$ 83.3	\$ 48.8
Gross receivables sold	1,049.7	876.4
Payments received from customers on sold accounts	(1,021.2)	(841.9)
Ending Balance	\$ 111.8	\$ 83.3

The factoring discount paid under the AR Facilities is recorded as interest expense on the consolidated statements of operations. The factoring discount for the years ended December 31, 2022, 2021 and 2020 was \$3.1 million, \$1.1 million and \$1.5 million, respectively. The agreements are without recourse and therefore no recourse liability has been recorded as of December 31, 2022.

Our consolidated balance sheets included an allowance for doubtful accounts receivables of \$12.6 million, \$12.3 million and \$12.3 million and other receivables of \$71.6 million, \$65.3 million and \$62.4 million at December 31, 2022, 2021 and 2020, respectively, which were included in receivables, net.

NOTE 7. INVENTORIES

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
<i>(\$ in millions)</i>		
Supplies	\$ 137.6	\$ 115.6
Raw materials	201.2	180.7
Work in process	199.6	155.2
Finished goods	559.3	523.3
Inventories excluding LIFO reserve	1,097.7	974.8
LIFO reserve	(155.8)	(106.5)
Inventories, net	<u>\$ 941.9</u>	<u>\$ 868.3</u>

Inventories valued using the LIFO method comprised 59% and 58% of the total inventories at December 31, 2022 and 2021, respectively. The replacement cost of our inventories would have been approximately \$155.8 million and \$106.5 million higher than that reported at December 31, 2022 and 2021, respectively.

NOTE 8. PROPERTY, PLANT AND EQUIPMENT

	<i>Useful Lives</i>	<i>December 31,</i>	
		<i>2022</i>	<i>2021</i>
<i>(\$ in millions)</i>			
Land and improvements to land	10-20 Years ⁽¹⁾	\$ 283.5	\$ 284.3
Buildings and building equipment	10-30 Years	412.0	412.6
Machinery and equipment	3-20 Years	6,181.1	6,079.8
Leasehold improvements	3-11 Years	8.5	8.6
Construction in progress		202.1	204.8
Property, plant and equipment		7,087.2	6,990.1
Accumulated depreciation		(4,413.1)	(4,076.5)
Property, plant and equipment, net		<u>\$ 2,674.1</u>	<u>\$ 2,913.6</u>

(1) Useful life is exclusively related to improvements to land as land is not depreciated.

The weighted-average useful life of machinery and equipment at December 31, 2022 was 11 years. Depreciation expense was \$469.9 million, \$443.3 million and \$445.4 million for 2022, 2021 and 2020, respectively. Interest capitalized was \$3.1 million, \$3.2 million and \$6.4 million for 2022, 2021 and 2020, respectively.

The consolidated statements of cash flows for the years ended December 31, 2022, 2021 and 2020, included a (decrease) increase of \$(4.2) million, \$6.4 million and \$31.0 million, respectively, to capital expenditures, with the corresponding change to accounts payable and accrued liabilities, related to purchases of property, plant and equipment included in accounts payable and accrued liabilities at December 31, 2022, 2021 and 2020.

NOTE 9. OTHER ASSETS

Included in other assets were the following:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
<i>(\$ in millions)</i>		
Supply contracts	\$ 1,048.0	\$ 1,061.8
Other	54.5	70.0
Other assets	<u>\$ 1,102.5</u>	<u>\$ 1,131.8</u>

We have entered into various arrangements for the long-term supply of ethylene and electricity. A payment of \$461.0 million was made during 2020 associated with a previously executed option to reserve additional ethylene at producer economics. The original liability was discounted and recorded at present value as of March 31, 2017. For the year ended December 31, 2020, \$4.0 million of interest expense was recorded for accretion of the 2020 payment liability discount.

During the year ended December 31, 2020, a payment of \$75.8 million was made associated with the resolution of a dispute over the allocation to Olin of certain capital costs incurred at our Plaquemine, LA site.

The weighted-average useful life of long-term supply contracts at December 31, 2022 was 20 years. For the years ended December 31, 2022, 2021 and 2020, amortization expense of \$70.4 million, \$69.4 million and \$56.0 million, respectively, was recognized within cost of goods sold related to our supply contracts and is reflected in depreciation and amortization on the consolidated statements of cash flows. We estimate that amortization expense will be approximately \$70 million in 2023 and 2024 and \$75 million in 2025, 2026 and 2027 related to our long-term supply contracts. The long-term supply contracts are monitored for impairment each reporting period.

NOTE 10. GOODWILL AND INTANGIBLE ASSETS

Changes in the carrying value of goodwill were as follows:

	<i>Chlor Alkali Products and Vinyls</i>	<i>Epoxy</i>	<i>Total</i>
	<i>(\$ in millions)</i>		
Balance at January 1, 2021	\$ 1,275.3	\$ 144.9	\$ 1,420.2
Foreign currency translation adjustment	0.3	0.1	0.4
Balance at December 31, 2021	1,275.6	145.0	1,420.6
Foreign currency translation adjustment	0.2	0.1	0.3
Balance at December 31, 2022	<u>\$ 1,275.8</u>	<u>\$ 145.1</u>	<u>\$ 1,420.9</u>

During the fourth quarter of 2022, we performed our qualitative assessment of goodwill. Based upon our qualitative assessment, it was more likely than not that the fair value of our reporting units were greater than their carrying amounts as of December 31, 2022. No impairment charges were recorded for 2022 or 2021.

During the first quarter of 2020, our market capitalization declined significantly compared to the fourth quarter of 2019. Over the same period, the equity value of our peer group companies and the overall U.S. stock market also declined significantly amid market volatility. These declines were driven by the uncertainty surrounding the outbreak of the 2019 Novel Coronavirus (COVID-19) global pandemic and other macroeconomic events impacting the various industries in which Olin and our peers participate. Additionally, the various governmental, business and consumer responses to the pandemic were expected to have a negative impact on the near-term demand for several of the products produced by our Chlor Alkali Products and Vinyls and Epoxy businesses. The full extent and duration of the impact of COVID-19 on our operations and financial performance was unknown at the time. As a result of these events, we identified triggering events associated with a significant overall decrease in our stock price, a significant adverse change in the business climate and a significant reduction in near-term cash flow projections and performed a quantitative goodwill impairment test during the first quarter of 2020. We used a discounted cash flow approach to develop the estimated fair value of our reporting units. Based on the aforementioned analysis, the estimated fair value of our reporting units exceeded the carrying value of the reporting units and no impairment charges were recorded.

Throughout the second and third quarters of 2020, the spread of the COVID-19 pandemic and the associated response had caused significant disruptions in the U.S. and global economies, resulting in the disruption of the supply and demand fundamentals of our Chemicals businesses. The various governmental, business and consumer responses to the pandemic continued to negatively impact the demand for several of the products produced by our Chlor Alkali Products and Vinyls and Epoxy businesses resulting in lower volumes and pricing during 2020 compared to 2019. Due to these factors, the triggering events identified in the first quarter associated with a significant adverse change in the business climate and a significant adverse reduction in near-term cash flow projections had persisted during 2020. Throughout the second and third quarters of 2020, the equity value of our peer group companies and the overall U.S. stock market improved significantly while Olin's stock price remained low. During the three months ended September 30, 2020, we identified a triggering event associated with a sustained significant overall decrease in our stock price. As a result, we performed an updated quantitative goodwill

impairment test during the third quarter of 2020. We used a discounted cash flow approach to develop the estimated fair value of our reporting units.

The fair value determinations required considerable judgment and were sensitive to changes in underlying assumptions, estimates and market factors. The discount rate, profitability assumptions and terminal growth rate of our reporting units and the supply and demand fundamentals of the chlor alkali industry were the material assumptions utilized in the discounted cash flow model used to estimate the fair value of each reporting unit. The discount rate reflected a weighted-average cost of capital, which was calculated, in part based on observable market data. Some of this data (such as the risk free or treasury rate and the pretax cost of debt) were based on the market data at a point in time. Other data (such as the equity risk premium) were based upon market data over time for a peer group of companies in the chemical manufacturing or distribution industries with a market capitalization premium added, as applicable. Also factoring into the discount rate was a market participant's perceived risk (such as the company specific risk premium) in the valuation implied by the sustained reduction in our stock price.

The discounted cash flow analysis required estimates, assumptions and judgments about future events. Our analysis used our internally generated long-range plan. Specifically, the assumptions in our long-range plan about terminal growth rates, forecasted capital expenditures and changes in future working capital requirements were used to determine the implied fair value of each reporting unit. The long-range plan reflected management judgment, supplemented by independent chemical industry analyses which provided multi-year industry operating and pricing forecasts.

As a further indicator that each reporting unit had been valued appropriately using a discounted cash flow model, the aggregate fair value of all reporting units was reconciled to the total market value of Olin. Due to the sustained decline in our stock price, the decrease in the value of our reporting units reflected a market participant's perceived risk in the valuation implied by the sustained reduction in our stock price. As a result of this assessment, the carrying values of our Chlor Alkali Products and Vinyls and Epoxy reporting units exceeded the fair values which resulted in pre-tax goodwill impairment charges of \$557.6 million and \$142.2 million, respectively, for the year ended December 31, 2020. The goodwill impairment charge was calculated as the amount that the carrying value of the reporting unit, including any goodwill, exceeded its fair value and therefore the carrying value of our reporting units equaled their fair value upon completion of the goodwill impairment test.

We believe the assumptions used in our goodwill impairment analysis were appropriate and resulted in reasonable estimates of the implied fair value of each reporting unit. However, given the economic environment at the time and the uncertainties regarding the impact on our business, there can be no assurance that our estimates and assumptions, made for purposes of our goodwill impairment testing, will prove to be an accurate prediction of the future. If our assumptions regarding future performance are not achieved, or if our stock price experiences further sustained declines, we may be required to record additional goodwill impairment charges in future periods. It is not possible at this time to determine if any such future impairment charge would result or, if it does, whether such charge would be material.

Intangible assets consisted of the following:

	<i>Useful Lives</i>	<i>December 31,</i>					
		<i>2022</i>			<i>2021</i>		
		<i>Gross Amount</i>	<i>Accumulated Amortization</i>	<i>Net</i>	<i>Gross Amount</i>	<i>Accumulated Amortization</i>	<i>Net</i>
							<i>(\$ in millions)</i>
Customers, customer contracts and relationships	10-15 Years	\$ 669.1	\$ (401.2)	\$ 267.9	\$ 674.4	\$ (359.8)	\$ 314.6
Acquired technology	5-7 Years	93.1	(88.3)	4.8	93.9	(77.9)	16.0
Other	10 Years	1.8	(0.7)	1.1	1.8	(0.7)	1.1
Total intangible assets		<u>\$ 764.0</u>	<u>\$ (490.2)</u>	<u>\$ 273.8</u>	<u>\$ 770.1</u>	<u>\$ (438.4)</u>	<u>\$ 331.7</u>

Amortization expense relating to intangible assets was \$55.3 million, \$63.1 million and \$62.9 million in 2022, 2021 and 2020, respectively. We estimate that amortization expense will be approximately \$37 million in both 2023 and 2024, approximately \$36 million in 2025 and approximately \$35 million in both 2026 and 2027.

During the fourth quarter of 2022, we performed our qualitative assessment of our intangible assets. Based upon our qualitative impairment assessment, it is more likely than not that the fair value of our intangible assets are greater than the carrying amount as of December 31, 2022. No impairment of our intangible assets were recorded in 2022, 2021 or 2020.

NOTE 11. DEBT

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
Notes payable:	<i>(\$ in millions)</i>	
Variable-rate Senior Term Loans, due 2027 (5.923% and 1.604% at December 31, 2022 and 2021, respectively)	\$ 350.0	\$ 350.0
Variable-rate Recovery Zone bonds, due 2024-2035 (5.198% and 1.100% at December 31, 2022 and 2021, respectively)	103.0	103.0
Variable-rate Go Zone bonds, due 2024 (5.198% and 1.100% at December 31, 2022 and 2021, respectively)	50.0	50.0
Variable-rate Industrial development and environmental improvement obligations, due 2025 (4.55% and 0.17% at December 31, 2022 and 2021, respectively)	2.9	2.9
9.50% senior notes, due 2025	108.6	108.6
5.625% senior notes, due 2029	669.3	669.3
5.50% senior notes, due 2022	—	200.0
5.125% senior notes, due 2027	500.0	500.0
5.00% senior notes, due 2030	515.3	515.3
Receivables Financing Agreement (See Note 6)	300.0	300.0
Finance lease obligations	1.9	3.0
Total notes payable	2,601.0	2,802.1
Deferred debt issuance costs	(20.1)	(22.5)
Unamortized bond original issue discount	(0.2)	(0.3)
Total debt	2,580.7	2,779.3
Amounts due within one year	9.7	201.1
Total long-term debt	\$ 2,571.0	\$ 2,578.2

Senior Credit Facility

On October 11, 2022, we entered into a \$1,550.0 million senior credit facility (Senior Credit Facility) that replaced our 2021 Senior Credit Facility. The Senior Credit Facility includes a senior term loan facility with aggregate commitments of \$350.0 million (Term Loan Facility) and a senior revolving credit facility with aggregate commitments of \$1,200.0 million (Senior Revolving Credit Facility). The Term Loan Facility was fully drawn on the closing date with the proceeds of the Term Loan Facility used to refinance the loans and commitments outstanding under the 2021 Senior Credit Facility. The Term Loan Facility will require principal amortization amounts payable beginning March 31, 2023 at a rate of 0.625% per quarter through the end of 2024, increasing to 1.250% per quarter thereafter until maturity. The maturity date for the Senior Credit Facility is October 11, 2027.

The Senior Revolving Credit Facility includes a \$100.0 million letter of credit subfacility. At December 31, 2022, we had \$1,199.6 million available under our \$1,200.0 million Senior Revolving Credit Facility because we had issued \$0.4 million of letters of credit.

On February 24, 2021, we entered into a \$1,615.0 million senior secured credit facility (2021 Senior Credit Facility) that amended our existing \$1,300.0 million senior secured credit facility. On July 28, 2021, the liens on the collateral provided under the 2021 Senior Credit Facility were released based on the achievement of a net leverage ratio below 3.50 for the prior two consecutive fiscal quarters. The 2021 Senior Credit Facility included a senior delayed-draw term loan facility with aggregate commitments of \$315.0 million (2021 Delayed Draw Term Loan), a senior term loan facility with aggregate commitments of \$500.0 million (2020 Term Loan and together with the 2021 Delayed Draw Term Loan, the 2021 Senior Term Loans) and a senior revolving credit facility with aggregate commitments in an amount equal to \$800.0 million (2021 Senior Revolving Credit Facility). The maturity date for the 2021 Senior Credit Facility was July 16, 2024. The amendment modified the pricing grid for the 2021 Senior Credit Facility by reducing applicable interest rates on the borrowings under the facility.

On March 30, 2021, Olin drew the entire \$315.0 million of the 2021 Delayed Draw Term Loan and used the proceeds to fund the redemption of the 10.00% senior notes due October 15, 2025. During the year ended December 31, 2021, we repaid \$465.0 million of the 2021 Senior Term Loans.

We were in compliance with all covenants and restrictions under all our outstanding credit agreements as of December 31, 2022, and no event of default had occurred that would permit the lenders under our outstanding credit agreements to accelerate the debt if not cured. In the future, our ability to generate sufficient operating cash flows, among other factors, will determine the amounts available to be borrowed under these facilities. As a result of our restrictive covenant related to the net leverage ratio, the maximum additional borrowings available to us could be limited in the future. The limitation, if an amendment or waiver from our lenders is not obtained, could restrict our ability to borrow the maximum amounts available under the Senior Revolving Credit Facility and the Receivables Financing Agreement. As of December 31, 2022, there were no covenants or other restrictions that limited our ability to borrow.

Senior Notes and Other Financing

During 2022 and 2021, activity of our outstanding debt included:

<i>Debt Instrument</i>	<i>Year Ended December 31, 2022</i>		<i>Year Ended December 31, 2021</i>	
	<i>Long-term Debt Borrowings (Repayments)</i>		<i>Long-term Debt Borrowings (Repayments)</i>	<i>Loss on Debt Extinguishment (1)</i>
	<i>(\$ in millions)</i>			
Borrowings:				
Senior Revolving Credit Facility	\$	320.0	\$	—
Senior Term Loans		—		315.0
Receivables Financing Agreement		95.0		225.0
Total borrowings	\$	415.0	\$	540.0
Repayments:				
10.00% senior notes, due 2025 (Blue Cube 2025 Notes)	\$	—	\$	(500.0)
9.50% senior notes, due 2025 (2025 Notes)		—		(391.4)
9.75% senior notes, due 2023 (2023 Notes)		—		(120.0)
5.625% senior notes, due 2029 (2029 Notes)		—		(80.7)
5.00% senior notes, due 2030 (2030 Notes)		—		(34.7)
5.50% senior notes, due 2022 (2022 Notes)		(200.0)		—
Senior Revolving Credit Facility		(320.0)		—
Senior Term Loans		—		(465.0)
Receivables Financing Agreement		(95.0)		(50.0)
Finance leases		(1.1)		(1.3)
Total repayments	\$	(616.1)	\$	(1,643.1)
Long-term debt repayments, net	\$	(201.1)	\$	(1,103.1)

(1) Loss on debt extinguishment is included as interest expense in the consolidated statements of operations. The loss includes the payment of bond redemption premiums of \$137.7 million for the year ended December 31, 2021, as well as the write-off of deferred debt issuance costs, write-off of bond original issue discount and recognition of deferred fair value interest rate swap losses of \$14.5 million for the year ended December 31, 2021, associated with the optional prepayment of existing debt. The cash payments related to the early redemption premiums for the debt extinguishments are classified as cash outflows from financing activities on the consolidated statements of cash flows for year ended December 31, 2021.

During the year ended December 31, 2022, Olin redeemed the full aggregate principal amount \$200.0 million of the outstanding 2022 Notes which became due utilizing cash on hand.

In the fourth quarter of 2021, we completed a cash tender offer to purchase a principal amount of \$391.4 million of the outstanding 2025 Notes. This action resulted in total redemption premiums of \$99.4 million. The 2025 Notes were redeemed by drawing \$150.0 million of the Receivables Financing Agreement along with utilizing cash on hand.

During the year ended December 31, 2021, we repurchased, through open market transactions, a principal amount of \$80.7 million of the outstanding aggregate principal amount of the 2029 Notes and \$34.7 million of the outstanding aggregate principal amount of the 2030 Notes. These actions resulted in total redemption premiums of \$10.4 million.

On March 31, 2021, Olin redeemed \$315.0 million of the outstanding Blue Cube 2025 Notes and on May 14, 2021, Olin redeemed the remaining \$185.0 million of the outstanding Blue Cube 2025 Notes. The Blue Cube 2025 Notes were redeemed at 105.00% of the principal amount of the Blue Cube 2025 Notes, resulting in a redemption premium of \$25.0 million. The Blue Cube 2025 Notes were redeemed by drawing \$315.0 million of the 2021 Delayed Draw Term Loan along with utilizing cash on hand.

On January 15, 2021, Olin redeemed the remaining \$120.0 million of the outstanding 2023 Notes. The 2023 Notes were redeemed at 102.438% of the principal amount of the 2023 Notes, resulting in a redemption premium of \$2.9 million. The remaining 2023 Notes were redeemed by utilizing \$122.9 million of cash on hand.

For the years ended December 31, 2021 and 2020, we recognized interest expense of \$14.5 million and \$5.8 million, respectively, for the write-off of deferred debt issuance costs, write-off of bond original issue discount and recognition of deferred fair value interest rate swap losses.

For the years ended December 31, 2022, 2021 and 2020, we paid debt issuance costs of \$4.4 million, \$3.9 million and \$10.3 million, respectively, related to financing transactions.

At December 31, 2022, we had total letters of credit of \$89.8 million outstanding, of which \$0.4 million were issued under our Senior Revolving Credit Facility. The letters of credit are used to support certain long-term debt, certain workers compensation insurance policies, certain plant closure and post-closure obligations, certain international payment obligations and certain international pension funding requirements.

Annual maturities of long-term debt, including finance lease obligations, are \$9.7 million in 2023, \$79.5 million in 2024, \$429.2 million in 2025, \$100.5 million in 2026, \$797.5 million in 2027 and a total of \$1,184.6 million thereafter.

NOTE 12. PENSION PLANS

We sponsor domestic and foreign defined benefit pension plans for eligible employees and retirees. Most of our domestic employees participate in defined contribution plans. However, a portion of our bargaining hourly employees continue to participate in our domestic qualified defined benefit pension plans under a flat-benefit formula. Our funding policy for the qualified defined benefit pension plans is consistent with the requirements of federal laws and regulations. Our foreign subsidiaries maintain pension and other benefit plans, which are consistent with local statutory practices.

Our domestic qualified defined benefit pension plan provides that if, within three years following a change of control of Olin, any corporate action is taken or filing made in contemplation of, among other things, a plan termination or merger or other transfer of assets or liabilities of the plan, and such termination, merger or transfer thereafter takes place, plan benefits would automatically be increased for affected participants (and retired participants) to absorb any plan surplus (subject to applicable collective bargaining requirements).

Based on our plan assumptions and estimates, we will not be required to make any cash contributions to the domestic qualified defined benefit pension plan at least through 2023.

We have international qualified defined benefit pension plans to which we made cash contributions of \$1.3 million, \$1.1 million and \$2.1 million in 2022, 2021 and 2020, respectively, and we anticipate less than \$5 million of cash contributions to international qualified defined benefit pension plans in 2023.

Pension Obligations and Funded Status

Changes in the benefit obligation and plan assets were as follows:

	December 31, 2022			December 31, 2021		
	U.S.	Foreign	Total	U.S.	Foreign	Total
Change in Benefit Obligation						
(\$ in millions)						
Benefit obligation at beginning of year	\$ 2,506.0	\$ 382.3	\$ 2,888.3	\$ 2,758.9	\$ 446.4	\$ 3,205.3
Service cost	0.5	7.9	8.4	0.9	10.5	11.4
Interest cost	57.3	4.1	61.4	48.4	2.9	51.3
Actuarial gain	(556.1)	(113.7)	(669.8)	(163.7)	(41.7)	(205.4)
Benefits paid	(139.3)	(6.1)	(145.4)	(138.5)	(11.4)	(149.9)
Plan participant's contributions	—	0.3	0.3	—	0.9	0.9
Plan amendments	—	—	—	—	(0.7)	(0.7)
Foreign currency translation adjustments	—	(23.7)	(23.7)	—	(24.6)	(24.6)
Benefit obligation at end of year	\$ 1,868.4	\$ 251.1	\$ 2,119.5	\$ 2,506.0	\$ 382.3	\$ 2,888.3
Change in Plan Assets						
(\$ in millions)						
Fair value of plans' assets at beginning of year	\$ 2,429.6	\$ 76.1	\$ 2,505.7	\$ 2,383.8	\$ 85.3	\$ 2,469.1
Actual return on plans' assets	(465.6)	(7.6)	(473.2)	184.0	(1.1)	182.9
Employer contributions	0.2	1.4	1.6	0.3	1.5	1.8
Benefits paid	(139.3)	(3.1)	(142.4)	(138.5)	(9.1)	(147.6)
Foreign currency translation adjustments	—	(3.5)	(3.5)	—	(0.5)	(0.5)
Fair value of plans' assets at end of year	\$ 1,824.9	\$ 63.3	\$ 1,888.2	\$ 2,429.6	\$ 76.1	\$ 2,505.7
Funded Status						
(\$ in millions)						
Qualified plans	\$ (41.4)	\$ (185.7)	\$ (227.1)	\$ (73.7)	\$ (303.6)	\$ (377.3)
Non-qualified plans	(2.1)	(2.1)	(4.2)	(2.7)	(2.6)	(5.3)
Total funded status	\$ (43.5)	\$ (187.8)	\$ (231.3)	\$ (76.4)	\$ (306.2)	\$ (382.6)

We recorded a \$37.2 million after-tax benefit (\$59.9 million pretax) to shareholders' equity as of December 31, 2022 for our pension plans. This benefit primarily reflected a 260-basis point increase in the domestic pension plans' discount rate and a 230-basis point increase in the international defined benefit pension plans' discount rate, partially offset by unfavorable performance on plan assets during 2022. In 2021, we recorded a \$185.6 million after-tax benefit (\$245.9 million pretax) to shareholders' equity as of December 31, 2021 for our pension plans. This benefit primarily reflected a 50-basis point decrease in the domestic pension plans' discount rate and favorable performance on plan assets during 2021.

The \$669.8 million actuarial gain for 2022 was primarily due to a 260-basis point increase in the domestic pension plans' discount rate and a 230-basis point increase in the international defined benefit pension plans' discount rate. The \$205.4 million actuarial loss for 2021 was primarily due to an 50-basis point increase in the domestic pension plans' discount rate.

Amounts recognized in the consolidated balance sheets consisted of:

	<i>December 31, 2022</i>			<i>December 31, 2021</i>		
	<i>U.S.</i>	<i>Foreign</i>	<i>Total</i>	<i>U.S.</i>	<i>Foreign</i>	<i>Total</i>
	<i>(\$ in millions)</i>					
Prepaid benefit cost in noncurrent assets	\$ —	\$ 3.9	\$ 3.9	\$ —	\$ —	\$ —
Accrued benefit in current liabilities	(0.5)	(0.2)	(0.7)	(0.6)	(0.1)	(0.7)
Accrued benefit in noncurrent liabilities	(43.0)	(191.5)	(234.5)	(75.8)	(306.1)	(381.9)
Accumulated other comprehensive loss	558.1	(21.4)	536.7	545.4	85.1	630.5
Net balance sheet impact	\$ 514.6	\$ (209.2)	\$ 305.4	\$ 469.0	\$ (221.1)	\$ 247.9

At December 31, 2022 and 2021, the benefit obligation of non-qualified pension plans was \$4.2 million and \$5.3 million, respectively, and was included in the above pension benefit obligation. There were no plan assets for these non-qualified pension plans. Benefit payments for the non-qualified pension plans are expected to be as follows: 2023—\$0.7 million; 2024—\$0.3 million; 2025—\$0.3 million; 2026—\$0.4 million; and 2027—\$1.0 million. Benefit payments for the qualified plans are projected to be as follows: 2023—\$149.3 million; 2024—\$141.5 million; 2025—\$136.2 million; 2026—\$130.5 million; and 2027—\$125.2 million.

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Projected benefit obligation	\$ 2,119.5	\$ 2,888.3
Accumulated benefit obligation	2,107.5	2,862.7
Fair value of plans' assets	1,888.2	2,505.7

	<i>Years Ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
<i>Components of Net Periodic Benefit Income</i>			
Service cost	\$ 8.4	\$ 11.4	\$ 10.9
Interest cost	61.4	51.3	75.1
Expected return on plans' assets	(136.7)	(142.3)	(141.7)
Amortization of prior service cost	(0.7)	(0.6)	(0.4)
Recognized actuarial loss	34.6	52.7	44.4
Net periodic benefit income	\$ (33.0)	\$ (27.5)	\$ (11.7)

Included in Other Comprehensive Income (Loss) (Pretax)

Liability adjustment	\$ (59.9)	\$ (245.9)	\$ (30.7)
Amortization of prior service costs and actuarial losses	(33.9)	(52.1)	(44.0)

The service cost component of net periodic benefit (income) cost related to the employees of the operating segments are allocated to the operating segments based on their respective estimated census data.

Pension Plan Assumptions

Certain actuarial assumptions, such as discount rate and long-term rate of return on plan assets, have a significant effect on the amounts reported for net periodic benefit cost and accrued benefit obligation amounts. We use a measurement date of December 31 for our pension plans.

Weighted-Average Assumptions	U.S. Pension Benefits			Foreign Pension Benefits		
	2022	2021	2020	2022	2021	2020
Discount rate—periodic benefit cost	2.9% (1)	2.4%	3.2%	1.4%	0.8%	1.4%
Expected return on assets	6.75%	7.25%	7.75%	3.8%	4.2%	4.4%
Rate of compensation increase	3.0%	3.0%	3.0%	3.0%	3.0%	2.7%
Discount rate—benefit obligation	5.5%	2.9%	2.4%	3.7%	1.4%	0.8%

(1) The discount rate—periodic benefit cost for our domestic qualified pension plan is comprised of the discount rate used to determine interest costs of 2.3% and the discount rate used to determine service costs of 3.0%.

The discount rate is based on a hypothetical yield curve represented by a series of annualized individual zero-coupon bond spot rates for maturities ranging from one-half to thirty years. The bonds used in the yield curve must have a rating of AA or better per Standard & Poor's, be non-callable, and have at least \$250 million par outstanding. The yield curve is then applied to the projected benefit payments from the plan. Based on these bonds and the projected benefit payment streams, the single rate that produces the same yield as the matching bond portfolio is used as the discount rate.

The long-term expected rate of return on plan assets represents an estimate of the long-term rate of returns on the investment portfolio consisting of equities, fixed income and alternative investments. We use long-term historical actual return information, the allocation mix of investments that comprise plan assets and forecast estimates of long-term investment returns, including inflation rates, by reference to external sources. The historic rates of return on plan assets have been 3.5% for the last 5 years, 5.7% for the last 10 years and 7.0% for the last 15 years. The following rates of return by asset class were considered in setting the long-term rate of return assumption:

U.S. equities	7%	to	11%
Non-U.S. equities	8%	to	12%
Fixed income/cash	3%	to	7%
Alternative investments	5%	to	15%

Plan Assets

Our pension plan asset allocations at December 31, 2022 and 2021 by asset class were as follows:

Asset Class	Percentage of Plan Assets	
	2022	2021
U.S. equities	4%	6%
Non-U.S. equities	11%	11%
Fixed income/cash	38%	44%
Alternative investments	47%	39%
Total	100%	100%

The Alternative Investments asset class includes hedge funds, real estate and private equity investments. The Alternative Investments class is intended to help diversify risk and increase returns by utilizing a broader group of assets.

A master trust was established by our pension plan to accumulate funds required to meet benefit payments of our plan and is administered solely in the interest of our plan's participants and their beneficiaries. The master trust's investment horizon is long term. Its assets are managed by professional investment managers or invested in professionally managed investment vehicles.

Our pension plan maintains a portfolio of assets designed to achieve an appropriate risk adjusted return. The portfolio of assets is also structured to manage risk by diversifying assets across asset classes whose return patterns are not highly

correlated, investing in passively and actively managed strategies and in value and growth styles, and by periodic rebalancing of asset classes, strategies and investment styles to objectively set targets.

As of December 31, 2022, the following target allocation and ranges have been set for each asset class:

<i>Asset Class</i>	<i>Target Allocation</i>		<i>Target Range</i>
U.S. equities ⁽¹⁾	21	%	10-30
Non-U.S. equities ⁽¹⁾	14	%	0-35
Fixed income/cash ⁽¹⁾	58	%	25-90
Alternative investments	7	%	0-40

(1) The target allocation for these asset classes include alternative investments, primarily hedge funds, based on the underlying investments in each hedge fund.

Determining which hierarchical level an asset or liability falls within requires significant judgment. The following table summarizes our domestic and foreign defined benefit pension plan assets measured at fair value as of December 31, 2022:

<i>Asset Class</i>	<i>Investments Measured at Net Asset Value</i>	<i>Quoted Prices In Active Markets for Identical Assets (Level 1)</i>	<i>Significant Other Observable Inputs (Level 2)</i>	<i>Significant Unobservable Inputs (Level 3)</i>	<i>Total</i>
<i>Equity securities</i>					
<i>(\$ in millions)</i>					
U.S. equities	\$ 19.2	\$ 54.4	\$ —	\$ —	\$ 73.6
Non-U.S. equities	206.4	0.2	0.1	—	206.7
<i>Fixed income/cash</i>					
Cash	—	102.2	—	—	102.2
Government treasuries	—	—	171.2	—	171.2
Corporate debt instruments	345.2	—	0.5	—	345.7
Asset-backed securities	90.1	—	19.0	—	109.1
<i>Alternative investments</i>					
Hedge fund of funds	685.1	—	—	—	685.1
Real estate funds	25.2	—	—	—	25.2
Private equity funds	169.4	—	—	—	169.4
Total assets	\$ 1,540.6	\$ 156.8	\$ 190.8	\$ —	\$ 1,888.2

The following table summarizes our domestic and foreign defined benefit pension plan assets measured at fair value as of December 31, 2021:

<i>Asset Class</i>	<i>Investments Measured at Net Asset Value</i>	<i>Quoted Prices In Active Markets for Identical Assets (Level 1)</i>	<i>Significant Other Observable Inputs (Level 2)</i>	<i>Significant Unobservable Inputs (Level 3)</i>	<i>Total</i>
<i>(\$ in millions)</i>					
Equity securities					
U.S. equities	\$ 59.7	\$ 86.7	\$ —	\$ —	\$ 146.4
Non-U.S. equities	287.7	1.3	0.6	—	289.6
Fixed income/cash					
Cash	—	129.3	—	—	129.3
Government treasuries	—	—	363.8	—	363.8
Corporate debt instruments	433.9	—	40.3	—	474.2
Asset-backed securities	107.2	—	18.5	—	125.7
Alternative investments					
Hedge fund of funds	820.9	—	—	—	820.9
Real estate funds	17.0	—	—	—	17.0
Private equity funds	138.8	—	—	—	138.8
Total assets	\$ 1,865.2	\$ 217.3	\$ 423.2	\$ —	\$ 2,505.7

U.S. equities—This class included actively and passively managed equity investments in common stock and commingled funds comprised primarily of large-capitalization stocks with value, core and growth strategies.

Non-U.S. equities—This class included actively managed equity investments in commingled funds comprised primarily of international large-capitalization stocks from both developed and emerging markets.

Fixed income and cash—This class included commingled funds comprised of debt instruments issued by the U.S. and Canadian Treasuries, U.S. Agencies, corporate debt instruments, asset- and mortgage-backed securities and cash.

Hedge fund of funds—This class included a hedge fund which invests in the following types of hedge funds:

Event driven hedge funds—This class included hedge funds that invest in securities to capture excess returns that are driven by market or specific company events including activist investment philosophies and the arbitrage of equity and private and public debt securities.

Market neutral hedge funds—This class included investments in U.S. and international equities and fixed income securities while maintaining a market neutral position in those markets.

Other hedge funds—This class primarily included long-short equity strategies and a global macro fund which invested in fixed income, equity, currency, commodity and related derivative markets.

Real estate funds—This class included several funds that invest primarily in U.S. commercial real estate.

Private equity funds—This class included several private equity funds that invest primarily in infrastructure and U.S. power generation and transmission assets.

U.S. equities and non-U.S. equities are primarily valued at the net asset value provided by the independent administrator or custodian of the commingled fund. The net asset value is based on the value of the underlying equities, which are traded on an active market. U.S. equities are also valued at the closing price reported in an active market on which the individual securities are traded. A portion of our fixed income investments are valued at the net asset value provided by the independent administrator or custodian of the fund. The net asset value is based on the underlying assets, which are valued using inputs such as the closing price reported, if traded on an active market, values derived from comparable securities of issuers with similar credit ratings, or under a discounted cash flow approach that utilizes observable inputs, such as current yields of similar instruments, but includes adjustments for risks that may not be observable such as certain credit and liquidity risks. Alternative

investments are valued at the net asset value as determined by the independent administrator or custodian of the fund. The net asset value is based on the underlying investments, which are valued using inputs such as quoted market prices of identical instruments, discounted future cash flows, independent appraisals and market-based comparable data.

NOTE 13. POSTRETIREMENT BENEFITS

We provide certain postretirement healthcare (medical) and life insurance benefits for eligible active and retired domestic employees. The healthcare plans are contributory with participants' contributions adjusted annually based on medical rates of inflation and plan experience. We use a measurement date of December 31 for our postretirement plans.

Other Postretirement Benefits Obligations and Funded Status

Changes in the benefit obligation were as follows:

	December 31, 2022			December 31, 2021		
	U.S.	Foreign	Total	U.S.	Foreign	Total
<i>(\$ in millions)</i>						
Change in Benefit Obligation						
Benefit obligation at beginning of year	\$ 39.3	\$ 11.2	\$ 50.5	\$ 44.2	\$ 11.9	\$ 56.1
Service cost	0.8	0.3	1.1	0.9	0.4	1.3
Interest cost	0.8	0.3	1.1	0.7	0.3	1.0
Actuarial gain	(8.0)	(4.2)	(12.2)	(2.7)	(1.1)	(3.8)
Benefits paid	(4.4)	(0.4)	(4.8)	(3.8)	(0.3)	(4.1)
Foreign currency translation adjustments	—	(0.8)	(0.8)	—	—	—
Benefit obligation at end of year	\$ 28.5	\$ 6.4	\$ 34.9	\$ 39.3	\$ 11.2	\$ 50.5
<i>(\$ in millions)</i>						
Funded status	\$ (28.5)	\$ (6.4)	\$ (34.9)	\$ (39.3)	\$ (11.2)	\$ (50.5)

We recorded a \$9.6 million after-tax benefit (\$12.2 million pretax) to shareholders' equity as of December 31, 2022 for our other postretirement plans. In 2021, we recorded an after-tax benefit of \$2.9 million (\$3.8 million pretax) to shareholders' equity as of December 31, 2021 for our other postretirement plans.

Amounts recognized in the consolidated balance sheets consisted of:

	December 31, 2022			December 31, 2021		
	U.S.	Foreign	Total	U.S.	Foreign	Total
<i>(\$ in millions)</i>						
Accrued benefit in current liabilities	\$ (2.6)	\$ (0.3)	\$ (2.9)	\$ (3.0)	\$ (0.4)	\$ (3.4)
Accrued benefit in noncurrent liabilities	(25.9)	(6.1)	(32.0)	(36.3)	(10.8)	(47.1)
Accumulated other comprehensive loss	10.3	(3.1)	7.2	20.0	1.0	21.0
Net balance sheet impact	\$ (18.2)	\$ (9.5)	\$ (27.7)	\$ (19.3)	\$ (10.2)	\$ (29.5)

	<i>Years Ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
<i>(\$ in millions)</i>			
<i>Components of Net Periodic Benefit Cost</i>			
Service cost	\$ 1.1	\$ 1.3	\$ 1.2
Interest cost	1.1	1.0	1.4
Amortization of prior service cost	0.1	0.1	0.1
Recognized actuarial loss	1.5	2.1	2.2
Net periodic benefit cost	<u>\$ 3.8</u>	<u>\$ 4.5</u>	<u>\$ 4.9</u>

Included in Other Comprehensive Income (Loss) (Pretax)

Liability adjustment	\$ (12.2)	\$ (3.8)	\$ 4.1
Amortization of prior service costs and actuarial losses	(1.6)	(2.2)	(2.3)

The service cost component of net periodic postretirement benefit cost related to the employees of the operating segments are allocated to the operating segments based on their respective estimated census data.

Other Postretirement Benefits Plan Assumptions

Certain actuarial assumptions, such as discount rate, have a significant effect on the amounts reported for net periodic benefit cost and accrued benefit obligation amounts.

Weighted-Average Assumptions

	<i>December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
Discount rate—periodic benefit cost	2.8 %	2.3 %	3.1 %
Discount rate—benefit obligation	5.5 %	2.8 %	2.3 %

The discount rate is based on a hypothetical yield curve represented by a series of annualized individual zero-coupon bond spot rates for maturities ranging from one-half to thirty years. The bonds used in the yield curve must have a rating of AA or better per Standard & Poor's, be non-callable, and have at least \$250 million par outstanding. The yield curve is then applied to the projected benefit payments from the plan. Based on these bonds and the projected benefit payment streams, the single rate that produces the same yield as the matching bond portfolio is used as the discount rate.

We review external data and our own internal trends for healthcare costs to determine the healthcare cost for the post retirement benefit obligation. The assumed healthcare cost trend rates for pre-65 retirees were as follows:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
Healthcare cost trend rate assumed for next year	7.0 %	7.3 %
Rate that the cost trend rate gradually declines to	4.5 %	4.5 %
Year that the rate reaches the ultimate rate	2032	2032

For post-65 retirees, we provide a fixed dollar benefit, which is not subject to escalation.

We expect to make payments of approximately \$3 million for each of the next five years under the provisions of our other postretirement benefit plans.

NOTE 14. INCOME TAXES

	<i>Years ended December 31,</i>		
	2022	2021	2020
<i>(\$ in millions)</i>			
<i>Components of Income (Loss) Before Taxes</i>			
Domestic	\$ 1,231.2	\$ 977.3	\$ (1,025.2)
Foreign	444.8	561.4	5.2
Income (loss) before taxes	<u>\$ 1,676.0</u>	<u>\$ 1,538.7</u>	<u>\$ (1,020.0)</u>
<i>Components of Income Tax Provision (Benefit)</i>			
Current provision (benefit):			
Federal	\$ 225.0	\$ 139.6	\$ (42.9)
State	31.1	24.5	0.5
Foreign	121.7	131.3	12.5
	<u>377.8</u>	<u>295.4</u>	<u>(29.9)</u>
Deferred (benefit) provision:			
Federal	(32.1)	39.1	(36.0)
State	(4.3)	6.2	(13.2)
Foreign	7.7	(98.7)	29.0
	<u>(28.7)</u>	<u>(53.4)</u>	<u>(20.2)</u>
Income tax provision (benefit)	<u>\$ 349.1</u>	<u>\$ 242.0</u>	<u>\$ (50.1)</u>

The following table accounts for the difference between the actual tax provision and the amounts obtained by applying the statutory U.S. federal income tax rate to the income (loss) before taxes.

	<i>Years ended December 31,</i>		
	2022	2021	2020
<i>Effective Tax Rate Reconciliation (Percent)</i>			
Statutory federal tax rate	21.0 %	21.0 %	21.0 %
State income taxes, net	2.3	1.9	1.1
Foreign rate differential	1.5	2.9	(0.2)
U.S. tax on foreign earnings	(0.8)	0.3	(1.8)
Salt depletion	(0.5)	(0.6)	1.0
Change in valuation allowance	0.4	(10.4)	(3.5)
Remeasurement of U.S. state deferred taxes	(0.8)	0.1	(0.1)
Change in tax contingencies	0.5	1.5	0.2
Share-based payments	(0.3)	(0.7)	—
Return to provision	(0.6)	(0.5)	0.3
U.S. federal tax credits	(0.1)	—	0.2
Legal entity liquidation	(2.0)	—	—
Goodwill impairment charge	—	—	(13.3)
Other, net	0.2	0.2	—
Effective tax rate	<u>20.8 %</u>	<u>15.7 %</u>	<u>4.9 %</u>

The effective tax rate for 2022 included a benefit associated with a legal entity liquidation, a benefit associated with prior year tax positions, a benefit associated with stock-based compensation, a benefit from remeasurement of deferred taxes due to a decrease in our state effective tax rates, an expense associated with a net increase in the valuation allowance related to state tax credits and an expense from a change in tax contingencies. These factors resulted in a net \$60.2 million tax benefit. After giving consideration to these items, the effective tax rate for 2022 of 24.4% was higher than the 21.0% U.S. federal statutory rate primarily due to state taxes, an increase in the valuation allowance related to losses in foreign jurisdictions and foreign income taxes, partially offset by foreign income exclusions and favorable permanent salt depletion deductions.

The effective tax rate for 2021 included benefits from a net decrease in the valuation allowance related to deferred tax assets in foreign jurisdictions and domestic tax credits, a benefit associated with prior year tax positions, a benefit associated with stock-based compensation, an expense from remeasurement of deferred taxes due to an increase in our state effective tax rates and an expense from a change in tax contingencies. These factors resulted in a net \$103.6 million tax benefit. After giving consideration to these items, the effective tax rate for 2021 of 22.5% was higher than the 21.0% U.S. federal statutory rate primarily due to state taxes, foreign income inclusions and foreign income taxes, partially offset by a net decrease in the valuation allowance related to utilization of losses in foreign jurisdictions and favorable permanent salt depletion deductions.

The effective tax rate for 2020 included expenses associated with a net increase in the valuation allowance related to foreign and domestic tax credits and deferred tax assets in foreign jurisdictions, a remeasurement of deferred taxes due to an increase in our state effective tax rates and a change in tax contingencies, and stock-based compensation, partially offset by a benefit associated with prior year tax positions. These factors resulted in a net \$27.9 million tax expense. For 2020, a tax benefit of \$10.8 million was recognized associated with the \$699.8 million goodwill impairment charge. After giving consideration to these items, including the goodwill impairment charge on Olin's loss before taxes, the effective tax rate for 2020 of 21.0% was equal to the 21.0% U.S. federal statutory rate as foreign income taxes, foreign income inclusions and a net increase in the valuation allowance related to losses in foreign jurisdictions were offset by state taxes and favorable permanent salt depletion deductions.

<i>Components of Deferred Tax Assets and Liabilities</i>	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
Deferred tax assets:	<i>(\$ in millions)</i>	
Pension and postretirement benefits	\$ 42.9	\$ 92.4
Environmental reserves	37.4	36.4
Asset retirement obligations	13.9	14.7
Accrued liabilities	47.4	49.4
Lease liabilities	91.4	89.7
Tax credits	37.4	40.8
Net operating losses	23.2	22.6
Capital loss carryforward	0.2	0.5
Other miscellaneous items	2.5	—
Total deferred tax assets	296.3	346.5
Valuation allowance	(76.4)	(70.1)
Net deferred tax assets	219.9	276.4
Deferred tax liabilities:		
Property, plant and equipment	481.7	496.7
Right-of-use lease assets	89.8	88.2
Intangible amortization	68.7	41.2
Inventory and prepaids	12.1	7.9
Partnerships	2.4	87.0
Taxes on unremitted earnings	12.0	8.7
Other miscellaneous items	—	6.3
Total deferred tax liabilities	666.7	736.0
Net deferred tax liability	\$ (446.8)	\$ (459.6)

Realization of the net deferred tax assets, irrespective of indefinite-lived deferred tax liabilities, is dependent on future reversals of existing taxable temporary differences and adequate future taxable income, exclusive of reversing temporary differences and carryforwards. Although realization is not assured, we believe that it is more likely than not that the net deferred tax assets will be realized.

At December 31, 2022, we had deferred state tax assets of \$9.6 million relating to state NOLs, which will expire in years 2023 through 2042, if not utilized.

At December 31, 2022, we had deferred state tax assets of \$18.8 million relating to state tax credits, which will expire in years 2023 through 2037, if not utilized.

At December 31, 2022, we had foreign tax credits of \$12.6 million, that will expire in years 2027 through 2031, if not utilized.

At December 31, 2022, we had NOLs of approximately \$58.6 million (representing \$13.5 million of deferred tax assets) in various foreign jurisdictions. Of these, \$47.3 million (representing \$11.5 million of deferred tax assets) expire in various years from 2023 to 2032. The remaining \$11.3 million (representing \$2.0 million of deferred tax assets) do not expire.

As of December 31, 2022, we had recorded a valuation allowance of \$76.4 million, compared to \$70.1 million as of December 31, 2021 and \$239.6 million as of December 31, 2020. The decrease of \$169.5 million in 2021 is primarily due to a release of the \$156.9 million valuation allowance related to deferred tax assets of our German operations, of which \$103.8 million was released in the second quarter of 2021. As a result of significant taxable income during the first six months of 2021, our German operations reported cumulative income before tax (adjusted for permanent items) over the previous twelve quarters. Additionally, we projected taxable income in our German operations for the remainder of 2021 and we expected that net operating loss carryovers and other deductible amounts in Germany would ultimately be realizable against future income. We concluded, based upon the preponderance of positive evidence over negative evidence and the anticipated ability to use the deferred tax assets, that it was more likely than not that the deferred tax assets in Germany would be realizable due to U.S. GAAP forecasted income. If there are unfavorable changes to actual operating results or to projections of future income, we may determine that it is more likely than not such deferred tax assets may not be realizable. All German net operating loss carryovers were realized in 2021.

We continue to have net deferred tax assets in several jurisdictions which we expect to realize, assuming sufficient taxable income can be generated to utilize these deferred tax benefits, which is based on certain estimates and assumptions. If these estimates and related assumptions change in the future, we may be required to reduce the value of the deferred tax assets resulting in additional tax expense.

The activity of our deferred income tax valuation allowance was as follows:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Beginning balance	\$ 70.1	\$ 239.6
Increases to valuation allowances	14.6	3.2
Decreases to valuation allowances	(6.6)	(169.6)
Foreign currency translation adjustments	(1.7)	(3.1)
Ending balance	<u>\$ 76.4</u>	<u>\$ 70.1</u>

As of December 31, 2022, we had \$51.6 million of gross unrecognized tax benefits, which would have a net \$50.6 million impact on the effective tax rate, if recognized. As of December 31, 2021, we had \$43.4 million of gross unrecognized tax benefits, which would have a net \$43.6 million impact on the effective tax rate, if recognized. The change for both 2022 and 2021 primarily relates to additional gross unrecognized benefits for current and prior year tax positions, as well as decreases for prior year tax positions. The amounts of unrecognized tax benefits were as follows:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Beginning balance	\$ 43.4	\$ 21.3
Increase for current year tax positions	10.3	5.8
Increase for prior year tax positions	0.3	24.4
Decrease for prior year tax positions	(0.8)	(4.1)
Reduction due to lapse in statute of limitations	—	(3.0)
Foreign currency translation adjustments	(1.6)	(1.0)
Ending balance	<u>\$ 51.6</u>	<u>\$ 43.4</u>

We recognize interest and penalty expense related to unrecognized tax positions as a component of the income tax provision. As of December 31, 2022 and 2021, interest and penalties accrued were \$1.2 million and \$0.5 million, respectively. For 2022, 2021 and 2020, we recorded expense (benefit) related to interest and penalties of \$0.7 million, \$0.5 million and \$(0.1) million, respectively.

As of December 31, 2022, we believe it is reasonably possible that our total amount of unrecognized tax benefits will decrease by approximately \$18.3 million over the next twelve months. The anticipated reduction primarily relates to settlements with tax authorities and the expiration of federal, state and foreign statutes of limitation.

We operate globally and file income tax returns in numerous jurisdictions. Our tax returns are subject to examination by various federal, state and local tax authorities. Additionally, examinations are ongoing in various states and foreign jurisdictions. We believe we have adequately provided for all tax positions; however, amounts asserted by taxing authorities could be greater than our accrued position. For our primary tax jurisdictions, the tax years that remain subject to examination are as follows:

	<i>Tax Years</i>
U.S. federal income tax	2018 - 2021
U.S. state income tax	2012 - 2021
Canadian federal income tax	2015 - 2021
Brazil	2015 - 2021
Germany	2015 - 2021
China	2014 - 2021
The Netherlands	2015 - 2021

NOTE 15. ACCRUED LIABILITIES

Included in accrued liabilities were the following:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Accrued compensation and payroll taxes	\$ 111.9	\$ 112.0
Tax-related accruals	51.4	58.0
Accrued interest	35.6	39.1
Legal and professional costs	41.6	35.8
Accrued employee benefits	64.6	48.3
Manufacturing related accruals	47.1	52.8
Environmental (current portion only)	25.0	25.0
Asset retirement obligation (current portion only)	13.7	13.4
Restructuring reserves (current portion only)	13.6	12.2
Derivative contracts	42.5	3.5
Other	61.8	58.0
Accrued liabilities	<u>\$ 508.8</u>	<u>\$ 458.1</u>

NOTE 16. CONTRIBUTING EMPLOYEE OWNERSHIP PLAN

The Contributing Employee Ownership Plan (CEOP) is a defined contribution plan available to essentially all domestic employees. We provide a contribution to an individual retirement contribution account maintained with the CEOP equal to an amount of between 5.0% and 7.5% of the employee's eligible compensation. The defined contribution plan expense was \$37.4 million, \$35.4 million and \$30.6 million for 2022, 2021 and 2020, respectively.

Company matching contributions are invested in the same investment allocation as the employee's contribution. Our matching contributions for eligible employees amounted to \$14.4 million, \$14.2 million and \$3.7 million in 2022, 2021 and 2020, respectively. Effective January 1, 2020, we suspended the match on all salaried and non-bargaining hourly employees' contributions, and moved to a discretionary contribution model with contributions contingent upon company-wide financial performance. For the year ended December 31, 2020, we did not make a discretionary matching contribution. Effective January 1, 2021, we reinstated the match on all salaried and non-bargaining hourly employees' contributions, which provides for a maximum 3% matching contribution based on the level of participant contributions.

Employees generally become vested in the value of the contributions we make to the CEOP according to a schedule based on service. After 2 years of service, participants are 25% vested. They vest in increments of 25% for each additional year and after 5 years of service, they are 100% vested in the value of the contributions that we have made to their accounts. Effective in February 2023, employees will immediately vest in matching contributions. Additionally, after 2 years of service, participants will be 50% vested and after 3 years of service, participants will be 100% vested in the value of the Company matching contributions made to the CEOP.

NOTE 17. STOCK-BASED COMPENSATION

Stock-based compensation expense was allocated to the operating segments for the portion related to employees whose compensation would be included in cost of goods sold with the remainder recognized in corporate/other. There were no significant capitalized stock-based compensation costs. Stock-based compensation granted includes stock options, performance share awards, restricted stock awards and deferred directors' compensation. Stock-based compensation expense was as follows:

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Stock-based compensation	\$ 25.6	\$ 28.4	\$ 17.5
Mark-to-market adjustments	(2.5)	24.7	4.8
Total expense	\$ 23.1	\$ 53.1	\$ 22.3

Stock Plans

Under the stock option and long-term incentive plans, options may be granted to purchase shares of our common stock at an exercise price not less than fair market value at the date of grant, and are exercisable for a period not exceeding ten years from that date. Stock options, restricted stock and performance shares typically vest over three years. We issue shares to settle stock options, restricted stock and share-based performance awards. In 2022, 2021 and 2020, long-term incentive awards included stock options, performance share awards and restricted stock. The stock option exercise price was set at the fair market value of common stock on the date of the grant, and the options have a ten-year term.

The fair value of each stock option granted, which typically vests ratably over three years, but not less than one year, was estimated on the date of grant, using the Black-Scholes option-pricing model with the following assumptions:

<i>Grant date</i>	<i>2022</i>	<i>2021</i>	<i>2020</i>
Dividend yield	1.60%	2.76%	4.60%
Risk-free interest rate	1.93%	0.94%	1.44%
Expected volatility	48%	44%	36%
Expected life (years)	7.0	6.0	6.0
Weighted-average grant fair value (per option)	\$ 21.18	\$ 9.91	\$ 3.64
Weighted-average exercise price	\$ 49.71	\$ 28.99	\$ 17.33
Stock options granted	752,100	1,154,700	2,663,100

Dividend yield was based on our current dividend yield as of the option grant date. Risk-free interest rate was based on zero coupon U.S. Treasury securities rates for the expected life of the options. Expected volatility was based on our historical stock price movements, as we believe that historical experience is the best available indicator of the expected volatility. Expected life of the option grant was based on historical exercise and cancellation patterns, as we believe that historical experience is the best estimate for future exercise patterns.

Stock option transactions were as follows:

	<i>Shares</i>	<i>Option Price</i>	<i>Weighted-Average Option Price</i>	<i>Exercisable</i>	
				<i>Options</i>	<i>Weighted-Average Exercise Price</i>
Outstanding at January 1, 2022	5,980,236	13.14-58.59	\$ 25.88	3,736,639	\$ 26.60
Granted	752,100	43.91-65.77	49.88		
Exercised	(1,057,723)	13.14-50.08	24.25		
Canceled	(235,893)	17.33-49.71	29.56		
Outstanding at December 31, 2022	5,438,720	13.14-65.77	\$ 29.36	3,740,936	\$ 26.50

At December 31, 2022, the average exercise period for all outstanding and exercisable options was 74 months and 62 months, respectively. At December 31, 2022, the aggregate intrinsic value (the difference between the exercise price and market value) for outstanding options was \$128.7 million, which includes exercisable options of \$99.0 million. The total intrinsic value of options exercised during the years ended December 31, 2022, 2021 and 2020 was \$36.9 million, \$73.1 million and \$0.6 million, respectively.

The total unrecognized compensation cost related to unvested stock options at December 31, 2022 was \$14.3 million and was expected to be recognized over a weighted-average period of 1.3 years.

The following table provides certain information with respect to stock options exercisable at December 31, 2022:

<i>Range of Exercise Prices</i>	<i>Options Exercisable</i>	<i>Weighted-Average Exercise Price</i>	<i>Options Outstanding</i>	<i>Weighted-Average Exercise Price</i>
Under \$22.00	799,201	\$ 15.86	1,172,870	\$ 16.33
\$22.00 - \$28.00	1,063,453	26.50	1,063,453	26.50
Over \$28.00	1,878,282	31.02	3,202,397	35.08
	<u>3,740,936</u>		<u>5,438,720</u>	

At December 31, 2022, common shares reserved for issuance and available for grant or purchase under the following plans consisted of:

<i>Stock Option Plans</i>	<i>Number of Shares</i>	
	<i>Reserved for Issuance</i>	<i>Available for Grant or Purchase⁽¹⁾</i>
2000 long term incentive plan	6,000	—
2003 long term incentive plan	60,167	—
2006 long term incentive plan	26,697	—
2009 long term incentive plan	129,617	—
2014 long term incentive plan	521,734	—
2016 long term incentive plan	1,425,333	—
2018 long term incentive plan	8,685,620	4,228,662
2021 long term incentive plan	2,750,000	2,750,000
Total under stock option plans	<u>13,605,168</u>	<u>6,978,662</u>

<i>Stock Purchase Plans</i>	<i>Number of Shares</i>	
	<i>Reserved for Issuance</i>	<i>Available for Grant or Purchase</i>
1997 stock plan for non-employee directors	373,322	130,293

(1) All available to be issued as stock options, but includes a sub-limit for all types of stock awards of 2,767,130 shares.

Under the stock purchase plans, our non-employee directors may defer certain elements of their compensation into shares of our common stock based on fair market value of the shares at the time of deferral. Non-employee directors annually receive stock grants as a portion of their director compensation. Of the shares reserved under the stock purchase plans at December 31, 2022, 243,029 shares were committed.

Performance share awards are denominated in shares of our stock and are paid half in cash and half in stock. Payouts for performance share awards are based on two criteria: (1) 50% of the award is based on Olin's total shareholder returns (TSR) over the applicable three-year performance cycle in relation to the TSR over the same period among a portfolio of public companies which are selected in concert with outside compensation consultants and (2) 50% of the award is based on Olin's net income over the applicable three-year performance cycle in relation to the net income goal for such period as set by the compensation committee of Olin's board of directors. The expense associated with performance shares is recorded based on our estimate of our performance relative to the respective target. If an employee leaves the company before the end of the performance cycle, the performance shares may be prorated based on the number of months of the performance cycle worked and are settled in cash instead of half in cash and half in stock when the three-year performance cycle is completed. Granted shares reflects changes in assumptions associated with the expected achievement of the aforementioned criteria.

The fair value of each performance share award based on net income was estimated on the date of grant, using the current stock price. The fair value of each performance share award based on TSR was estimated on the date of grant, using a Monte Carlo simulation model with the following weighted average assumptions:

<i>Grant date</i>	2022	2021
Risk-free interest rate	1.74 %	0.23 %
Expected volatility of Olin common stock	59 %	55 %
Expected average volatility of peer companies	47 %	50 %
Average correlation coefficient of peer companies	0.51	0.50
Expected life (years)	3	3
Grant date fair value (TSR based award)	\$ 64.13	\$ 39.96
Grant date fair value (net income based award)	\$ 49.71	\$ 28.99
Performance share awards granted	184,000	248,700

Risk-free interest rate was based on zero coupon U.S. Treasury securities rates for the expected life of the performance share awards. Expected volatility of Olin common stock and peer companies was based on historical stock price movements, as we believe that historical experience is the best available indicator of the expected volatility. The average correlation coefficient of peer companies was determined based on historical trends of Olin's common stock price compared to the peer companies. Expected life of the performance share award grant was based on historical exercise and cancellation patterns, as we believe that historical experience is the best estimate of future exercise patterns.

Performance share transactions were as follows:

	<i>To Settle in Cash</i>		<i>To Settle in Shares</i>	
	<i>Shares</i>	<i>Weighted-Average Fair Value per Share</i>	<i>Shares</i>	<i>Weighted-Average Fair Value per Share</i>
Outstanding at January 1, 2022	783,274	\$ 57.57	436,757	\$ 23.75
Granted	108,660	49.68	105,706	49.63
Paid/Issued	(228,009)	57.57	(81,844)	26.26
Converted from shares to cash	41,767	21.02	(41,767)	21.02
Canceled	(30,676)	54.22	(30,044)	31.65
Outstanding at December 31, 2022	675,016	\$ 52.90	388,808	\$ 29.94
Total vested at December 31, 2022	549,266	\$ 52.90	273,406	\$ 25.51

The summary of the status of our unvested performance shares to be settled in cash were as follows:

	<i>Shares</i>	<i>Weighted-Average Fair Value per Share</i>
Unvested at January 1, 2022	190,360	\$ 57.57
Granted	108,660	49.68
Vested	(142,594)	52.90
Canceled	(30,676)	54.22
Unvested at December 31, 2022	<u>125,750</u>	<u>\$ 52.90</u>

At December 31, 2022, the liability recorded for performance shares to be settled in cash totaled \$29.1 million. The total unrecognized compensation cost related to unvested performance shares at December 31, 2022 was \$11.3 million and was expected to be recognized over a weighted-average period of 1.6 years.

NOTE 18. SHAREHOLDERS' EQUITY

On July 28, 2022, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$2.0 billion (the 2022 Repurchase Authorization). This program will terminate upon the purchase of \$2.0 billion of common stock. On November 1, 2021, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$1.0 billion. This program terminated upon the purchase of \$1.0 billion of our common stock during the third quarter of 2022. On April 26, 2018, our Board of Directors authorized a share repurchase program for the purchase of shares of common stock at an aggregate price of up to \$500.0 million. This program terminated upon the purchase of \$500.0 million of our common stock during the first quarter of 2022.

For the years ended December 31, 2022 and 2021, 25.7 million and 4.7 million shares, respectively, of common stock have been repurchased and retired at a total value of \$1,350.7 million and \$251.9 million, respectively. As of December 31, 2022, a cumulative total of 5.9 million shares were repurchased and retired at a cost of \$298.5 million and \$1,701.5 million of common stock remained authorized to be repurchased under the 2022 Repurchase Authorization program.

During 2022, 2021 and 2020, we issued 1.1 million, 3.4 million and 0.1 million shares, respectively, with a total value of \$25.7 million, \$72.4 million and \$1.9 million, respectively, representing stock options exercised.

We have registered an undetermined amount of securities with the SEC, so that, from time-to-time, we may issue debt securities, preferred stock and/or common stock and associated warrants in the public market under that registration statement.

The following table represents the activity included in accumulated other comprehensive loss:

	<i>Foreign Currency Translation Adjustment</i>	<i>Unrealized Gains (Losses) on Derivative Contracts (net of taxes)</i>	<i>Pension and Other Postretirement Benefits (net of taxes)</i>	<i>Accumulated Other Comprehensive Loss</i>
	<i>(\$ in millions)</i>			
Balance at January 1, 2020	\$ (8.4)	\$ (13.6)	\$ (781.4)	\$ (803.4)
Unrealized losses	27.8	31.1	26.6	85.5
Reclassification adjustments of losses into income	—	14.9	46.3	61.2
Tax provision	—	(11.0)	(22.2)	(33.2)
Net change	27.8	35.0	50.7	113.5
Balance at December 31, 2020	19.4	21.4	(730.7)	(689.9)
Unrealized gains	(30.3)	182.0	249.7	401.4
Reclassification adjustments of (gains) losses into income	—	(180.1)	54.3	(125.8)
Tax provision	—	(0.5)	(73.2)	(73.7)
Net change	(30.3)	1.4	230.8	201.9
Balance at December 31, 2021	(10.9)	22.8	(499.9)	(488.0)
Unrealized (losses) gains	(27.7)	(15.6)	72.1	28.8
Reclassification adjustments of (gains) losses into income	—	(58.2)	35.5	(22.7)
Tax benefit (provision)	—	18.5	(32.5)	(14.0)
Net change	(27.7)	(55.3)	75.1	(7.9)
Balance at December 31, 2022	\$ (38.6)	\$ (32.5)	\$ (424.8)	\$ (495.9)

Net income (loss), interest expense and cost of goods sold included reclassification adjustments for realized gains and losses on derivative contracts from accumulated other comprehensive loss.

Net income (loss) and non-operating pension income included the amortization of prior service costs and actuarial losses from accumulated other comprehensive loss.

NOTE 19. SEGMENT INFORMATION

We define segment results as income (loss) before interest expense, interest income, goodwill impairment charges, other operating income (expense), non-operating pension income, other income and income taxes, and includes the operating results of non-consolidated affiliates. Consistent with the guidance in ASC 280 "Segment Reporting," we have determined it is appropriate to include the operating results of non-consolidated affiliates in the relevant segment financial results. We have three operating segments: Chlor Alkali Products and Vinyls, Epoxy and Winchester. The three operating segments reflect the organization used by our management for purposes of allocating resources and assessing performance. Chlorine and caustic soda used in our Epoxy segment is transferred at cost from the Chlor Alkali Products and Vinyls segment.

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
Sales:	<i>(\$ in millions)</i>		
Chlor Alkali Products and Vinyls	\$ 5,085.0	\$ 4,140.8	\$ 2,959.9
Epoxy	2,690.5	3,186.0	1,870.5
Winchester	1,600.7	1,583.8	927.6
Total sales	<u>\$ 9,376.2</u>	<u>\$ 8,910.6</u>	<u>\$ 5,758.0</u>
Income (loss) before taxes:			
Chlor Alkali Products and Vinyls	\$ 1,181.3	\$ 997.8	\$ 3.5
Epoxy	388.5	616.5	40.8
Winchester	372.9	412.1	92.3
Corporate/Other:			
Environmental expense	(23.2)	(14.0)	(20.9)
Other corporate and unallocated costs	(131.5)	(135.1)	(154.3)
Restructuring charges	(25.3)	(27.9)	(9.0)
Goodwill impairment	—	—	(699.8)
Other operating income	16.3	1.4	0.7
Interest expense	(143.9)	(348.0)	(292.7)
Interest income	2.2	0.2	0.5
Non-operating pension income	38.7	35.7	18.9
Income (loss) before taxes	<u>\$ 1,676.0</u>	<u>\$ 1,538.7</u>	<u>\$ (1,020.0)</u>
Depreciation and amortization expense:			
Chlor Alkali Products and Vinyls	\$ 482.2	\$ 466.4	\$ 451.4
Epoxy	83.3	86.1	90.7
Winchester	24.6	23.3	20.1
Corporate/Other	8.7	6.7	6.2
Total depreciation and amortization expense	<u>\$ 598.8</u>	<u>\$ 582.5</u>	<u>\$ 568.4</u>
Capital spending:			
Chlor Alkali Products and Vinyls	\$ 151.4	\$ 130.2	\$ 180.4
Epoxy	27.2	31.0	33.7
Winchester	31.0	28.5	24.5
Corporate/Other	27.3	10.9	60.3
Total capital spending	<u>\$ 236.9</u>	<u>\$ 200.6</u>	<u>\$ 298.9</u>

Segment assets include only those assets which are directly identifiable to an operating segment. Assets of the corporate/other segment include primarily such items as cash and cash equivalents, deferred taxes and other assets.

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
Assets:	<i>(\$ in millions)</i>	
Chlor Alkali Products and Vinyls	\$ 5,782.2	\$ 6,184.9
Epoxy	1,201.9	1,307.3
Winchester	595.0	540.6
Corporate/Other	465.1	484.9
Total assets	\$ 8,044.2	\$ 8,517.7

Property, plant and equipment is attributed to geographic areas based on asset location and sales are attributed to geographic areas based on customer location.

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
Property, plant and equipment:	<i>(\$ in millions)</i>	
United States	\$ 2,434.4	\$ 2,639.6
Foreign	239.7	274.0
Total property, plant and equipment	\$ 2,674.1	\$ 2,913.6

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
Sales by geography:	<i>(\$ in millions)</i>		
Chlor Alkali Products and Vinyls			
United States	\$ 3,400.0	\$ 2,839.1	\$ 2,092.5
Europe	331.9	203.5	106.7
Other foreign	1,353.1	1,098.2	760.7
Total Chlor Alkali Products and Vinyls	5,085.0	4,140.8	2,959.9
Epoxy			
United States	855.1	926.7	578.1
Europe	1,181.8	1,457.9	684.9
Other foreign	653.6	801.4	607.5
Total Epoxy	2,690.5	3,186.0	1,870.5
Winchester			
United States	1,467.0	1,502.2	865.9
Europe	34.1	19.4	9.3
Other foreign	99.6	62.2	52.4
Total Winchester	1,600.7	1,583.8	927.6
Total			
United States	5,722.1	5,268.0	3,536.5
Europe	1,547.8	1,680.8	800.9
Other foreign	2,106.3	1,961.8	1,420.6
Total sales	\$ 9,376.2	\$ 8,910.6	\$ 5,758.0

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Sales by product line:			
Chlor Alkali Products and Vinyls			
Caustic soda	\$ 2,389.1	\$ 1,869.3	\$ 1,408.3
Chlorine, chlorine derivatives and other products	2,695.9	2,271.5	1,551.6
Total Chlor Alkali Products and Vinyls	5,085.0	4,140.8	2,959.9
Epoxy			
Aromatics and allylics	1,338.6	1,450.5	821.0
Epoxy resins	1,351.9	1,735.5	1,049.5
Total Epoxy	2,690.5	3,186.0	1,870.5
Winchester			
Commercial	1,079.1	1,104.1	640.5
Military and law enforcement	521.6	479.7	287.1
Total Winchester	1,600.7	1,583.8	927.6
Total sales	\$ 9,376.2	\$ 8,910.6	\$ 5,758.0

NOTE 20. ENVIRONMENTAL

As is common in our industry, we are subject to environmental laws and regulations related to the use, storage, handling, generation, transportation, emission, discharge, disposal and remediation of, and exposure to, hazardous and non-hazardous substances and wastes in all of the countries in which we do business.

The establishment and implementation of national, state or provincial and local standards to regulate air, water and land quality affect substantially all of our manufacturing locations around the world. Laws providing for regulation of the manufacture, transportation, use and disposal of hazardous and toxic substances, and remediation of contaminated sites, have imposed additional regulatory requirements on industry, particularly the chemicals industry. In addition, implementation of environmental laws has required and will continue to require new capital expenditures and will increase plant operating costs. We employ waste minimization and pollution prevention programs at our manufacturing sites.

We are party to various government and private environmental actions associated with past manufacturing facilities and former waste disposal sites. Associated costs of investigatory and remedial activities are provided for in accordance with generally accepted accounting principles governing probability and the ability to reasonably estimate future costs. Our ability to estimate future costs depends on whether our investigatory and remedial activities are in preliminary or advanced stages. With respect to unasserted claims, we accrue liabilities for costs that, in our experience, we expect to incur to protect our interests against those unasserted claims. Our accrued liabilities for unasserted claims amounted to \$9.0 million at December 31, 2022. With respect to asserted claims, we accrue liabilities based on remedial investigation, feasibility study, remedial action and operation, maintenance and monitoring (OM&M) expenses that, in our experience, we expect to incur in connection with the asserted claims. Required site OM&M expenses are estimated and accrued in their entirety for required periods not exceeding 30 years, which reasonably approximates the typical duration of long-term site OM&M.

Our liabilities for future environmental expenditures were as follows:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Beginning balance	\$ 147.3	\$ 147.2
Charges to income	24.2	16.2
Remedial and investigatory spending	(24.6)	(16.4)
Foreign currency translation adjustments	(0.3)	0.3
Ending balance	\$ 146.6	\$ 147.3

At December 31, 2022 and 2021, our consolidated balance sheets included environmental liabilities of \$121.6 million and \$122.3 million, respectively, which were classified as other noncurrent liabilities. Our environmental liability amounts do not take into account any discounting of future expenditures or any consideration of insurance recoveries or advances in technology. These liabilities are reassessed periodically to determine if environmental circumstances have changed and/or remediation efforts and our estimate of related costs have changed. As a result of these reassessments, future charges to income may be made for additional liabilities. Of the \$146.6 million included on our consolidated balance sheet at December 31, 2022 for future environmental expenditures, we currently expect to utilize \$56.5 million of the reserve for future environmental expenditures over the next 5 years, \$49.0 million for expenditures 6 to 10 years in the future, and \$41.1 million for expenditures beyond 10 years in the future.

Our total estimated environmental liability at December 31, 2022 was attributable to 57 sites, 14 of which were United States Environmental Protection Agency National Priority List sites. Nine sites accounted for 82% of our environmental liability and, of the remaining 48 sites, no one site accounted for more than 2% of our environmental liability. At seven of the nine sites, part of the site is in the long-term OM&M stage. At seven of the nine sites, a remedial action plan is being developed for part of the site. At five of the nine sites, a remedial design is being developed at part of the site and at four of the nine sites, part of the site is subject to a remedial investigation. All nine sites are either associated with past manufacturing operations or former waste disposal sites. None of the nine largest sites represents more than 25% of the liabilities reserved on our consolidated balance sheet at December 31, 2022 for future environmental expenditures.

Environmental provisions charged to income, which are included in cost of goods sold, were as follows:

	<i>Years ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Provisions charged to income	\$ 24.2	\$ 16.2	\$ 20.9
Insurance recoveries for costs incurred and expensed	(1.0)	(2.2)	—
Environmental expense	<u>\$ 23.2</u>	<u>\$ 14.0</u>	<u>\$ 20.9</u>

Environmental expense for the years ended December 31, 2022 and 2021 included \$1.0 million and \$2.2 million, respectively, of insurance recoveries for environmental costs incurred and expensed in prior periods.

These charges relate primarily to remedial and investigatory activities associated with past manufacturing operations and former waste disposal sites and may be material to operating results in future years.

Annual environmental-related cash outlays for site investigation and remediation are expected to range between approximately \$20 million to \$30 million over the next several years, which are expected to be charged against reserves recorded on our consolidated balance sheet. While we do not anticipate a material increase in the projected annual level of our environmental-related cash outlays for site investigation and remediation, there is always the possibility that such an increase may occur in the future in view of the uncertainties associated with environmental exposures. Environmental exposures are difficult to assess for numerous reasons, including the identification of new sites, developments at sites resulting from investigatory studies, advances in technology, changes in environmental laws and regulations and their application, changes in regulatory authorities, the scarcity of reliable data pertaining to identified sites, the difficulty in assessing the involvement and financial capability of other Potentially Responsible Parties (PRPs), our ability to obtain contributions from other parties and the lengthy time periods over which site remediation occurs. It is possible that some of these matters (the outcomes of which are subject to various uncertainties) may be resolved unfavorably to us, which could materially adversely affect our financial position or results of operations. At December 31, 2022, we estimate that it is reasonably possible that we may have additional contingent environmental liabilities of \$70 million in addition to the amounts for which we have already recorded as a reserve.

NOTE 21. LEASES

Our lease commitments are primarily for railcars, but also include logistics, manufacturing, storage, real estate and information technology assets. Our leases have remaining lease terms of up to 92 years (15 years excluding land leases), some of which may include options to extend the leases for up to five years, and some of which may include options to terminate the leases within one year.

The amounts for leases included in our consolidated balance sheets include:

		December 31,	
		2022	2021
		<i>(\$ in millions)</i>	
Lease assets:	Balance sheet location:		
Operating	Operating lease assets, net	\$ 356.0	\$ 372.4
Finance	Property, plant and equipment, less accumulated depreciation ⁽¹⁾	2.4	3.4
Total lease assets		\$ 358.4	\$ 375.8
Lease liabilities:			
Current			
Operating	Current operating lease liabilities	\$ 71.8	\$ 76.8
Finance	Current installments of long-term debt	1.0	1.1
Long-term			
Operating	Operating lease liabilities	292.5	302.0
Finance	Long-term debt	0.9	1.9
Total lease liabilities		\$ 366.2	\$ 381.8

(1) As of December 31, 2022 and 2021, assets recorded under finance leases were \$7.6 million for both years and accumulated depreciation associated with finance leases was \$5.2 million and \$4.3 million, respectively.

The components of lease expense are recorded to cost of goods sold and selling and administration expenses in the consolidated statement of operations, excluding interest on finance lease liabilities which is recorded to interest expense. The components of lease expense were as follows:

		Years Ended December 31,		
		2022	2021	2020
		<i>(\$ in millions)</i>		
Lease expense:				
Operating		\$ 93.4	\$ 97.1	\$ 96.0
Other operating lease expense ⁽¹⁾		32.5	28.7	24.3
Finance:				
Depreciation of leased assets		1.0	1.1	1.3
Interest on lease liabilities		0.1	0.1	0.2
Total lease expense		\$ 127.0	\$ 127.0	\$ 121.8

(1) Includes costs associated with short-term leases and variable lease expenses.

The maturities of lease liabilities were as follows:

	<i>December 31, 2022</i>		
	<i>Operating leases</i>	<i>Finance leases</i>	<i>Total</i>
	<i>(\$ in millions)</i>		
2023	\$ 81.8	\$ 1.0	\$ 82.8
2024	68.1	0.8	68.9
2025	58.4	0.2	58.6
2026	45.4	—	45.4
2027	35.3	—	35.3
Thereafter	138.3	—	138.3
Total lease payments	427.3	2.0	429.3
Less: Imputed interest ⁽¹⁾	(63.0)	(0.1)	(63.1)
Present value of lease liabilities	\$ 364.3	\$ 1.9	\$ 366.2

(1) Calculated using the discount rate for each lease.

Other information related to leases was as follows:

	<i>Years Ended December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
	<i>(\$ in millions)</i>		
Supplemental cash flows information:			
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows from operating leases	\$ 93.1	\$ 97.4	\$ 95.9
Operating cash flows from finance leases	0.1	0.1	0.2
Financing cash flows from finance leases	1.1	1.1	2.1
Non-cash increase in lease assets and lease liabilities:			
Operating leases	\$ 71.8	\$ 56.7	\$ 70.5
Finance leases	—	0.1	1.1

	<i>December 31,</i>		
	<i>2022</i>	<i>2021</i>	<i>2020</i>
Weighted-average remaining lease term:			
Operating leases	9.1 years	9.3 years	9.5 years
Finance leases	1.6 years	2.4 years	3.1 years
Weighted-average discount rate:			
Operating leases	3.4 %	3.1 %	3.0 %
Finance leases	3.6 %	3.4 %	3.3 %

As of December 31, 2022, we have additional operating leases that have not yet commenced of approximately \$2 million which are expected to commence during 2023 with lease terms between 2 years and 5 years.

NOTE 22. COMMITMENTS AND CONTINGENCIES

The following table summarizes our contractual commitments under purchase contracts as of December 31, 2022:

	<i>Purchase Commitments</i>	
	<i>(\$ in millions)</i>	
2023	\$	1,044.7
2024		1,031.6
2025		844.6
2026		321.6
2027		321.7
Thereafter		3,097.4
Total commitments	\$	6,661.6

The above purchase commitments include raw material, capital expenditure, long-term energy supply contracts and utility purchasing commitments utilized in our normal course of business for our projected needs.

Legal Matters

Olin, K.A. Steel Chemicals (a wholly owned subsidiary of Olin) and other caustic soda producers were named as defendants in six purported class action civil lawsuits filed March 22, 25 and 26, 2019 and April 12, 2019 in the U.S. District Court for the Western District of New York. Those cases were consolidated on May 22, 2019; the claims in the consolidated "Direct Purchaser" lawsuit, as modified, are on behalf of the respective named plaintiffs and a putative class comprised of all persons and entities who purchased certain types of caustic soda in the U.S. directly from one or more of the defendants, their parents, predecessors, subsidiaries or affiliates at any time on or after October 1, 2015 through December 31, 2018. Olin, K.A. Steel Chemicals and other caustic soda producers were also named as defendants in two purported class action civil lawsuits filed July 25 and 29, 2019 in the U.S. District Court for the Western District of New York on behalf of the respective named plaintiffs and a putative class comprised of all persons and entities who purchased caustic soda in the U.S. indirectly from distributors at any time on or after October 1, 2015. Those cases were consolidated and a consolidated, amended complaint in the "Indirect Purchaser" lawsuit was filed on August 23, 2021. The other current defendants in the Direct Purchaser and Indirect Purchaser lawsuits are Occidental Chemical Corporation d/b/a OxyChem, Westlake Chemical Corporation, Shin-Etsu Chemical Co., Ltd., and Formosa Plastics Corporation, U.S.A. The Direct Purchaser and Indirect Purchaser lawsuits allege the defendants conspired to fix, raise, maintain and stabilize the price of caustic soda, restrict domestic (U.S.) supply of caustic soda and allocate caustic soda customers. Plaintiffs seek damages and injunctive relief.

Olin, K.A. Steel Chemical, Olin Canada ULC, 3229897 Nova Scotia Co. (wholly owned subsidiaries of Olin) and other alleged caustic soda producers were named as defendants in a proposed class action civil lawsuit filed on October 7, 2020 in the Quebec Superior Court (Province of Quebec) on behalf of the respective named plaintiff and a putative class comprised of all Canadian persons and entities who, between October 1, 2015 and the date of the eventual class action certification, directly or indirectly purchased caustic soda or products containing caustic soda, produced by one or more of the defendants. Olin, K.A. Steel Chemical, Olin Canada ULC, 3229897 Nova Scotia Co. and other alleged caustic soda producers were also named as defendants in a proposed class action civil lawsuit filed November 13, 2020 in the Federal Court of Canada on behalf of the respective named plaintiff and a putative class comprised of all legal persons in Canada who, at any time on or after October 1, 2015 to the present, directly or indirectly purchased caustic soda. The other defendants named in the two Canadian lawsuits are Occidental Petroleum Corporation, Occidental Chemical Corporation, Oxy Canada Sales, Inc., Westlake Chemical Corporation, Axiall Canada, Inc., Shin-Etsu Chemical Co., Ltd., Shintech Incorporated, Formosa Plastics Corporation, and Formosa Plastics Corporation, U.S.A. The lawsuits allege the defendants conspired to fix, raise, maintain control, and stabilize the price of caustic soda, divide and allocate markets, sales, customers and territories, fix, maintain, control, prevent, restrict, lessen or eliminate production and supply of caustic soda, and agree to idle capacity of production and/or refrain from increasing their production capacity. Plaintiffs seek damages, including punitive damages.

We believe we have meritorious legal positions and will continue to represent our interests vigorously in the above matters. Any losses related to these matters are not currently estimable because of unresolved questions of fact and law, but if resolved unfavorably to Olin, could have a material adverse effect on our financial position, cash flows or results of operations.

We, and our subsidiaries, are defendants in various other legal actions (including proceedings based on alleged exposures to asbestos) incidental to our past and current business activities. At December 31, 2022 and 2021, our consolidated balance sheets included accrued liabilities for these other legal actions of \$14.4 million and \$14.2 million, respectively. These liabilities do not include costs associated with legal representation. Based on our analysis, and considering the inherent uncertainties associated with litigation, we do not believe that it is reasonably possible that these other legal actions will materially adversely affect our financial position, cash flows or results of operations.

During the ordinary course of our business, contingencies arise resulting from an existing condition, situation or set of circumstances involving an uncertainty as to the realization of a possible gain contingency. In certain instances, such as environmental projects, we are responsible for managing the cleanup and remediation of an environmental site. There exists the possibility of recovering a portion of these costs from other parties. We account for gain contingencies in accordance with the provisions of ASC 450 "Contingencies" and, therefore, do not record gain contingencies and recognize income until it is earned and realizable.

NOTE 23. DERIVATIVE FINANCIAL INSTRUMENTS

We are exposed to market risk in the normal course of our business operations due to our purchases of certain commodities, our ongoing investing and financing activities and our operations that use foreign currencies. The risk of loss can be assessed from the perspective of adverse changes in fair values, cash flows and future earnings. We have established policies and procedures governing our management of market risks and the use of financial instruments to manage exposure to such risks. ASC 815 "Derivatives and Hedging" (ASC 815) requires an entity to recognize all derivatives as either assets or liabilities in the consolidated balance sheets and measure those instruments at fair value. In accordance with ASC 815, we designate derivative contracts as cash flow hedges of forecasted purchases of commodities and forecasted interest payments related to variable-rate borrowings and designate certain interest rate swaps as fair value hedges of fixed-rate borrowings. We do not enter into any derivative instruments for trading or speculative purposes.

Energy costs, including electricity and natural gas, and certain raw materials used in our production processes are subject to price volatility. Depending on market conditions, we may enter into futures contracts, forward contracts, commodity swaps and put and call option contracts in order to reduce the impact of commodity price fluctuations. The majority of our commodity derivatives expire within one year.

We actively manage currency exposures that are associated with net monetary asset positions, currency purchases and sales commitments denominated in foreign currencies and foreign currency denominated assets and liabilities created in the normal course of business. We enter into forward sales and purchase contracts to manage currency risk to offset our net exposures, by currency, related to the foreign currency denominated monetary assets and liabilities of our operations. At December 31, 2022, we had outstanding forward contracts to buy foreign currency with a notional value of \$275.8 million and to sell foreign currency with a notional value of \$110.7 million. All of the currency derivatives expire within one year and are for USD equivalents. The counterparties to the forward contracts are large financial institutions; however, the risk of loss to us in the event of nonperformance by a counterparty could impact our financial position or results of operations. At December 31, 2021, we had outstanding forward contracts to buy foreign currency with a notional value of \$199.0 million and to sell foreign currency with a notional value of \$124.4 million.

Cash Flow Hedges

For derivative instruments that are designated and qualify as a cash flow hedge, the change in fair value of the derivative is recognized as a component of other comprehensive income (loss) until the hedged item is recognized in earnings.

We had the following notional amounts of outstanding commodity contracts that were entered into to hedge forecasted purchases:

	<i>December 31,</i>	
	<i>2022</i>	<i>2021</i>
	<i>(\$ in millions)</i>	
Natural gas	\$ 107.6	\$ 37.7
Ethane	46.0	60.3
Metals	107.6	126.3
Total notional	<u>\$ 261.2</u>	<u>\$ 224.3</u>

As of December 31, 2022, the counterparties to these commodity contracts were Wells Fargo Bank, N.A., Citibank, N.A., JPMorgan Chase Bank, National Association, and Bank of America Corporation, all of which are major financial institutions.

We use cash flow hedges for certain raw material and energy costs such as copper, zinc, lead, ethane, electricity and natural gas to provide a measure of stability in managing our exposure to price fluctuations associated with forecasted purchases of raw materials and energy used in our manufacturing process. At December 31, 2022, we had open derivative contract positions through 2028. If all open futures contracts had been settled on December 31, 2022, we would have recognized a pretax loss of \$43.5 million.

If commodity prices were to remain at December 31, 2022 levels, approximately \$30.5 million of deferred losses, net of tax, would be reclassified into earnings during the next twelve months. The actual effect on earnings will be dependent on actual commodity prices when the forecasted transactions occur.

Fair Value Hedges

We use interest rate swaps as a means of managing interest expense and floating interest rate exposure to optimal levels. For derivative instruments that are designated and qualify as a fair value hedge, the gain or loss on the derivative as well as the offsetting loss or gain on the hedged item attributable to the hedged risk are recognized in current earnings. We include the gain or loss on the hedged items (fixed-rate borrowings) in the same line item, interest expense, as the offsetting loss or gain on the related interest rate swaps.

In August 2019, we terminated the interest rate swaps designated as fair value hedges which resulted in a loss of \$2.3 million that was deferred as an offset to the carrying value of the related debt and was subsequently recognized to interest expense. In 2021, we redeemed the 2025 Notes, which resulted in recognition of the outstanding deferred swap loss. For the years ended December 31, 2021 and 2020, \$1.8 million and \$0.4 million, respectively, of expense was recorded to interest expense on the accompanying consolidated statements of operations related to these swap agreements.

Financial Statement Impacts

We present our derivative assets and liabilities in our consolidated balance sheets on a net basis whenever we have a legally enforceable master netting agreement with the counterparty to our derivative contracts. We use these agreements to manage and substantially reduce our potential counterparty credit risk.

The following table summarizes the location and fair value of the derivative instruments on our consolidated balance sheets. The table disaggregates our net derivative assets and liabilities into gross components on a contract-by-contract basis before giving effect to master netting arrangements:

	December 31,	
	2022	2021
	<i>(\$ in millions)</i>	
Asset Derivatives:		
Other current assets		
Derivatives designated as hedging instruments:		
Commodity contracts - gains	\$ 2.4	\$ 31.8
Commodity contracts - losses	(0.9)	(6.2)
Derivatives not designated as hedging instruments:		
Foreign exchange contracts - gains	0.3	2.0
Foreign exchange contracts - losses	—	(0.8)
Total other current assets	1.8	26.8
Other assets		
Derivatives designated as hedging instruments:		
Commodity contracts - gains	4.0	7.9
Total other assets	4.0	7.9
Total Asset Derivatives⁽¹⁾	\$ 5.8	\$ 34.7
Liability Derivatives:		
Accrued liabilities		
Derivatives designated as hedging instruments:		
Commodity contracts - losses	\$ 43.3	\$ 3.6
Commodity contracts - gains	(1.7)	(0.7)
Derivatives not designated as hedging instruments:		
Foreign exchange contracts - losses	1.7	0.7
Foreign exchange contracts - gains	(0.8)	(0.1)
Total accrued liabilities	42.5	3.5
Other liabilities		
Derivatives designated as hedging instruments:		
Commodity contract - losses	8.0	0.3
Commodity contract - gains	(0.6)	—
Total other liabilities	7.4	0.3
Total Liability Derivatives⁽¹⁾	\$ 49.9	\$ 3.8

(1) Does not include the impact of cash collateral received from or provided to counterparties.

The following table summarizes the effects of derivative instruments on our consolidated statements of operations:

	<i>Location of Gain (Loss)</i>	<i>Amount of Gain (Loss)</i>		
		<i>Years Ended December 31,</i>		
		<i>2022</i>	<i>2021</i>	<i>2020</i>
<i>(\$ in millions)</i>				
Derivatives – Cash Flow Hedges				
Recognized in other comprehensive (loss) income:				
Commodity contracts	—	\$ (15.6)	\$ 182.0	\$ 31.1
Reclassified from accumulated other comprehensive loss into income:				
Commodity contracts	Cost of goods sold	\$ 58.2	\$ 180.1	\$ (14.9)
Derivatives – Fair Value Hedges				
Interest rate contracts	Interest expense	\$ —	\$ (1.8)	\$ (0.4)
Derivatives Not Designated as Hedging Instruments				
Commodity Contracts	Cost of goods sold	\$ 0.5	\$ —	\$ —
Foreign exchange contracts	Selling and administration	\$ (27.8)	\$ (22.0)	\$ 17.7

Credit Risk and Collateral

By using derivative instruments, we are exposed to credit and market risk. If a counterparty fails to fulfill its performance obligations under a derivative contract, our credit risk will equal the fair value gain in a derivative. Generally, when the fair value of a derivative contract is positive, this indicates that the counterparty owes us, thus creating a repayment risk for us. When the fair value of a derivative contract is negative, we owe the counterparty and, therefore, assume no repayment risk. We minimize the credit (or repayment) risk in derivative instruments by entering into transactions with high-quality counterparties. We monitor our positions and the credit ratings of our counterparties, and we do not anticipate non-performance by the counterparties.

Based on the agreements with our various counterparties, cash collateral is required to be provided when the net fair value of the derivatives, with the counterparty, exceeds a specific threshold. If the threshold is exceeded, cash is either provided by the counterparty to us if the value of the derivatives is our asset, or cash is provided by us to the counterparty if the value of the derivatives is our liability. As of December 31, 2022 and 2021, this threshold was not exceeded. In all instances where we are party to a master netting agreement, we offset the receivable or payable recognized upon payment of cash collateral against the fair value amounts recognized for derivative instruments that have also been offset under such master netting agreements.

NOTE 24. FAIR VALUE MEASUREMENTS

Assets and liabilities recorded at fair value in the consolidated balance sheets are categorized based upon the level of judgment associated with the inputs used to measure their fair value. Hierarchical levels are directly related to the amount of subjectivity associated with the inputs to fair valuation of these assets and liabilities. We are required to separately disclose assets and liabilities measured at fair value on a recurring basis, from those measured at fair value on a nonrecurring basis. Nonfinancial assets measured at fair value on a nonrecurring basis are intangible assets and goodwill, which are reviewed for impairment annually in the fourth quarter and/or when circumstances or other events indicate that impairment may have occurred. Determining which hierarchical level an asset or liability falls within requires significant judgment. The following table summarizes the assets and liabilities measured at fair value in the consolidated balance sheets:

Balance at December 31, 2022	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
<i>(\$ in millions)</i>				
Assets				
Commodity contracts	\$ —	\$ 5.5	\$ —	\$ 5.5
Foreign exchange contracts	—	0.3	—	0.3
Total Assets	\$ —	\$ 5.8	\$ —	\$ 5.8
Liabilities				
Commodity contracts	\$ —	\$ 49.0	\$ —	\$ 49.0
Foreign exchange contracts	—	0.9	—	0.9
Total Liabilities	\$ —	\$ 49.9	\$ —	\$ 49.9
Balance at December 31, 2021				
Assets				
Commodity contracts	\$ —	\$ 33.5	\$ —	\$ 33.5
Foreign exchange contracts	—	1.2	—	1.2
Total Assets	\$ —	\$ 34.7	\$ —	\$ 34.7
Liabilities				
Commodity contracts	\$ —	\$ 3.2	\$ —	\$ 3.2
Foreign exchange contracts	—	0.6	—	0.6
Total Liabilities	\$ —	\$ 3.8	\$ —	\$ 3.8

Commodity Contracts

Commodity contract financial instruments were valued primarily based on prices and other relevant information observable in market transactions involving identical or comparable assets or liabilities including both forward and spot prices for commodities. We use commodity derivative contracts for certain raw materials and energy costs such as copper, zinc, lead, ethane, electricity and natural gas to provide a measure of stability in managing our exposure to price fluctuations.

Foreign Currency Contracts

Foreign currency contract financial instruments were valued primarily based on relevant information observable in market transactions involving identical or comparable assets or liabilities including both forward and spot prices for currencies. We enter into forward sales and purchase contracts to manage currency risk resulting from purchase and sale commitments denominated in foreign currencies.

Financial Instruments

The carrying values of cash and cash equivalents, accounts receivable and accounts payable approximated fair values due to the short-term maturities of these instruments. Since our long-term debt instruments may not be actively traded, the inputs used to measure the fair value of our long-term debt are based on current market rates for debt of similar risk and maturities and is classified as Level 2 in the fair value measurement hierarchy. As of December 31, 2022 and 2021, the fair value measurements of debt were \$2,517.7 million and \$2,921.0 million, respectively.

Nonrecurring Fair Value Measurements

In addition to assets and liabilities that are recorded at fair value on a recurring basis, we record assets and liabilities at fair value on a nonrecurring basis as required by ASC 820. There were no assets measured at fair value on a nonrecurring basis as of December 31, 2022 and 2021.

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

Not applicable.

Item 9A. CONTROLS AND PROCEDURES

Our chief executive officer and our chief financial officer evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2022. Based on that evaluation, our chief executive officer and chief financial officer have concluded that, as of such date, our disclosure controls and procedures were effective to ensure that information Olin is required to disclose in the reports that it files or submits with the SEC under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms, and to ensure that information we are required to disclose in such reports is accumulated and communicated to our management, including our chief executive officer and chief financial officer, as appropriate to allow timely decisions regarding required disclosure.

There have been no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2022, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Management's report on internal control over financial reporting and the related report of Olin's independent registered public accounting firm, KPMG LLP, are included in Item 8—"Consolidated Financial Statements and Supplementary Data."

Item 9B. OTHER INFORMATION

On February 22, 2023, our Board of Directors, as part of a periodic review of Olin's governance documents, approved changes to Olin's Bylaws, effective as of February 22, 2023 (as amended and restated, the "Bylaws"). The amendments, among other things:

- expand the scope of disclosures required by a shareholder seeking to bring a director nomination or other business before a meeting of shareholders ("proposing shareholder") to include:
 - any derivative instrument that has been entered into by, or on behalf of, the proposing shareholder and any affiliates or associates or other parties with whom the proposing shareholder is acting in concert (each, an "associated person"), the effect or intent of which is to mitigate loss to, manage risk or benefit of share price changes for, or increase or decrease the voting power of, the proposing shareholder or any associated person, with respect to Olin shares, or relates to the acquisition or disposition of any Olin shares;
 - any agreement pursuant to which the proposing shareholder or any associated person, has a right to vote or direct the voting of any of the Olin's securities;
 - any rights to dividends on Olin shares owned beneficially by the proposing shareholder and any associated person that are separated or separable from the underlying Olin shares;
 - any proportionate interest in Olin shares or any derivative instruments held, directly or indirectly, by a general or limited partnership or limited liability company or similar entity in which the proposing shareholder or any associated person is a general partner or, directly or indirectly, beneficially owns an interest in a general partner, is the manager or managing member or, directly or indirectly, beneficially owns an interest in the manager or managing member of a limited liability company or similar entity; and
 - any performance-related fees (other than an asset-based fee) that the proposing shareholder or any associated person is entitled to based on the increase or decrease in the value of Olin shares or derivative instruments;

- expand the scope of disclosures required by a proposing shareholder seeking to bring a director nomination ("shareholder nominee") to include:
 - the name, age, business address and, if known, residence address of each shareholder nominee for whom the proposing shareholder is proposing or intends to solicit proxies and of each shareholder nominee who would be presented for election at the annual meeting in the event of a need to change the proposing shareholders' original slate; and
 - a representation as to whether the proposing shareholder or any associated person intends to solicit proxies in support of director nominees other than individuals nominated by the Board of Directors ("board nominees") in compliance with the requirements of Rule 14a-19(b) under the Securities Exchange Act of 1934 (the "Exchange Act");
- change the deadline by which a proposing shareholder must provide notice to Olin of the proposing shareholder's intent to nominate directors for election to the Board or propose other business at an annual meeting from not later than 90 calendar days before the anniversary of the immediately preceding annual meeting to not later than 120 calendar days before the anniversary of the immediately preceding annual meeting and provide that, if no annual meeting was held in the previous year or the date of the annual meeting is more than 30 calendar days before or more than 60 calendar days after such anniversary date, the proposing shareholder must provide notice to Olin not later than the 90th calendar day prior to such annual meeting of shareholders or, if later, the 10th calendar day following the date on which public disclosure of the date of such annual meeting is first made;
- provide that, in the case of a special meeting for the election of directors called by the Board of Directors, a proposing shareholder must provide notice of the proposing shareholder's intent to nominate directors not later the 7th calendar day following the date on which notice of such meeting is first given to shareholders;
- clarify that, in addition to complying with the advance notice provisions in the Bylaws, each proposing shareholder and any associated person must also comply with all applicable requirements of Olin's Articles of Incorporation, the Bylaws and state and federal law, including the Exchange Act, with respect to any such proposal or the solicitation of proxies with respect thereto;
- provide that any shareholder directly or indirectly soliciting proxies from other shareholders must use a proxy card color other than white;
- provide that (a) no shareholder or associated person may solicit proxies in support of any nominees other than board nominees unless such shareholder and associated person complies with Rule 14a-19 under the Exchange Act in connection with the solicitation of such proxies, including the provision to Olin of notices required thereunder in a timely manner, and (b) if such shareholder or associated person (i) provides notice pursuant to Rule 14a-19(b) under the Exchange Act and (ii) subsequently fails to comply with any of the requirements of Rule 14a-19 under the Exchange Act, then Olin will disregard any proxies or votes solicited for such shareholder's nominees;
- provide that, if any shareholder or associated person provides notice pursuant to Rule 14a-19(b) under the Exchange Act, such shareholder or associated person must deliver to Olin, upon its request, reasonable evidence that such shareholder or associated person has met the requirements of Rule 14a-19 under the Exchange Act no later than five business days prior to the applicable meeting;
- require shareholder nominees and board nominees to provide any additional information necessary to permit the Board to determine the nominee's independence; and
- make various other updates, including clarify, ministerial and conforming changes.

The foregoing description of the amendments to the Bylaws is qualified in its entirety by reference to the full text of the Bylaws, a copy of which is attached hereto as Exhibit 3.2 and is incorporated herein by reference.

Item 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III

Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

We incorporate the biographical information relating to our Directors under the heading ITEM 1—"PROPOSAL FOR THE ELECTION OF DIRECTORS" in our Proxy Statement relating to our 2023 Annual Meeting of Shareholders (the "Proxy Statement") by reference in this Report. We incorporate the biographical information regarding executive officers under the heading "EXECUTIVE OFFICERS" in our Proxy Statement by reference in this report.

The information with respect to our audit committee, including the audit committee financial expert, is incorporated by reference in this Report to the information contained in the paragraph entitled "CORPORATE GOVERNANCE MATTERS—What Are our Board Committees?" in our Proxy Statement. We incorporate by reference in this Report information regarding procedures for shareholders to nominate a director for election, in the Proxy Statement under the headings "MISCELLANEOUS—How can I directly nominate a director for election to the board at the 2024 annual meeting?" and "CORPORATE GOVERNANCE MATTERS—What Is Olin's Director Nomination Process?".

We have adopted a code of business conduct and ethics for directors, officers and employees, known as the Code of Conduct. The Code of Conduct is available in the About, Our Values section of our website at www.olin.com. Olin intends to satisfy disclosure requirements under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, any provision of the Code of Conduct with respect to its executive officers or directors by posting such amendment or waiver on its website.

Item 11. EXECUTIVE COMPENSATION

The information in the Proxy Statement under the heading "CORPORATE GOVERNANCE MATTERS—Compensation Committee Interlocks and Insider Participation," and the information under the heading "COMPENSATION DISCUSSION AND ANALYSIS" through the information under the heading "COMPENSATION COMMITTEE REPORT," are incorporated by reference in this Report.

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

We incorporate the information concerning holdings of our common stock by certain beneficial owners contained under the heading "CERTAIN BENEFICIAL OWNERS" in our Proxy Statement, and the information concerning beneficial ownership of our common stock by our directors and officers under the heading "SECURITY OWNERSHIP OF DIRECTORS AND OFFICERS" in our Proxy Statement by reference in this Report.

<i>Plan Category</i>	<i>Equity Compensation Plan Information</i>		
	<i>(a)</i>	<i>(b)</i>	<i>(c)</i>
	<i>Number of securities to be issued upon exercise of outstanding options, warrants and rights (1)</i>	<i>Weighted-average exercise price of outstanding options, warrants and rights</i>	<i>Number of securities remaining available for future issuance under equity compensation plans excluding securities reflected in column (a)(1)</i>
Equity compensation plans approved by security holders (2)	6,869,535 (3)	\$ 28.06 (3)	7,108,955
Equity compensation plans not approved by security holders	N/A	N/A	N/A
Total	6,869,535	\$ 28.06 (3)	7,108,955

- (1) Number of shares is subject to adjustment for changes in capitalization for stock splits and stock dividends and similar events.
- (2) Consists of the 2000 Long Term Incentive Plan, the 2003 Long Term Incentive Plan, The 2006 Long Term Incentive Plan, the 2009 Long Term Incentive Plan, the 2014 Long Term Incentive Plan, the 2016 Long Term Incentive Plan, the 2018 Long Term Incentive Plan, the 2021 Long Term Incentive Plan and the 1997 Stock Plan for Non-employee Directors.
- (3) Includes:
 - 5,438,720 shares issuable upon exercise of options with a weighted-average exercise price of \$29.36, and a weighted-average remaining term of 6.2 years,
 - 153,220 shares issuable under restricted stock unit grants, with a weighted-average remaining term of 0.4 years,
 - 1,034,566 shares issuable in connection with outstanding performance share awards, with a weighted-average term of 1.5 years remaining in the performance measurement period, and
 - 243,029 shares under the 1997 Stock Plan for Non-employee Directors which represent stock grants for retainers, other board and committee fees and dividends on deferred stock under the plan.

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

We incorporate the information under the headings "CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS" and "CORPORATE GOVERNANCE MATTERS—Which Board Members Are Independent?" in our Proxy Statement by reference in this Report.

Item 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Our independent registered public accounting firm is KPMG LLP, St. Louis, MO, Auditor Firm ID: 185.

We incorporate the information concerning the accounting fees and services of our independent registered public accounting firm, KPMG LLP, under the heading ITEM 4—"PROPOSAL TO RATIFY APPOINTMENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM" in our Proxy Statement by reference in this Report.

PART IV**Item 15. EXHIBITS AND CONSOLIDATED FINANCIAL STATEMENT SCHEDULES****(a) 1. Consolidated Financial Statements**

Consolidated financial statements of the registrant are included in Item 8 above.

2. Financial Statement Schedules

Schedules not included herein are omitted because they are inapplicable or not required or because the required information is given in the consolidated financial statements and notes thereto.

3. Exhibits

The following exhibits are filed with this Annual Report on Form 10-K, unless incorporated by reference. Management contracts and compensatory plans and arrangements are listed as Exhibits 10.1 through 10.25. We are party to a number of other instruments defining the rights of holders of long-term debt. No such instrument authorizes an amount of securities in excess of 10% of the total assets of Olin and its subsidiaries on a consolidated basis. Olin agrees to furnish a copy of each instrument to the Commission upon request.

Exhibit	Exhibit Description
1	Underwriting Agreement dated as of July 11, 2019, between Olin Corporation and J.P. Morgan Securities LLC, as representative of the several underwriters named therein—Exhibit 1.1 to Olin’s Form 8-K filed July 16, 2019*
2	Merger Agreement dated as of March 26, 2015, among The Dow Chemical Company, Blue Cube Spinco Inc., Olin Corporation and Blue Cube Acquisition Corp.—Exhibit 2.1 to Olin’s Form 8-K filed March 27, 2015*
3.1	Amended and Restated Articles of Incorporation of Olin Corporation as amended effective April 24, 2020—Exhibit 3.1 to Olin’s Form 8-K filed April 28, 2020*
3.2	Bylaws of Olin Corporation as amended effective February 22, 2023
4.1	Description of Olin Corporation Securities registered under Section 12 of the Exchange Act
4.2	Trust Indenture effective October 1, 2010 between The Industrial Development Authority of Washington County and U.S. Bank National Association, as trustee—Exhibit 4.1 to Olin’s Form 8-K filed October 20, 2010*
4.3	Loan Agreement effective October 1, 2010 between The Industrial Development Authority of Washington County and Olin Corporation—Exhibit 4.2 to Olin’s Form 8-K filed October 20, 2010*
4.4	Bond Purchase Agreement dated October 14, 2010 between The Industrial Development Authority of Washington County, Olin Corporation and PNC Bank, National Association, as administrative agent—Exhibit 4.3 to Olin’s Form 8-K filed October 20, 2010*
4.5	Trust Indenture effective December 1, 2010 between Mississippi Business Finance Corporation and U.S. Bank National Association—Exhibit 4.1 to Olin’s Form 8-K filed December 10, 2010*
4.6	Third Supplemental Indenture dated as of August 22, 2012 between Olin Corporation and U.S. Bank National Association—Exhibit 4.1 to Olin’s Form 8-K filed August 22, 2012*
4.7	Fourth Supplemental Indenture dated as of March 9, 2017 between Olin Corporation and U.S. Bank National Association—Exhibit 4.3 to Olin’s Form 8-K filed March 9, 2017*
4.8	Fifth Supplemental Indenture dated January 16, 2018 between Olin Corporation and U.S. Bank National Association, as trustee, governing the Senior Notes—Exhibit 4.1 to Olin’s Form 8-K filed January 19, 2018*
4.9	Sixth Supplemental Indenture dated July 16, 2019 between Olin Corporation and U.S. Bank National Association, as trustee, governing the Senior Notes—Exhibit 4.1 to Olin’s Form 8-K filed July 16, 2019*
4.10	Seventh Supplemental Indenture dated September 30, 2020 between Olin Corporation and U. S. Bank National Association, as trustee, governing the Senior Notes—Exhibit 4.1 to Olin’s Form 10-Q filed November 5, 2020*
4.11	Loan Agreement effective December 1, 2010 between Mississippi Business Finance Corporation and Olin Corporation—Exhibit 4.2 to Olin’s Form 8-K filed December 10, 2010*
4.12	Bond Purchase Agreement dated December 9, 2010 between Mississippi Business Finance Corporation, Olin Corporation and PNC Bank, National Association, as administrative agent—Exhibit 4.3 to Olin’s Form 8-K filed December 10, 2010*
4.13	Amended and Restated Credit and Funding Agreement dated December 9, 2010 between Olin Corporation, as borrower; PNC Bank, National Association, as administrative agent; PNC Capital Markets LLC, as lead arranger; and the Lenders party thereto—Exhibit 4.4 to Olin’s Form 8-K filed December 10, 2010*

- 4.14 [First Amendment dated December 27, 2010 to the Amended and Restated Credit and Funding Agreement dated December 9, 2010 between Olin Corporation, as borrower, PNC Bank, National Association, as administrative agent; PNC Capital Markets LLC, as lead arranger; and the Lenders party thereto—Exhibit 4.4 to Olin’s Form 8-K filed December 30, 2010*](#)
- 4.15 [Second Amendment dated April 27, 2012 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.2 to Olin’s Form 8-K filed May 3, 2012*](#)
- 4.16 [Third Amendment dated June 23, 2014 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.2 to Olin’s Form 8-K filed June 25, 2014*](#)
- 4.17 [Amendment No. 4 dated June 23, 2015 to the Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent—Exhibit 10.3 to Olin’s Form 8-K filed June 29, 2015*](#)
- 4.18 [Fifth Amendment dated September 29, 2016 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.1 to Olin’s Form 10-Q filed May 3, 2017*](#)
- 4.19 [Sixth Amendment dated March 9, 2017 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.2 to Olin’s Form 8-K filed March 9, 2017*](#)
- 4.20 [Seventh Amendment dated July 16, 2019 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.3 to Olin’s Form 8-K filed July 16, 2019*](#)
- 4.21 [Eighth Amendment dated December 20, 2019 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.1 to Olin’s Form 8-K filed December 20, 2019*](#)
- 4.22 [Ninth Amendment dated May 8, 2020 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.1 to Olin’s Form 8-K filed May 11, 2020*](#)
- 4.23 [Tenth Amendment to Amended and Restated Credit and Funding Agreement, dated as of February 24, 2021, among Olin Corporation, the Lenders \(as defined therein\), and PNC Bank, National Association, as Administrative Agent—Exhibit 4.1 to Olin’s Form 8-K filed March 1, 2021*](#)
- 4.24 [Eleventh Amendment dated August 30, 2021 to Amended and Restated Credit and Funding Agreement dated December 9, 2010 among Olin Corporation, Olin Winchester, LLC, the Lenders as named therein, and PNC Bank, National Association, as administrative agent for the Lenders—Exhibit 4.1 to Olin’s Form 10-Q filed October 22, 2021*](#)
- 4.25 [Twelfth Amendment to Amended and Restated Credit and Funding Agreement, dated as of October 11, 2022, among Olin Corporation, the Lenders \(as defined therein\), and PNC Bank, National Association, as administrative agent - Exhibit 4.1 to Olin's Form 8-K filed October 12, 2022*](#)
- 4.26 [Form of 5.50% Senior Notes due 2022—Exhibit 4.2 to Olin’s Form 8-K filed August 22, 2012*](#)
- 4.27 [Forward Purchase Agreement dated as of March 9, 2017, among Olin Corporation, the Lenders as named therein, and PNC Bank, National Association, as administrative agent—Exhibit 4.1 to Olin’s Form 8-K filed March 9, 2017*](#)
- 4.28 [First Amendment dated August 30, 2021 to Forward Purchase Agreement dated March 9, 2017, among Olin Corporation, Olin Winchester, LLC, the Lenders as named therein, and PNC Bank, National Association, as administrative agent—Exhibit 4.2 to Olin’s Form 10-Q filed October 22, 2021*](#)
- 4.29 [Senior Notes Indenture dated May 19, 2020 among Olin Corporation, as issuer, and U.S. Bank National Association, as trustee, governing the Senior Notes—Exhibit 4.1 to Olin’s Form 8-K filed May 20, 2020*](#)
- 4.30 [First Supplemental Indenture dated September 30, 2020 between Olin Corporation, as issuer, as issuer, and U.S. Bank National Association, as trustee, governing the 9.500% Senior Notes due 2025—Exhibit 4.4 to Olin’s Form 10-Q filed November 5, 2020*](#)
- 4.31 [Second Supplemental Indenture dated September 30, 2020 between Olin Corporation, as issuer, as issuer, and U.S. Bank National Association, as trustee, governing the 9.500% Senior Notes due 2025—Exhibit 4.1 to Olin’s Form 8-K filed November 16, 2021*](#)
- 4.32 [Form of 5.125% Senior Notes due 2027—Exhibit 4.4 \(included in Exhibit 4.3\) to Olin’s Form 8-K filed March 9, 2017*](#)
- 4.33 [Form of 5.000% Senior Notes due 2030—Exhibit 4.1 to Olin’s Form 8-K filed January 19, 2018*](#)
- 4.34 [Form of 5.625% Senior Notes due 2029—Exhibit 4.2 \(included in Exhibit 4.1\) to Olin’s Form 8-K filed July 16, 2019*](#)
- 4.35 [Form of 9.500% Senior Notes due 2025—Exhibit 4.2 \(included in Exhibit 4.1\) to Olin’s Form 8-K filed May 20, 2020*](#)

4.36	Receivables Financing Arrangement dated December 20, 2016 by and among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 4(x) to Olin’s Form 10-K filed February 28, 2017*
4.37	Amendment No. 1 dated July 16, 2019 to Receivables Financing Arrangement and Reaffirmation of Performance Guaranty dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 10.2 to Olin’s Form 8-K filed July 16, 2019*
4.38	Amendment No. 2 dated March 27, 2020 to Receivables Financing Arrangement and Reaffirmation of Performance Guaranty dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 10.1 to Olin’s Form 8-K filed March 27, 2020*
4.39	Amendment No. 3 dated April 23, 2020 to Receivables Financing Arrangement and Reaffirmation of Performance Guaranty dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 10.1 to Olin’s Form 8-K filed April 23, 2020*
4.40	Amendment No. 4 dated May 8, 2020 to Receivables Financing Arrangement and Reaffirmation of Performance Guaranty dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 10.2 to Olin’s Form 8-K filed May 11, 2020*
4.41	Amendment No. 5 dated December 28, 2020 to Receivables Financing Arrangement and Reaffirmation of Performance Guaranty dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 4.46 to Olin’s Form 10-K filed February 22, 2021*
4.42	Amendment No. 6 dated February 24, 2021 to Receivables Financing Arrangement and Reaffirmation of Performance Guaranty dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 4.1 to Olin’s Form 10-Q filed April 28, 2021*
4.43	Amendment No. 7 dated September 28, 2021 to Receivables Financing Agreement dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 10.1 to Olin’s Form 8-K filed September 29, 2021*
4.44	Amendment No. 8 dated January 20, 2022 to Receivables Financing Agreement dated December 20, 2016 among Olin Corporation, Olin Finance Company, LLC, PNC Bank, National Association, PNC Capital Markets LLC and the Lender parties thereto—Exhibit 4.53 to Olin’s Form 10-K filed February 24, 2022*
4.45	Amendment No. 9 to Receivables Financing Agreement and Reaffirmation of Performance Guaranty, dated as of October 11, 2022, among Olin Corporation, as servicer, Olin Finance Company, LLC, as borrower, PNC Bank, National Association, as administrative agent, PNC Capital Markets LLC, as structuring agent, and the Lender parties thereto—Exhibit 10.2 to Olin’s Form 10Q filed October 27, 2022*
10.1	Senior Executive Pension Plan amended and restated effective October 24, 2008—Exhibit 10.1 to Olin’s Form 10-Q filed October 27, 2008*
10.2	Supplemental Contributing Employee Ownership Plan as amended and restated effective January 1, 2018—Exhibit 99.1 to Olin’s Form 8-K filed December 12, 2017*
10.3	Olin Corporation Change in Control Severance Plan for Section 16(b) Officers effective January 27, 2019—Exhibit 10.1 to Olin’s Form 8-K filed December 14, 2018*
10.4	Olin Corporation Severance Plan for Section 16(b) Officers effective January 27, 2019—Exhibit 10.2 to Olin’s Form 8-K filed December 14, 2018*
10.5	Amended and Restated 1997 Stock Plan for Non-employee Directors codified to reflect amendments adopted through October 27, 2021—Exhibit 10.5 to Olin’s Form 10-K filed February 24, 2022*
10.6	Description of Restricted Stock Unit Awards granted under one of Olin’s Long Term Incentive Plans
10.7	Supplementary and Deferral Benefit Pension Plan as amended and restated effective October 24, 2008—Exhibit 10.2 to Olin’s Form 10-Q filed October 27, 2008*
10.8	Amended and Restated Olin Corporation 2000 Long Term Incentive Plan codified as of January 27, 2019—Exhibit 10.1 to Olin’s Form 8-K filed January 30, 2019*
10.9	Amended and Restated Olin Corporation 2003 Long Term Incentive Plan codified as of January 27, 2019—Exhibit 10.2 to Olin’s Form 8-K filed January 30, 2019*
10.10	Amended and Restated Olin Corporation 2006 Long Term Incentive Plan codified as of January 27, 2019—Exhibit 10.3 to Olin’s Form 8-K filed January 30, 2019*
10.11	Amended and Restated Olin Corporation 2009 Long Term Incentive Plan codified as of January 27, 2019—Exhibit 10.4 to Olin’s Form 8-K filed January 30, 2019*
10.12	Amended and Restated Olin Corporation 2014 Long Term Incentive Plan codified as of January 27, 2019—Exhibit 10.5 to Olin’s Form 8-K filed January 30, 2019*

10.13	Amended and Restated Olin Corporation 2016 Long Term Incentive Plan codified as of January 27, 2019—Exhibit 10.6 to Olin’s Form 8-K filed January 30, 2019*
10.14	Amended and Restated Olin Corporation 2018 Long Term Incentive Plan codified as of January 27, 2019—Exhibit 10.7 to Olin’s Form 8-K filed January 30, 2019*
10.15	Amended and Restated Olin Corporation 2021 Long Term Incentive Plan codified as of April 22, 2021—Exhibit 10.1 to Olin’s Form 8-K/A filed April 26, 2021*
10.16	Olin Corporation 2022 Short Term Incentive Program dated December 10, 2021—Exhibit 10.1 to Olin’s Form 8-K filed December 10, 2021*
10.17	Performance Share Program adopted February 22, 2023
10.18	Offer Letter dated July 14, 2020 by and between Scott M. Sutton and Olin Corporation—Exhibit 10.1 to Olin’s Form 8-K filed July 15, 2020*
10.19	Form of Non-Qualified Stock Option Award Certificate
10.20	Form of Restricted Stock Unit Award Certificate
10.21	Form of Performance Award Certificate
10.22	Form of Restricted Stock Unit and Performance Restricted Stock Unit Award Certificate and Description for Mr. Flaughter granted under Olin 2018 Long Term Incentive Plan—Exhibit 10.23 to Olin’s Form 10-K filed February 22, 2021*
10.23	Restricted Stock Award to Damian Gumpel dated December 10, 2021 and related Description—Exhibit 10.2 to Olin’s Form 8-K filed December 10, 2021*
10.24	Summary of Stock Option/Performance Share Continuation Provisions for Olin Employees as amended effective September 1, 2021
10.25	Olin Corporation Contributing Employee Ownership Plan Amended and Restated effective as of October 24, 2008, and as amended effective September 29, 2015—Exhibit 99.1 to Olin’s Form S-8 filed February 16, 2016*
10.26	Distribution Agreement between Olin Corporation and Arch Chemicals, Inc., dated as of February 1, 1999—Exhibit 2.1 to Olin’s Form 8-K filed February 23, 1999*
10.27	Note Purchase Agreement dated December 22, 1997 between the SunBelt Chlor Alkali Partnership and the Purchasers named therein—Exhibit 99.5 to Olin’s Form 8-K filed December 3, 2001*
10.28	Guarantee Agreement dated December 22, 1997 between Olin Corporation and the Purchasers named therein—Exhibit 99.6 to Olin’s Form 8-K filed December 3, 2001*
10.29	Subordination Agreement dated December 22, 1997 between Olin Corporation and the Subordinated Parties named therein—Exhibit 99.7 to Olin’s Form 8-K filed December 3, 2001*
10.30	Credit Agreement dated June 23, 2015 among Olin Corporation, Olin Canada ULC, the Lenders named therein and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.1 to Olin’s Form 8-K filed June 29, 2015*
10.31	Credit Agreement dated June 23, 2015 among Blue Cube Spinco Inc., the Lenders as named therein and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.2 to Olin’s Form 8-K filed June 29, 2015*
10.32	Amendment Agreement dated June 23, 2015 among Olin, Olin Canada ULC, Blue Cube Spinco Inc., the Lenders as named therein, and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.5 to Olin’s Form 8-K filed October 5, 2015*
10.33	Second Amendment Agreement, dated as of March 9, 2017 among Olin Corporation, Olin Canada ULC and Blue Cube Spinco Inc., the Lenders named therein and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.1 to Olin’s Form 8-K filed March 9, 2017*
10.34	Third Amendment Agreement, dated as of June 28, 2018, among Olin Corporation, Olin Canada ULC and Blue Cube Spinco LLC, the Lenders named therein and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.2 to Olin’s Form 10-Q filed August 1, 2018*
10.35	Separation Agreement dated March 26, 2015 between The Dow Chemical Company and Blue Cube Spinco Inc.—Exhibit 10.1 to Olin’s Form 8-K filed March 27, 2015*
10.36	Credit Agreement dated August 25, 2015 among Olin Corporation, Olin subsidiaries, the Lenders as named therein and Sumitomo Mitsui Banking Corporation, as administrative agent—Exhibit 10.1 to Olin’s Form 8-K filed August 25, 2015*
10.37	Amended and Restated Credit Agreement, dated as of October 5, 2015 as Amended and Restated by the Second Amendment Agreement dated as of March 9, 2017 among Olin Corporation, Olin Canada ULC and Blue Cube Spinco Inc., the Lenders named therein and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.2 to Olin’s Form 8-K filed March 9, 2017*
10.38	Credit Agreement dated July 16, 2019 among Olin Corporation, Blue Cube Spinco, LLC, the Lenders and Issuing Banks as named therein and Wells Fargo Bank, National Association—Exhibit 10.1 to Olin’s Form 8-K filed July 16, 2019*
10.39	First Amendment dated December 20, 2019 to Credit Agreement dated July 16, 2019 among Olin Corporation, Blue Cube Spinco, LLC, the Lenders and Issuing Banks as named therein and Wells Fargo Bank, National Association—Exhibit 10.1 to Olin’s Form 8-K filed December 20, 2019*

10.40	Second Amendment dated May 8, 2020 to Credit Agreement dated July 16, 2019 among Olin Corporation, Blue Cube Spinco, LLC, the Lenders and Issuing Banks as named therein and Wells Fargo Bank, National Association—Exhibit 10.1 to Olin’s Form 8-K filed May 11, 2020*
10.41	Third Amendment to Credit Agreement, dated as of February 24, 2021, among Olin Corporation, the guarantors party thereto, the Lenders and Issuing Banks (as defined therein) and Bank of America, N.A., as Administrative Agent—Exhibit 10.1 to Olin’s Form 8-K filed March 1, 2021*
10.42	Guaranty Agreement dated October 5, 2015 among Blue Cube Spinco Inc., Olin Corporation and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.2 to Olin’s Form 8-K filed October 5, 2015*
10.43	Borrowing Subsidiary Agreement dated October 5, 2015 among Olin Corporation, Blue Cube Spinco Inc. and Wells Fargo Bank, National Association, as administrative agent—Exhibit 10.3 to Olin’s Form 8-K filed October 5, 2015*
10.44	Guaranty Joinder dated October 5, 2015 among Olin subsidiaries, Blue Cube Spinco Inc. and Sumitomo Mitsui Banking Corporation, as administrative agent—Exhibit 10.4 to Olin’s Form 8-K filed October 5, 2015*
21	Subsidiaries of Olin Corporation
23	Consent of KPMG LLP
31.1	Section 302 Certification Statement of Chief Executive Officer
31.2	Section 302 Certification Statement of Chief Financial Officer
32	Section 906 Certification Statement of Chief Executive Officer and Chief Financial Officer
101.INS	XBRL Instance Document (the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the XBRL document)
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (embedded in the Exhibit 101 Interactive Data Files)

*Previously filed as indicated and incorporated herein by reference. Exhibits incorporated by reference are located in SEC file No. 1-1070 unless otherwise indicated.

Any exhibit is available from Olin by writing to the Secretary, Olin Corporation, 190 Carondelet Plaza, Suite 1530, Clayton, MO 63105 USA.

Shareholders may obtain information from EQ Shareowner Services, our registrar and transfer agent, who also manages our Automatic Dividend Reinvestment Plan by writing to: EQ Shareowner Services, 1110 Centre Pointe Curve, Suite 101, Mendota Heights, MN 55120 USA, by telephone from the United States at 800-401-1957 or outside the United States at 651-450-4064 or via the Internet under "Contact Us" at www.shareowneronline.com.

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.

OLIN CORPORATION

By: /s/ Scott Sutton

Scott Sutton

Chairman, President and Chief Executive Officer

Date: February 23, 2023

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

<i>Signature</i>	<i>Title</i>	<i>Date</i>
<u>/s/ SCOTT SUTTON</u> Scott Sutton	Chairman, President and Chief Executive Officer (Principal Executive Officer) and Director	February 23, 2023
<u>/s/ HEIDI S. ALDERMAN</u> Heidi S. Alderman	Director	February 23, 2023
<u>/s/ BEVERLEY A. BABCOCK</u> Beverley A. Babcock	Director	February 23, 2023
<u>/s/ C. ROBERT BUNCH</u> C. Robert Bunch	Director	February 23, 2023
<u>/s/ MATTHEW S. DARNALL</u> Matthew S. Darnall	Director	February 23, 2023
<u>/s/ EARL L. SHIPP</u> Earl L. Shipp	Director	February 23, 2023
<u>/s/ WILLIAM H. WEIDEMAN</u> William H. Weideman	Director	February 23, 2023
<u>/s/ W. ANTHONY WILL</u> W. Anthony Will	Director	February 23, 2023
<u>/s/ CAROL A. WILLIAMS</u> Carol A. Williams	Director	February 23, 2023
<u>/s/ TODD A. SLATER</u> Todd A. Slater	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 23, 2023
<u>/s/ RANDEEN. SUMNER</u> Randee N. Sumner	Vice President and Controller (Principal Accounting Officer)	February 23, 2023

BYLAWS

OF

OLIN CORPORATION

As Amended
Effective
February 22, 2023

**BYLAWS
of
OLIN CORPORATION**

**ARTICLE I.
MEETINGS OF SHAREHOLDERS.**

SECTION 1. Place of Meetings. All meetings of the shareholders of Olin Corporation (hereinafter called the "Corporation") shall be held at such place, either within or without the Commonwealth of Virginia, as may from time to time be fixed by the Board of Directors of the Corporation (hereinafter called the "Board"). The Board may also determine, in its sole discretion, that any meeting of shareholders of the Corporation may be held by means of remote communication.

SECTION 2. Annual Meetings. The annual meeting of the shareholders of the Corporation for the election of directors and for the transaction of such other business as may properly come before the meeting shall be held on the last Thursday in April in each year (or, if that day shall be a legal holiday, then on the next succeeding business day), or on such other date and at such time as the Board may determine in its discretion.

SECTION 3. Special Meetings. A special meeting of the shareholders for any purpose or purposes, unless otherwise provided by law or in the Articles of Incorporation of the Corporation as from time to time amended (hereinafter called the "Articles"), may be held at any time upon the call of the Board, the Chair of the Board, the President or the Secretary, on the written demand describing the purpose or purposes of the proposed special meeting of the shareholders, signed, dated and delivered by the holders of a majority of the shares of the issued and outstanding stock of the Corporation entitled to vote at the meeting. Only business within the purpose or purposes described in the meeting notice may be conducted at a special meeting of the shareholders.

SECTION 4. Notice of Meetings. Except as otherwise provided by law or the Articles, not less than 10 nor more than 60 calendar days' notice in writing of the place (if any), day, hour and purpose or purposes of each meeting of the shareholders, whether annual or special, shall be given to each shareholder of record of the Corporation entitled to vote at such meeting, in any manner permitted by the Virginia Stock Corporation Act (the "VSCA"), including electronic transmission (as defined in the VSCA). Notice of any meeting of shareholders shall not be required to be given to any shareholder who shall attend the meeting in person or by proxy, unless attendance is for the express purpose of objecting to the transaction of any business because the meeting was not lawfully called or convened, or who shall waive notice thereof in writing signed by the shareholder before, at or after such meeting. Notice of any adjourned meeting need not be given, except when expressly required by law.

SECTION 5. Quorum. Shares representing a majority of the votes entitled to be cast on a matter by all classes or series which are entitled to vote thereon, represented in person or by proxy at any meeting of the shareholders, shall constitute a quorum for the transaction of business thereat with respect to such matter, unless otherwise provided by the VSCA or the Articles. In the absence of a quorum at any such meeting or any adjournment or adjournments thereof, the chair of such meeting or shares representing a majority of the votes cast on the matter of adjournment, either in person or by proxy, may adjourn such meeting from time to time until a quorum is obtained. At any such adjourned meeting at which a quorum has been obtained, any business may be transacted which might have been transacted at the meeting as originally called.

SECTION 6. Voting. Unless otherwise provided by the VSCA or the Articles, at each meeting of the shareholders each shareholder entitled to vote at such meeting shall be entitled to one vote for each share of stock standing in his or her name on the books of the Corporation upon any date fixed as hereinafter provided, and may vote either in person or by proxy. Unless so directed by the chair of the meeting, the vote on any matter need not be by ballot.

A shareholder or a shareholder's duly authorized attorney-in-fact may execute a writing authorizing another person or persons to act for such shareholder as proxy. Execution may be accomplished by the shareholder or such shareholder's duly authorized attorney-in-fact or authorized officer, director, employee or agent signing such writing or causing such shareholder's signature to be affixed to such writing by any reasonable means including, but not limited to, by facsimile signature.

A shareholder or a shareholder's duly authorized attorney-in-fact may authorize another person or persons to act for such shareholder as proxy by transmitting or authorizing an internet transmission, telephone transmission or other means of electronic transmission (as defined in the VSCA) to the person who will be the holder of the proxy or to a proxy solicitation firm, proxy support service organization or like agent duly authorized by the person who will be the holder of the proxy to receive such transmission, provided that any such transmission must either set forth or be submitted with information from which the judges or inspectors of election can determine that the transmission was authorized by the shareholder or the shareholder's duly authorized attorney-in-fact. If it is determined that such transmissions are valid, the judges or inspectors of election shall specify the information upon which they relied. Any copy, facsimile telecommunication or other reliable reproduction of the writing or transmission created pursuant to this Section 6 may be substituted or used in lieu of the original writing or transmission for any and all purposes for which the original writing or transmission could be used, provided that such copy, facsimile telecommunication or other reproduction shall be a complete reproduction of the entire original writing or transmission. Any shareholder directly or indirectly soliciting proxies from other shareholders must use a proxy card color other than white, which shall be reserved for the exclusive use by the Board.

SECTION 7. Inspectors. One or more inspectors of election for any meeting of shareholders may be appointed by the chair of such meeting, for the purpose of receiving and taking charge of proxies and ballots and deciding all questions as to the

qualification of voters, the validity of proxies and ballots and the number of votes properly cast and performing such other functions of that position as are provided in, and in accordance with the procedures set forth in, the VSCA.

SECTION 8. Conduct of Meeting. The chair of the meeting at each meeting of shareholders shall have all the powers and authority vested in presiding officers by law or practice, without restriction, as well as the authority to conduct an orderly meeting and to impose reasonable limits on the amount of time taken up in remarks by any one shareholder.

SECTION 9. Business Proposed by a Shareholder. To be properly brought before a meeting of shareholders, business must be (i) specified in the notice of meeting (or any supplement thereto) given by or at the direction of the Board, (ii) otherwise properly brought before the meeting by or at the direction of the Board, the Chair of the Board or the President or (iii) in the case of an annual meeting of shareholders or a special meeting called by the Secretary on the written request of shareholders in accordance with these Bylaws, properly brought before the meeting by a shareholder. In addition to any other applicable requirements, for business to be properly brought before a meeting by a shareholder, the shareholder must have given timely notice thereof in writing to the Secretary of the Corporation at its principal executive offices. To be timely, a shareholder's notice must be given, either by personal delivery or by United States registered or certified mail, postage prepaid, to the Secretary of the Corporation in the case of an annual meeting, not later than (i) 120 calendar days before the anniversary of the immediately preceding annual meeting or (ii) if no annual meeting was held in the previous year or the date of the annual meeting is more than 30 calendar days before or more than 60 calendar days after such anniversary date, not later than the 90th calendar day prior to such annual meeting of shareholders or, if later, the 10th calendar day following the date on which public disclosure of the date of such annual meeting of shareholders is first made and in the case of a special meeting called at the request of shareholders, in accordance with the procedures set forth in Section 10 of Article I of these Bylaws. A shareholder's notice to the Secretary shall set forth as to each matter the shareholder proposes to bring before the meeting (i) a brief description of the business desired to be brought before the meeting, including the complete text of any resolutions to be presented at the meeting (including the text of any proposed amendment to these Bylaws in the event that such business includes a proposal to amend these Bylaws), and the reasons for conducting such business at the meeting, (ii) the name and address, as they appear on the Corporation's stock transfer books, of such shareholder proposing such business, the name and address of any beneficial owner on whose behalf the proposal is being made and the name and address of any of their respective affiliates or associates or other parties with whom such shareholder or such beneficial owner is acting in concert (each, an "Associated Person"), (iii) a representation that such shareholder is a shareholder of record and intends to appear in person or by proxy at such meeting to bring the business before the meeting specified in the notice, (iv) the class and number of shares of stock of the Corporation owned (directly or indirectly) beneficially and of record by the shareholder and any beneficial owner on whose behalf the proposal is being made, and any Associated Person, (v) a description of any agreement, arrangement or understanding (including any derivative or short positions, profit interests, options, warrants, convertible securities, stock

appreciation or similar rights, hedging transactions, and borrowed or loaned shares) that has been entered into as of the date of the shareholder's notice by, or on behalf of, such shareholder and such beneficial owner, and any Associated Person, whether or not such instrument or right shall be subject to settlement in an underlying class of stock of the Corporation (collectively, "Derivative Instruments"), the effect or intent of which is to mitigate loss to, manage risk or benefit of share price changes for, or increase or decrease the voting power of, such shareholder or such beneficial owner, or any Associated Person, with respect to shares of stock of the Corporation, or relates to the acquisition or disposition of any shares of stock of the Corporation, (vi) any proxy (other than a revocable proxy given in response to a solicitation statement filed pursuant to, and in accordance with, Section 14(a) of the Securities Exchange Act of 1934, as amended (the "Exchange Act")), voting trust, voting agreement or similar contract, arrangement, agreement or understanding pursuant to which the shareholder and any beneficial owner on whose behalf the proposal is being made, or any Associated Person, has a right to vote or direct the voting of any of the Corporation's securities, (vii) any rights to dividends on the shares of the Corporation owned beneficially by the shareholder and any Associated Person that are separated or separable from the underlying shares of the Corporation, (viii) any proportionate interest in shares of the Corporation or any Derivative Instruments held, directly or indirectly, by a general or limited partnership or limited liability company or similar entity in which the shareholder, the beneficial owner or any Associated Person is a general partner or, directly or indirectly, beneficially owns an interest in a general partner, is the manager, managing member or, directly or indirectly, beneficially owns an interest in the manager or managing member of a limited liability company or similar entity, (ix) any performance-related fees (other than an asset-based fee) that the shareholder, the beneficial owner or any Associated Person is entitled to based on the increase or decrease in the value of shares of the Corporation or Derivative Instruments, (x) any material interest of the shareholder and any beneficial owner on whose behalf the proposal is being made, and any Associated Person, in such business and (xi) any other information as reasonably requested by the Corporation. The shareholder shall (a) notify the Corporation of any inaccuracy or change (within two business days of becoming aware of such inaccuracy or change) in any information previously provided to the Corporation pursuant to this Section 9 and (b) promptly update and supplement information previously provided to the Corporation pursuant to this Section 9, if necessary, so that the information provided or required to be provided shall be true and complete (y) as of the record date for the meeting of shareholders and (z) as of the date that is 10 calendar days prior to the meeting of shareholders or any adjournment or postponement thereof, and such update and supplement shall be delivered to the Secretary of the Corporation at the Corporation's principal executive offices. The immediately foregoing provisions shall not be construed to extend any applicable deadlines hereunder, enable a shareholder to change the business proposed for the meeting after the advance notice deadlines hereunder have expired or limit the Corporation's rights with respect to any inaccuracies or other deficiencies in notices provided by a shareholder. Unless otherwise required by law, if the shareholder (or a qualified representative of the shareholder) does not appear at the meeting of shareholders to present such business, such proposal shall be disregarded and such business shall not be transacted, notwithstanding that the Corporation may have received proxies in respect of such vote.

In addition to the other requirements of this Section 9 with respect to any business proposed by a shareholder to be made at a meeting, each shareholder, any beneficial owner on whose behalf the proposal is being made and any Associated Person shall also comply with all applicable requirements of the Articles, these Bylaws and state and federal law, including the Exchange Act, with respect to any such proposal or the solicitation of proxies with respect thereto.

Notwithstanding anything in the Bylaws to the contrary, no business shall be conducted at a meeting except in accordance with the procedures set forth in this Section 9. The chair of a meeting shall, if the facts warrant, determine that the business was not brought before the meeting in accordance with the procedures prescribed by this Section 9. If the chair of the meeting should so determine, he or she shall so declare to the meeting, and the business not properly brought before the meeting shall not be transacted. Notwithstanding the foregoing provisions of this Section 9, a shareholder seeking to have a proposal included in the Corporation's proxy statement shall, in order to do so, comply with the requirements of Regulation 14A under the Exchange Act (including Rule 14a-8 or its successor provision).

SECTION 10. Special Meeting at Request of Shareholders.

(a) Any one or more holders of record of a majority of the issued and outstanding stock of the Corporation entitled to vote requesting the Corporation to call a special meeting of shareholders pursuant to Section 2 of Article Eighth of the Articles (collectively, the "Initiating Shareholder") shall give written notice of such request to the Secretary of the Corporation at its principal executive offices (the "Notice"). The Notice shall be sent in the manner and contain all the information that would be required in a notice to the Secretary given pursuant to Section 9 of this Article I.

(b) If the Initiating Shareholder owns of record a majority of the issued and outstanding stock of the Corporation entitled to vote and complies with the other requirements of Sections 9 and 10(a) of this Article I, as determined by the Secretary of the Corporation, the Corporation shall be required to call the special meeting of shareholders requested by the Initiating Shareholder.

(c) The record date for determining the shareholders of record entitled to vote at a special meeting called pursuant to this Section 10 shall be fixed by the Board and shall be within 60 calendar days of the date the Secretary of the Corporation determines the Corporation is required to call such special meeting. Notice of the meeting shall be given by the Corporation in any manner permitted by the VSCA, including electronic transmission (as defined in the VSCA), to shareholders of record on such record date within 10 calendar days after the record date (or such longer period as may be necessary for the Corporation to file its proxy materials with, and receive and respond to the comments of, the Securities and Exchange Commission (the "SEC")), and the meeting will be held within 50 calendar days after the date of mailing of the notice, as determined by the Board.

(d) The business to be conducted at a special meeting called pursuant to this Section 10 shall be limited to the business set forth in the Notice and such other

business or proposals as the Board shall determine and shall be set forth in the notice of meeting. The Board or the Chair of the Board may determine other rules and procedures for the conduct of the meeting.

ARTICLE II. BOARD OF DIRECTORS.

SECTION 1. Number, Term, Election. The property, business and affairs of the Corporation shall be managed under the direction of the Board as from time to time constituted. The Board shall consist of nine directors, but the number of directors may be increased to any number, not more than 18 directors, or decreased to any number, not less than three directors, by amendment of these Bylaws. No director need be a shareholder. Each director shall stand for election for a term expiring at the next succeeding annual meeting of shareholders and until a successor shall have been elected and qualified or until such director's prior death, resignation, disqualification or removal. In case the number of directors shall be increased, the additional directors to fill the vacancies caused by such increase shall be elected in accordance with the provisions of Section 4 of Article VI of these Bylaws.

Except as provided in the following paragraph, each director shall be elected by a vote of the majority of the votes cast with respect to that director-nominee's election at a meeting for the election of directors at which a quorum is present. For purposes of this Section 1, a majority of the votes cast means that the number of shares voted "for" a director must exceed the number of shares voted "against" that director.

The foregoing paragraph shall not apply to any election of directors if there are more nominees for election than the number of directors to be elected, one or more of whom are properly proposed by shareholders, as of the last applicable date on which a shareholder may give proper notice of a nomination of a director pursuant to this Section 1. A nominee for director in an election to which this paragraph applies shall be elected by a plurality of the votes cast in such election.

Subject to the rights of holders of any preferred stock outstanding, nominations for the election of directors may be made by the Board or a committee appointed by the Board (each such nominee, a "Board Nominee") or by any shareholder entitled to vote in the election of directors generally (each such nominee, a "Shareholder Nominee"). However, any shareholder entitled to vote in the election of directors generally may nominate one or more persons for election as directors at a meeting only if written notice of such shareholder's intent to make such nomination or nominations has been given, either by personal delivery or by United States registered or certified mail, postage prepaid, to the Secretary of the Corporation, with respect to an annual meeting, not later than (i) 120 calendar days before the anniversary of the immediately preceding annual meeting or (ii) if no annual meeting was held in the previous year or the date of the annual meeting is more than 30 calendar days before or more than 60 calendar days after such anniversary date, not later than the 90th calendar day prior to such annual meeting of shareholders or, if later, the 10th calendar day following the date on

which public disclosure of the date of such annual meeting of shareholders is first made, or, with respect to any special meeting of shareholders called for the election of directors by the Board, not later than the seventh calendar day following the date on which notice of such meeting is first given to shareholders. Each such notice shall set forth:

(a) the name and address, as they appear on the Corporation's stock transfer books, of the shareholder giving the notice, the name and address of any beneficial owner on whose behalf the nomination is being made and the name and address of any Associated Person,

(b) a representation that such shareholder is a shareholder of record and intends to appear in person or by proxy at such meeting to nominate the person or persons specified in the notice,

(c) the class and number of shares of stock of the Corporation owned (directly or indirectly) beneficially and of record by such shareholder and any beneficial owner on whose behalf the notice is given and any Associated Person,

(d) a description of any Derivative Instrument that has been entered into as of the date of the shareholder's notice by, or on behalf of, such shareholder and such beneficial owner, and any Associated Person, whether or not such instrument or right shall be subject to settlement in an underlying class of stock of the Corporation, the effect or intent of which is to mitigate loss to, manage risk or benefit of share price changes for, or increase or decrease the voting power of, such shareholder or such beneficial owner, or any Associated Person, with respect to shares of stock of the Corporation, or relates to the acquisition or disposition of any shares of stock of the Corporation,

(e) any proxy (other than a revocable proxy given in response to a solicitation statement filed pursuant to, and in accordance with, Section 14(a) of the Exchange Act), voting trust, voting agreement or similar contract, arrangement, agreement or understanding pursuant to which the shareholder and any beneficial owner on whose behalf the nomination is being made, or any Associated Person, has a right to vote or direct the voting of any of the Corporation's securities,

(f) any rights to dividends on the shares of the Corporation owned beneficially by the shareholder and any Associated Person that are separated or separable from the underlying shares of the Corporation,

(g) any proportionate interest in shares of the Corporation or any Derivative Instruments held, directly or indirectly, by a general or limited partnership or limited liability company or similar entity in which the shareholder, the beneficial owner or any Associated Person is a general partner or, directly or indirectly, beneficially owns an interest in a general partner, is the manager, managing member or, directly or indirectly, beneficially owns an interest in the manager or managing member of a limited liability company or similar entity,

(h) any performance-related fees (other than an asset-based fee) that the shareholder, the beneficial owner or any Associated Person is entitled to based on the increase or decrease in the value of shares of the Corporation or Derivative Instruments,

(i) a description of all agreements, arrangements and understandings between such shareholder or such beneficial owner or any Associated Person and each Shareholder Nominee with respect to such Shareholder Nominee's service or duties as a nominee or director of the Corporation, including any direct or indirect confidentiality, compensation, reimbursement or indemnification arrangement in connection with such Shareholder Nominee's service or action as a nominee or director or any commitment or assurance as to how such Shareholder Nominee will act or vote on any matter,

(j) the information that would be required to be set forth in a Schedule 13D filed pursuant to Rule 13d-1(a) or an amendment pursuant to Rule 13d-2(a) if such statement were required to be filed under the Exchange Act and the rules and regulations promulgated thereunder by such shareholder and any beneficial owner on whose behalf the notice is given, and

(k) any other information as reasonably requested by the Corporation.

Each such shareholder's notice pursuant to this Section 1 shall also set forth:

(i) the name, age, business address and, if known, residence address of each Shareholder Nominee for whom the shareholder is proposing or intends to solicit proxies and of each Shareholder Nominee who would be presented for election at the annual meeting in the event of a need to change the shareholder's original slate,

(ii) the principal occupation or employment of each Shareholder Nominee,

(iii) the class and number of shares of stock of the Corporation that are owned beneficially and of record by each Shareholder Nominee,

(iv) any other information relating to each Shareholder Nominee that is required to be disclosed in solicitations of proxies for election of directors or is otherwise required to be disclosed under the VSCA or applicable listing standards of the primary exchange on which the Corporation's capital stock is listed or by the rules and regulations of the SEC promulgated under the Exchange Act, including any proxy statement filed pursuant thereto (in each case, assuming the election is contested),

(v) a representation as to whether the shareholder, the beneficial owner, if any, or any Associated Person intends to solicit proxies in support of director nominees other than Board Nominees in compliance with the requirements of

Rule 14a-19(b) under the Exchange Act, including a statement that the shareholder, the beneficial owner, if any, or any Associated Person intends to solicit the holders of shares representing at least 67% of the voting power of the shares entitled to vote in the election of directors, and

(vi) the written consent of such Shareholder Nominee to be named in proxy statements as a nominee and to serve as a director if elected for the full term.

The shareholder shall (1) notify the Corporation of any inaccuracy or change (within two business days of becoming aware of such inaccuracy or change) in any information previously provided to the Corporation pursuant to this Section 1 and (2) promptly update and supplement information previously provided to the Corporation pursuant to this Section 1, if necessary, so that the information provided or required to be provided shall be true and complete (y) as of the record date for the meeting and (z) as of the date that is 10 calendar days prior to the meeting or any adjournment or postponement thereof, and such update and supplement shall be delivered to the Secretary of the Corporation at the Corporation's principal executive offices.

In addition to the other requirements of this Section 1 with respect to any nomination proposed by a shareholder to be made at a meeting, each shareholder, any beneficial owner on whose behalf the nomination is being made and any Associated Person shall also comply with all applicable requirements of the Articles, these Bylaws and state and federal law, including the Exchange Act (including Rule 14a-19 thereunder), with respect to any such nomination or the solicitation of proxies with respect thereto. In addition to the other requirements of this Section 1, unless otherwise required by law, (i) no shareholder, beneficial owner or Associated Person shall solicit proxies in support of any nominees other than Board Nominees unless such shareholder, beneficial owner and Associated Person have complied with Rule 14a-19 under the Exchange Act in connection with the solicitation of such proxies, including the provision to the Corporation of notices required thereunder in a timely manner, and (ii) if such shareholder, beneficial owner or Associated Person (1) provides notice pursuant to Rule 14a-19(b) under the Exchange Act and (2) subsequently fails to comply with any of the requirements of Rule 14a-19 under the Exchange Act, then the Corporation shall disregard any proxies or votes solicited for such shareholder's nominees. Upon request by the Corporation, if any shareholder, beneficial owner or Associated Person provides notice pursuant to Rule 14a-19(b) under the Exchange Act, such shareholder, beneficial owner or Associated Person shall deliver to the Corporation, no later than five business days prior to the applicable meeting, reasonable evidence that such shareholder, beneficial owner or Associated Person has met the requirements of Rule 14a-19 under the Exchange Act.

The immediately foregoing provisions shall not be construed to extend any applicable deadlines hereunder, enable a shareholder to change the person or persons specified in the notice for election as director after the advance notice deadlines hereunder have expired or limit the Corporation's rights with respect to any inaccuracies or other deficiencies in notices provided by a shareholder. The Secretary of the

Corporation shall deliver each shareholder's notice under this Section 1 that has been timely received to the Board or a committee designated by the Board for review.

Unless otherwise required by law, if the shareholder (or a qualified representative of the shareholder) does not appear at the meeting of shareholders to nominate the individual set forth in the shareholder's notice of nomination as a director, such nomination shall be disregarded, notwithstanding that the Corporation may have received proxies in respect of such vote.

In addition to the information required to be provided by shareholders pursuant to this Section 1, each Shareholder Nominee shall provide to the Secretary of the Corporation the following information:

- (i) a completed copy of the Corporation's form of director's questionnaire and a written consent of the Shareholder Nominee to the Corporation following such processes for evaluation of such nominee as the Corporation follows in evaluating any person being considered for nomination to the Board of Directors, as provided by the Secretary of the Corporation;
- (ii) the Shareholder Nominee's agreement to comply with the Corporation's corporate governance, conflict of interest, confidentiality, share ownership and share trading policies, as provided by the Secretary of the Corporation;
- (iii) written confirmation that the Shareholder Nominee (A) does not have, and will not have or enter into, any agreement, arrangement or understanding as to how he or she will vote on any matter, if elected as a director of the Corporation, and (B) is not a party to, and will not become a party to, any agreement, arrangement or understanding with any person or entity, including any direct or indirect compensation, reimbursement or indemnification arrangement with any person or entity other than the Corporation in connection with such nominee's service or action as a director of the Corporation the terms of which have not been fully disclosed in advance to the Secretary of the Corporation;
- (iv) written disclosure of any transactions between the shareholder and the Shareholder Nominee within the preceding five years; and
- (v) any additional information as necessary to permit the Board to determine if each Shareholder Nominee is independent under applicable listing standards with respect to service on the Board or any committee thereof, under any applicable rules of the SEC, and under any publicly disclosed standards used by the Board of Directors in determining and disclosing the independence and qualifications of the Corporation's directors.

Notwithstanding anything in the Bylaws to the contrary, no nomination for the election of a director shall be considered and voted upon at a meeting except in accordance with the procedures set forth in this Section 1. The chair of a meeting shall,

if the facts warrant, determine that a nomination for the election of a director was not brought before the meeting in accordance with the procedures prescribed by this Section 1. If the chair of the meeting should so determine, he or she shall so declare to the meeting, and the nomination for the election of such director not properly brought before the meeting shall not be considered and voted upon.

SECTION 2. Compensation. Each director, in consideration of his or her serving as such, shall be entitled to receive from the Corporation such amount per annum or such fees for attendance at Board and committee meetings, or both, in cash or other property, including securities of the Corporation, as the Board shall from time to time determine, together with reimbursements for the reasonable expenses incurred by him or her in connection with the performance of his or her duties. Nothing contained herein shall preclude any director from serving the Corporation, or any subsidiary or affiliated corporation, in any other capacity and receiving appropriate compensation therefor. If the Board adopts a resolution to that effect, any director may elect to defer all or any part of the annual and other fees hereinabove referred to for such period and on such terms and conditions as shall be permitted by such resolution.

SECTION 3. Place of Meetings. The Board may hold its meetings at such place or places within or without the Commonwealth of Virginia as it may from time to time by resolution determine or as shall be specified or fixed in the respective notices or waivers of notice thereof.

SECTION 4. Organization Meeting. After each annual election of directors, as soon as conveniently may be, the newly constituted Board shall meet for the purposes of organization. At such organization meeting, the newly constituted Board shall elect officers of the Corporation and transact such other business as shall come before the meeting. Notice of organization meetings of the Board need not be given. Any organization meeting may be held at any other time or place which shall be specified in a notice given as hereinafter provided for special meetings of the Board, or in a waiver of notice thereof signed by all the directors.

SECTION 5. Regular Meetings. Regular meetings of the Board may be held at such time and place as may from time to time be specified in a resolution adopted by the Board then in effect; and, unless otherwise required by such resolution, or by law, notice of any such regular meeting need not be given.

SECTION 6. Special Meetings. Special meetings of the Board shall be held whenever called by the Chair of the Board, the Chief Executive Officer or, at the request of any three directors, by the Secretary. Notice of a special meeting shall be mailed to each director, addressed to him or her at his or her residence or usual place of business, not later than the second calendar day before the day on which such meeting is to be held, or may be given to him or her by electronic transmission (as defined in the VSCA). Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the Board need be specified in the notice of such meeting, unless required by the Articles or by the VSCA.

SECTION 7. Quorum. At each meeting of the Board the presence of a majority of the number of directors fixed by these Bylaws shall be necessary to constitute a quorum. The act of a majority of the directors present at a meeting at which a quorum shall be present shall be the act of the Board, except as may be otherwise required by the Articles. Any meeting of the Board may be adjourned by a majority vote of the directors present at such meeting or by the Chair of the Board.

SECTION 8. Waivers of Notice of Meetings. Anything in these Bylaws or in any resolution adopted by the Board to the contrary notwithstanding, notice of any meeting of the Board need not be given to any director if such notice shall be waived in writing signed by such director before, at or after the meeting, or if such director shall be present at the meeting (unless at the beginning of the meeting, or promptly upon such director's arrival, he or she objects to holding the meeting or transacting business at the meeting and does not thereafter vote for or assent to action taken at the meeting). Any meeting of the Board shall be a legal meeting without any notice having been given or regardless of the giving of any notice or the adoption of any resolution in reference thereto, if every member of the Board, without objection, shall be present thereat. Except as otherwise provided by law or these Bylaws, waivers of notice of any meeting of the Board need not contain any statement of the purpose of the meeting.

SECTION 9. Telephone Meetings. Members of the Board or any committee may participate in a meeting of the Board or such committee by means of a conference telephone or other means of communications whereby all directors participating may simultaneously hear each other during the meeting, and participation by such means shall constitute presence in person at such meeting.

SECTION 10. Actions Without Meetings. Any action that may be taken at a meeting of the Board or of a committee may be taken without a meeting if a consent in writing, setting forth the action, shall be signed, either before or after such action, by all of the directors or all of the members of the committee, as the case may be. Such consent shall have the same force and effect as a unanimous vote.

SECTION 11. Chair of the Board. A Chair of the Board shall be elected by the Board and shall preside at all meetings of the Board and of the shareholders and, in the absence of the Chair of the Executive Committee, at all meetings of the Executive Committee. He or she shall perform such other duties and exercise such other powers as may from time to time be prescribed by the Board.

ARTICLE III.¹ INDEMNIFICATION AND LIMIT ON LIABILITY.

(a) Every person who is or was a director, officer or employee of the Corporation, or who, at the request of the Corporation, serves or has served in any such

¹ Compiler's Note: This Article III was adopted by the shareholders at the Annual Meeting of Shareholders, April 28, 1994.

capacity with another corporation, partnership, joint venture, trust, employee benefit plan, or other enterprise shall be indemnified by the Corporation against any and all liability and reasonable expense that may be incurred by him or her in connection with or resulting from any claim, action or proceeding (whether brought in the right of the Corporation or any such other corporation, entity, plan or otherwise), civil or criminal, in which he or she may become involved, as a party or otherwise, by reason of his or her being or having been a director, officer or employee of the Corporation, or such other corporation, entity or plan while serving at the request of the Corporation, whether or not he or she continues to be such at the time such liability or expense shall have been incurred, unless such person engaged in willful misconduct or a knowing violation of the criminal law.

As used in this Article III: (i) the terms "liability" and "expense" shall include, but shall not be limited to, counsel fees and disbursements and amounts of judgments, fines or penalties against, and amounts paid in settlement by, a director, officer or employee; (ii) the terms "director," "officer" and "employee," unless the context otherwise requires, include the estate or personal representative of any such person; (iii) a person is considered to be serving an employee benefit plan as a director, officer or employee of the plan at the Corporation's request if his or her duties to the Corporation also impose duties on, or otherwise involve services by, him or her to the plan or, in connection with the plan, to participants in or beneficiaries of the plan; (iv) the term "occurrence" means any act or failure to act, actual or alleged, giving rise to a claim, action or proceeding; and (v) service as a trustee or as a member of a management or similar committee of a partnership or joint venture shall be considered service as a director, officer or employee of the trust, partnership or joint venture.

The termination of any claim, action or proceeding, civil or criminal, by judgment, settlement, conviction or upon a plea of *nolo contendere*, or its equivalent, shall not create a presumption that a director, officer or employee did not meet the standards of conduct set forth in this paragraph (a). The burden of proof shall be on the Corporation to establish, by a preponderance of the evidence, that the relevant standards of conduct set forth in this paragraph (a) have not been met.

(b) Any indemnification under paragraph (a) of this Article shall be made unless (i) the Board, acting by a majority vote of those directors who were directors at the time of the occurrence giving rise to the claim, action or proceeding involved and who are not at the time parties to such claim, action or proceeding (provided there are at least five such directors), finds that the director, officer or employee has not met the relevant standards of conduct set forth in such paragraph (a), or (ii) if there are not at least five such directors, the Corporation's principal Virginia legal counsel, as last designated by the Board as such prior to the time of the occurrence giving rise to the claim, action or proceeding involved, or in the event for any reason such Virginia counsel is unwilling to so serve, then Virginia legal counsel mutually acceptable to the Corporation and the person seeking indemnification, deliver to the Corporation their written advice that, in their opinion, such standards have not been met.

(c) Expenses incurred with respect to any claim, action or proceeding of the character described in paragraph (a) shall, except as otherwise set forth in this

paragraph (c), be advanced by the Corporation prior to the final disposition thereof upon receipt of an undertaking by or on behalf of the recipient to repay such amount if it is ultimately determined that he or she is not entitled to indemnification under this Article III. No security shall be required for such undertaking and such undertaking shall be accepted without reference to the recipient's financial ability to make repayment. Notwithstanding the foregoing, the Corporation may refrain from, or suspend, payment of expenses in advance if at any time before delivery of the final finding described in paragraph (b), the Board or Virginia legal counsel, as the case may be, acting in accordance with the procedures set forth in paragraph (b), find by a preponderance of the evidence then available that the officer, director or employee has not met the relevant standards of conduct set forth in paragraph (a).

(d) No amendment or repeal of this Article III shall adversely affect or deny to any director, officer or employee the rights of indemnification provided in this Article III with respect to any liability or expense arising out of a claim, action or proceeding based in whole or substantial part on an occurrence the inception of which takes place before or while this Article III, as adopted by the shareholders of the Corporation at the 1986 Annual Meeting of the Corporation, is in effect. The provisions of this paragraph (d) shall apply to any such claim, action or proceeding whenever commenced, including any such claim, action or proceeding commenced after any amendment or repeal to this Article III.

(e) The rights of indemnification provided in this Article III shall be in addition to any rights to which any such director, officer or employee may otherwise be entitled by contract or as a matter of law.

(f) In any proceeding brought by or in the right of the Corporation or brought by or on behalf of shareholders of the Corporation, no director or officer of the Corporation shall be liable to the Corporation or its shareholders for monetary damages with respect to any transaction, occurrence or course of conduct, whether prior or subsequent to the effective date of this Article III, except for liability resulting from such person's having engaged in willful misconduct or a knowing violation of the criminal law or any federal or state securities law.

(g) An amendment to this Article III shall be approved only by a majority of the votes entitled to be cast by each voting group entitled to vote thereon.

ARTICLE IV. COMMITTEES.

SECTION 1. Executive Committee. The Board may, by resolution or resolutions adopted by a majority of the number of directors fixed by these Bylaws, appoint two or more directors to constitute an Executive Committee, each member of which shall serve as such during the pleasure of the Board, and may designate for such Executive Committee a Chair, who shall continue as such during the pleasure of the Board.

All completed action by the Executive Committee shall be reported to the Board at its meeting next succeeding such action or at its meeting held in the month following the taking of such action.

The Executive Committee shall fix its own rules of procedure and shall meet where and as provided by such rules or by resolution of the Board.

During the intervals between the meetings of the Board, the Executive Committee shall possess and may exercise all the power and authority of the Board (including, without limitation, all the power and authority of the Board in the management, control and direction of the financial affairs of the Corporation) except with respect to those matters reserved to the Board by the VSCA, in such manner as the Executive Committee shall deem best for the interests of the Corporation, in all cases in which specific directions shall not have been given by the Board.

SECTION 2. Other Committees. To the extent permitted by the VSCA, the Board may from time to time by resolution adopted by a majority of the number of directors fixed by these Bylaws create such other committees of directors as the Board shall deem advisable and with such limited authority, functions and duties as the Board shall by resolution prescribe. The Board shall have the power to change the members of any such committee at any time, to fill vacancies, and to discharge any such committee, either with or without cause, at any time. Such committees shall fix their own rules of procedure and shall meet where and as provided by such rules or by resolution of the Board.

SECTION 3. Committee Meetings; Miscellaneous. The provisions of Article II relating to meetings, quorum and voting, notice and waiver of notice and consents shall apply to the Executive Committee and other committees of directors and their respective members.

ARTICLE V. OFFICERS.

SECTION 1. Number, Term, Election. The officers of the Corporation shall be a Chief Executive Officer, a President, a Chief Financial Officer, a Treasurer, a Controller and a Secretary. The Board may appoint one or more Vice Presidents and such other officers and such assistant officers and agents with such powers and duties as the Board may find necessary or convenient to carry on the business of the Corporation. Such officers and assistant officers shall serve until their successors shall be chosen, or as otherwise provided in these Bylaws. Any two or more offices may be held by the same person.

SECTION 2. Chief Executive Officer. The Chief Executive Officer shall, subject to the control of the Board and any Executive Committee, have full authority and responsibility for directing the conduct of the business, affairs and operations of the Corporation. In addition to acting as Chief Executive Officer of the Corporation, he or

she shall perform such other duties and exercise such other powers as may from time to time be prescribed by the Board and shall see that all orders and resolutions of the Board and any Executive Committee are carried into effect. In the event of the inability of the Chief Executive Officer to act, the Board will designate an officer of the Corporation to perform the duties of that office.

SECTION 3. President. The President shall have such powers and perform such duties as may from time to time be prescribed by the Board or, if he or she shall not be the Chief Executive Officer, by the Chief Executive Officer.

SECTION 4. Chief Financial Officer. The Chief Financial Officer shall be the principal financial officer of the Corporation and shall have such powers and perform such duties as may be prescribed by the Board or the Chief Executive Officer.

SECTION 5. Vice Presidents. Each Vice President appointed by the Board shall have such powers and perform such duties as may from time to time be prescribed by the Board, the Chief Executive Officer or any officer to whom the Chief Executive Officer may have delegated such authority.

SECTION 6. Treasurer. The Treasurer shall have the general care and custody of the funds and securities of the Corporation. He or she shall perform such other duties and exercise such other powers as may from time to time be prescribed by the Board, the Chief Executive Officer or any officer to whom the Chief Executive Officer may have delegated such authority. If the Board shall so determine, he or she shall give a bond for the faithful performance of his or her duties, in such sum as the Board may determine to be proper, the expense of which shall be borne by the Corporation. To such extent as the Board shall deem proper, the duties of the Treasurer may be performed by one or more assistants, to be appointed by the Board.

SECTION 7. Controller. The Controller shall keep full and accurate accounts of all assets, liabilities, receipts and disbursements and other transactions of the Corporation and cause regular audits of the books and records of the Corporation to be made. He or she shall also perform such other duties and exercise such other powers as may from time to time be prescribed by the Board, the Chief Executive Officer or any officer to whom the Chief Executive Officer may have delegated such authority. If the Board shall so determine, he or she shall give a bond for the faithful performance of his or her duties, in such sum as the Board may determine to be proper, the expense of which shall be borne by the Corporation. To such extent as the Board shall deem proper, the duties of the Controller may be performed by one or more assistants, to be appointed by the Board.

SECTION 8. Secretary. The Secretary shall keep the minutes of meetings of shareholders, of the Board, and, when requested, of committees of the Board; and he or she shall attend to the giving and serving of notices of all meetings thereof. He or she shall keep or cause to be kept such stock and other books, showing the names of the shareholders of the Corporation, and all other particulars regarding them, as may be required by law. He or she shall also perform such other duties and exercise such other powers as may from time to time be prescribed by the Board, the Chief Executive

Officer or any officer to whom the Chief Executive Officer may have delegated such authority. To such extent as the Board shall deem proper, the duties of the Secretary may be performed by one or more assistants, to be appointed by the Board.

**ARTICLE VI.
REMOVALS, RESIGNATIONS AND VACANCIES.**

SECTION 1. Removal of Directors. Any director may be removed at any time but only with cause, by the affirmative vote of the holders of record of a majority of the shares of the Corporation entitled to vote on the election of directors, taken at a special meeting of the shareholders, the purpose, or one of the purposes, of which (as stated in the meeting notice) is removal of the director.

SECTION 2. Removal of Officers. Any officer, assistant officer or agent of the Corporation may be removed at any time, either with or without cause, by the Board in its absolute discretion. Any such removal shall be without prejudice to the recovery of damages for breach of the contract rights, if any, of the officer, assistant officer or agent removed. Election or appointment of an officer, assistant officer or agent shall not of itself create contract rights.

SECTION 3. Resignation. Any director, officer or assistant officer of the Corporation may resign as such at any time by giving his or her written resignation to the Board, the Chief Executive Officer or the Secretary of the Corporation. Such resignation shall take effect at the time or upon the occurrence of a future event specified therein or, if no time or such event is specified therein, at the time of delivery thereof, and, unless otherwise specified therein, the acceptance of such resignation shall not be necessary to make it effective.

SECTION 4. Vacancies. Any vacancy in the Board caused by death, resignation, disqualification, removal, an increase in the number of directors, or any other cause, may be filled (a) by the holders of shares of the Corporation entitled to vote on the election of directors, but only at an annual meeting of shareholders, or (b) by the affirmative vote of a majority of the remaining directors though less than a quorum of the Board at any regular or special meeting thereof. Each director so elected by the Board shall hold office until the next annual election of directors, and each director so elected by the shareholders shall hold office for a term expiring at the first annual meeting of shareholders subsequent to the annual meeting of shareholders at which such director was so elected by the shareholders, and, in each case, until his or her successor shall be elected, or until his or her death, or until he or she shall resign, or until he or she shall have been removed in the manner hereinabove provided. Any vacancy in the office of any officer or assistant officer caused by death, resignation, removal or any other cause, may be filled by the Board for the unexpired portion of the term.

**ARTICLE VII.
CONTRACTS, LOANS, CHECKS, DRAFTS, DEPOSITS, ETC.**

SECTION 1. Execution of Contracts. Except as otherwise provided by law or by these Bylaws, the Board (i) may authorize any officer, employee or agent of the Corporation to execute and deliver any contract, agreement or other instrument in writing in the name and on behalf of the Corporation, and (ii) may authorize any officer, employee or agent of the Corporation so authorized by the Board to delegate such authority by written instrument to other officers, employees or agents of the Corporation. Any such authorization by the Board may be general or specific and shall be subject to such limitations and restrictions as may be imposed by the Board. Any such delegation of authority by an officer, employee or agent may be general or specific, may authorize re-delegation, and shall be subject to such limitations and restrictions as may be imposed in the written instrument of delegation by the person making such delegation.

SECTION 2. Loans. No loans shall be contracted on behalf of the Corporation and no negotiable paper shall be issued in its name unless authorized by the Board. When authorized by the Board, any officer, employee or agent of the Corporation may effect loans and advances at any time for the Corporation from any bank, trust company or other institution, or from any firm, corporation or individual, and for such loans and advances may make, execute and deliver promissory notes, bonds or other certificates or evidences of indebtedness of the Corporation and when so authorized may pledge, hypothecate or transfer any securities or other property of the Corporation as security for any such loans or advances. Such authority may be general or confined to specific instances.

SECTION 3. Checks, Drafts, etc. All checks, drafts and other orders for the payment of money out of the funds of the Corporation and all notes or other evidences of indebtedness of the Corporation shall be signed on behalf of the Corporation in such manner as shall from time to time be determined by the Board.

SECTION 4. Deposits. All funds of the Corporation not otherwise employed shall be deposited from time to time to the credit of the Corporation in such banks, trust companies or other depositories as the Board may select or as may be selected by the Treasurer or any other officer, employee or agent of the Corporation to whom such power may from time to time be delegated by the Board.

SECTION 5. Voting of Securities. Unless otherwise provided by the Board, the Chief Executive Officer may from time to time appoint an attorney or attorneys, or agent or agents of the Corporation, in the name and on behalf of the Corporation, to cast the votes which the Corporation may be entitled to cast as the holder of stock or other securities in any other corporation, any of whose stock or other securities may be held by the Corporation, at meetings of the holders of the stock or other securities of such other corporation, or to consent in writing, in the name of the Corporation as such holder, to any action by such other corporation, and may instruct the person or persons so appointed as to the manner of casting such votes or giving such consent, and may execute or cause to be executed in the name and on behalf of the Corporation and under its corporate seal, or otherwise, all such written proxies or other instruments as such officer may deem necessary or proper in the premises.

**ARTICLE VIII.
CAPITAL STOCK.**

SECTION 1. Certificates. Shares of the stock of the Corporation may be certificated or uncertificated, as provided under the VSCA. Each shareholder, upon written request to the transfer agent of the Corporation, shall be entitled to a certificate for the stock of the Corporation in such form as may from time to time be approved by the Board, signed by the Chair of the Board, the President or a Vice President and the Secretary or an Assistant Secretary or the Treasurer or an Assistant Treasurer or any other officer authorized by these Bylaws or a resolution of the Board. Any such certificate may, but need not, bear the seal of the Corporation or a facsimile thereof. If any such certificate is countersigned by a transfer agent or registered by a registrar other than the Corporation or an employee of the Corporation, the signatures of any of the officers above specified upon such certificate may be facsimiles. In case any such officer who shall have signed or whose facsimile signature shall have been placed upon such certificate shall have ceased to be such before such certificate is issued, it may be issued by the Corporation with the same effect as if such officer had not ceased to be such at the date of its issue.

Within a reasonable time after the issuance or transfer of uncertificated stock, the Corporation shall send to the registered owner thereof a written notice setting forth: the name of the Corporation; that the Corporation is organized under the law of the Commonwealth of Virginia; the name of the shareholder; the number and class of shares (and the designation of the series, if any); and any restrictions on the transfer or registration of transfer of such shares of stock imposed by the Articles, these Bylaws, any agreement among shareholders or any agreement between shareholders and the Corporation. Such notice shall either (i) contain a summary of the designations, rights, preferences and limitations applicable to each class or series within a class that the Corporation is authorized to issue and the variations in rights, preferences and limitations determined for each series (and the authority of the Board to determine variations for future series) or (ii) a statement that the Corporation will furnish the shareholder this information on request in writing and without charge.

SECTION 2. Transfers. Uncertificated shares of stock of the Corporation shall be transferable upon proper instructions from the holder of such shares, and certificated shares of the Corporation shall be transferable on the stock books of the Corporation by the holder in person or by his or her attorney thereunto authorized by power of attorney duly executed and filed with the Secretary or the transfer agent. Except as hereinafter provided in the case of loss, destruction or mutilation of certificates, no transfer of certificated stock shall be entered until the previous certificate, if any, given for the same shall have been surrendered and canceled. Except as otherwise provided by law, no transfer of shares shall be valid as against the Corporation, its shareholders or creditors, for any purpose, until it shall have been entered in the stock records of the Corporation by an entry showing from and to whom transferred. The Board may also make such

additional rules and regulations as it may deem expedient concerning the issue and transfer of certificates representing shares of the capital stock of the Corporation.

SECTION 3. Status as Shareholders. Except as may otherwise be required by the VSCA, by the Articles or by these Bylaws, the Corporation shall be entitled to treat (i) each record holder of certificated shares, as shown on its books, and (ii) each registered owner of uncertificated shares, as the owner of such stock for all purposes, including the payment of dividends and the right to vote with respect thereto, regardless of any transfer, pledge or other disposition of such stock, until (i) any certificated shares have been transferred on the books of the Corporation in accordance with the requirements of these Bylaws, or (ii) proper notice of such event as to any uncertificated shares has been given to the Corporation by the registered owner thereof. It shall be the duty of (i) each record holder of certificated shares and (ii) each registered owner of uncertificated shares, in either case, to notify the Corporation of his or her post office address and any changes thereto.

SECTION 4. Record Date. For the purpose of determining shareholders entitled to notice of or to vote at any meeting of shareholders or any adjournment thereof, or entitled to receive payment of any dividend, or in order to make a determination of shareholders for any other proper purpose, the Board may fix in advance a date as the record date for any such determination of shareholders, such date in any case to be not more than 70 calendar days prior to the date on which the particular action, requiring such determination of shareholders, is to be taken. When a determination of shareholders entitled to vote at any meeting of shareholders has been made as provided in this section, such determination shall apply to any adjournment thereof unless the Board fixes a new record date, which it shall do if the meeting is adjourned to a date more than 120 calendar days after the date fixed for the original meeting.

SECTION 5. Lost, Destroyed or Mutilated Certificates. In case of loss, destruction or mutilation of any certificate of stock upon proof of such loss, destruction or mutilation and upon the giving of a bond of indemnity to the Corporation in such form and in such sum as the Board may direct (or without requiring any bond when, in the judgment of the Board, it is proper so to do), the Corporation may issue a new certificate or may issue uncertificated shares in place of the certificate previously issued by the Corporation.

SECTION 6. Control Share Acquisitions. Article 14.1 of Chapter 9 of Title 13.1 of the Code of Virginia shall not apply to acquisitions of shares of the Corporation.

ARTICLE IX. INSPECTION OF RECORDS.

The Board from time to time shall determine whether, to what extent, at what times and places, and under what conditions and regulations the accounts and books and papers of the Corporation, or any of them, shall be open for the inspection of the

shareholders, and no shareholder shall have any right to inspect any account or book or paper of the Corporation except as expressly conferred by statute or by these Bylaws or authorized by the Board.

**ARTICLE X.
AUDITOR.**

The Board shall annually appoint an independent accountant who shall carefully examine the books of the Corporation. One such examination shall be made immediately after the close of the fiscal year and be ready for presentation at the annual meeting of shareholders of the Corporation, and such other examinations shall be made as the Board may direct.

**ARTICLE XI.
SEAL.**

The seal of the Corporation shall be circular in form and shall bear the name of the Corporation and the year "1892."

**ARTICLE XII.
FISCAL YEAR.**

The fiscal year of the Corporation shall end on the 31st day of December in each year.

**ARTICLE XIII.
AMENDMENTS.**

The Bylaws of the Corporation may be altered, amended or repealed and new Bylaws may be adopted by the Board (except to the extent limited by Section 1 of Article II and Article III(g)), or by the holders of the outstanding shares of the Corporation entitled to vote generally at any annual or special meeting of the shareholders when notice thereof shall have been given in the notice of the meeting of shareholders.

**ARTICLE XIV.
HEADINGS; USAGE.**

The headings of Sections in these Bylaws are provided for convenience only and shall not affect their construction or interpretation. All references to "Section" or "Sections" refer to the corresponding Section or Sections of these Bylaws. All references to specific sections of the VSCA shall be deemed to refer to any successor provision of such statute or any successor statute, as appropriate. All references in these Bylaws to gender or number shall be construed to mean such gender or number as is appropriate in the particular circumstances.

EMERGENCY BYLAWS.

SECTION 1. Definitions. As used in these Emergency Bylaws,

(a) the term "period of emergency" shall mean any period during which a quorum of the Board cannot readily be assembled because of some catastrophic event.

(b) the term "incapacitated" shall mean that the individual to whom such term is applied shall not have been determined to be dead but shall be missing or unable to discharge the responsibilities of his or her office; and

(c) the term "senior officer" shall mean the President, any corporate Vice President, the Treasurer, the Controller and the Secretary, and any other person who may have been so designated by the Board before the emergency.

SECTION 2. Applicability. These Emergency Bylaws, as from time to time amended, shall be operative only during any period of emergency. To the extent not inconsistent with these Emergency Bylaws, all provisions of the regular Bylaws of the Corporation shall remain in effect during any period of emergency.

No officer, director or employee shall be liable for actions taken in good faith in accordance with these Emergency Bylaws.

SECTION 3. Board of Directors.

(a) A meeting of the Board may be called by any director or senior officer of the Corporation. Notice of any meeting of the Board need be given only to such of the directors as it may be feasible to reach at the time and by such means as may be feasible at the time, including publication or radio, and at a time less than 24 hours before the meeting if deemed necessary by the person giving notice.

(b) At any meeting of the Board, three directors in attendance shall constitute a quorum. Any act of a majority of the directors present at a meeting at which a quorum shall be present shall be the act of the Board. If less than three directors should be present at a meeting of the Board, any senior officer of the Corporation in attendance at

such meeting shall serve as a director for such meeting, selected in order of rank and within the same rank in order of seniority.

(c) In addition to the Board's powers under the regular Bylaws of the Corporation to fill vacancies on the Board, the Board may elect any individual as a director to replace any director who may be incapacitated and to serve until the latter ceases to be incapacitated or until the termination of the period of emergency, whichever first occurs. In considering officers of the Corporation for election to the Board, the rank and seniority of individual officers shall not be pertinent.

(d) The Board, during as well as before any such emergency, may change the principal office or designate several alternative offices or authorize the officers to do so.

SECTION 4. Appointment of Officers. In addition to the Board's powers under the regular Bylaws of the Corporation with respect to the election of officers, the Board may elect any individual as an officer to replace any officer who may be incapacitated and to serve until the latter ceases to be incapacitated.

SECTION 5. Amendments. These Emergency Bylaws shall be subject to repeal or change by further action of the Board or by action of the shareholders, except that no such repeal or change shall modify the provisions of the second paragraph of Section 2 with regard to action or inaction prior to the time of such repeal or change. Any such amendment of these Emergency Bylaws may make any further or different provision that may be practical and necessary for the circumstances of the emergency.

OLIN CORPORATION
DESCRIPTION OF SECURITIES

DESCRIPTION OF CAPITAL STOCK

The following statements with respect to our capital stock are subject to the detailed provisions of our Amended and Restated Articles of Incorporation, as further amended or restated, which we refer to as the Articles of Incorporation, our Bylaws, as amended, which we refer to as the Bylaws, and the provisions of applicable Virginia law, the state in which we are incorporated. These statements do not purport to be complete, or to give full effect to the terms of the provisions of statutory or common law, and are subject to, and are qualified in their entirety by reference to, the terms of the Articles of Incorporation and the Bylaws, each of which has been filed as an exhibit to (or incorporated by reference in) our Annual Report on Form 10-K ("Form 10-K") filed with the Securities and Exchange Commission and the provisions of applicable Virginia law.

General

Our authorized stock consists of 240,000,000 shares of common stock, \$1.00 par value per share, and 10,000,000 shares of preferred stock, \$1.00 par value per share, issuable in one or more series. The number of shares of common stock outstanding is set forth in our audited financial statements included in our Form 10-K and Form 10-Q filings. No shares of preferred stock are outstanding.

Preferred Stock

The following description of the terms of the preferred stock sets forth certain general terms and provisions of the preferred stock. Specific terms of any series of the preferred stock will be set forth in an amendment to the Articles of Incorporation approved by our board of directors before any such shares are issued.

General. Under the Articles of Incorporation, our board of directors is authorized, without further shareholder action, to provide for the issuance of up to 10,000,000 shares of preferred stock in one or more series, with such voting powers and with such designations, preferences and relative, participating, optional or other special rights, and qualifications, limitations or restrictions, as shall be set forth in articles of an amendment to the Articles of Incorporation providing for the issuance thereof adopted by our board of directors or a duly authorized committee thereof.

The preferred stock will have the dividend, liquidation, redemption, conversion and voting rights set forth below unless otherwise provided in an amendment to the Articles of Incorporation. An amendment to the Articles of Incorporation may establish specific terms for the series of the preferred stock, including:

- the title and liquidation preference per share of such preferred stock and the number of shares offered;
 - the price at which such preferred stock will be issued;
 - the dividend rate, or method of calculation of dividends, the dates on which dividends shall be payable, whether such dividends shall be cumulative or noncumulative and, if cumulative, the dates from which dividends shall commence to accumulate;
 - any redemption or sinking fund provisions of such preferred stock;
 - any conversion provisions of such preferred stock; and
 - any additional dividend, liquidation, redemption, sinking fund and other rights, preferences, privileges, limitations and restrictions of such preferred stock.
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The preferred stock will, when issued, be fully paid and nonassessable. Unless otherwise specified, each series of the preferred stock will rank on a parity as to dividends and distributions in the event of a liquidation with our outstanding preferred stock and each other series of the preferred stock.

Dividend Rights. Holders of the preferred stock of each series will be entitled to receive, when, as and if declared by our board of directors, out of our assets legally available therefor, cash dividends at such rates and on such dates as are established for such series of the preferred stock. Such rate, which may be based upon one or more methods of determination, may be fixed or variable or both. Different series of the preferred stock may be entitled to dividends at different dividend rates or based upon different methods of determination. Each such dividend will be payable to the holders of record as they appear on our stock books on such record dates as will be fixed by our board of directors or a duly authorized committee thereof. Dividends on any series of the preferred stock may be cumulative or noncumulative. If our board of directors fails to declare a dividend payable on a dividend payment date on any series of preferred stock for which dividends are noncumulative, then the right to receive a dividend in respect of the dividend period ending on such dividend payment day will be lost, and we shall have no obligation to pay the dividend accrued for that period, whether or not dividends are declared for any future period.

If the terms of preferred stock issued so provide, when dividends are not paid in full upon any series of the preferred stock and any other preferred stock ranking on a parity as to dividends with such series of the preferred stock, all dividends declared upon such series of the preferred stock and any other preferred stock ranking on a parity as to dividends will be declared pro rata so that the amount of dividends declared per share on such series of the preferred stock and such other preferred stock will in all cases bear to each other the same ratio that accrued dividends per share on such series of the preferred stock and such other preferred stock bear to each other. Except as provided in the preceding sentence, unless full dividends, including, in the case of cumulative preferred stock, accumulations, if any, in respect of prior dividend payment periods, on all outstanding shares of any series of the preferred stock have been paid, no dividends, other than in shares of common stock or another stock ranking junior to such series of the preferred stock as to dividends and upon liquidation, will be declared or paid or set aside for payment or other distributions made upon our common stock or any of our other stock ranking junior to the preferred stock as to dividends. If the terms of preferred stock issued so provides, no common stock or any of our other stock ranking junior to or on a parity with such series of the preferred stock as to dividends or upon liquidation may be redeemed, purchased or otherwise acquired for any consideration, or any moneys paid to or made available for a sinking fund for the redemption of any shares of any such stock, by us, except by conversion into or exchange for our stock ranking junior to such series of the preferred stock as to dividends and upon liquidation.

The amount of dividends payable for each dividend period will be computed by annualizing the applicable dividend rate and dividing by the number of dividend periods in a year, except that the amount of dividends payable for the initial dividend period or any period shorter than a full dividend period shall be computed on the basis of 30-day months, a 360-day year and the actual number of days elapsed in the period.

Rights Upon Liquidation. In the event of any voluntary or involuntary liquidation, dissolution or winding up of our business, the holders of each series of preferred stock will be entitled to receive out of our assets available for distribution to shareholders, before any distribution of assets is made to holders of common stock or any other class of stock ranking junior to such series of preferred stock upon liquidation, liquidating distributions in the amount set forth in an amendment to the Articles of Incorporation. If, upon any voluntary or involuntary liquidation, dissolution or winding up of our business, the amounts payable with respect to the preferred stock of any series and any other shares of our stock ranking as to any such distribution on a parity with such series of the preferred stock are not paid in full, the holders of the preferred stock of such series and of such other shares will share ratably in any such distribution of our assets in proportion to the full respective preferential amounts to which they are entitled.

Redemption. A series of the preferred stock may be redeemable, in whole or in part, at our option, and may be subject to mandatory redemption pursuant to a sinking fund or otherwise, in each case upon terms, at the times and the redemption prices and for the types of consideration set forth in an amendment to the Articles of Incorporation.

An amendment to the Articles of Incorporation shall specify the number of shares of such series of preferred stock which shall be redeemed by us in each year commencing after a date to be specified, at a redemption price per share to be specified, together with an amount equal to any accrued and unpaid dividends thereon to the date of redemption.

Conversion Rights. An amendment to the Articles of Incorporation will state the terms, if any, on which shares of that series are convertible into shares of common stock or another series of our preferred stock. The preferred stock will have no preemptive rights.

Voting Rights. Except as indicated below or in an amendment to the Articles of Incorporation, or except as expressly required by applicable law, a holder of the preferred stock will not be entitled to vote. Except as indicated in an amendment to the Articles of Incorporation, in the event we issue shares of any series of preferred stock, each such share will be entitled to one vote on matters on which holders of such series of the preferred stock are entitled to vote.

The affirmative vote of the holders of a majority of the outstanding shares of any series of preferred stock, unless our board of directors establishes a higher amount, voting as a separate class, will be required for any amendment of the Articles of Incorporation which changes any rights or preferences of such series of preferred stock.

In addition to the foregoing voting rights, the holders of the preferred stock will have the voting rights set forth under "-General" above with respect to amendments to the Articles of Incorporation which would increase the number of authorized shares of our preferred stock.

Transfer Agent and Registrar. The transfer agent, registrar and dividend disbursement agent for a series of preferred stock will be selected by us. The registrar for shares of preferred stock will send notices to shareholders of any meetings at which holders of the preferred stock have the right to elect members of our board of directors or to vote on any other matter.

Common Stock

Holders of common stock are entitled to dividends as declared by our board of directors from time to time after payment of, or provision for, full cumulative dividends on and any required redemptions of shares of preferred stock then outstanding. Holders of common stock are entitled to one vote per share on all matters submitted for action by the shareholders and may not cumulate votes for the election of directors. Holders of common stock have no preemptive or subscription rights and have no liability for further calls or assessments. In the event of the liquidation, dissolution or winding up of our business, holders of common stock are entitled to receive pro rata all our remaining assets available for distribution, after satisfaction of the prior preferential rights of the preferred stock and the satisfaction of all our debts and liabilities.

The transfer agent and registrar for our common stock is EQ Shareowner Services.

Our common stock is listed on The New York Stock Exchange under the trading symbol "OLN."

Certain Provisions of Virginia Law, our Articles of Incorporation and our Bylaws

Certain Provisions of Virginia Law

We are subject to the following provisions of Virginia law which may have the effect of discouraging unsolicited acquisition proposals or delaying or preventing a change in control of our board of directors:

Antitakeover Statutes

As permitted by Virginia law, we have opted out of Article 14.1 of the Virginia Stock Corporation Act (the "VSCA"), the Virginia anti-takeover statute regulating "control share acquisitions", which are transactions causing the voting power of any person acquiring beneficial ownership of shares of a Virginia public corporation to meet or exceed certain threshold percentages (20%, 33 1/3% or 50%) of the total votes entitled to be cast for the election of directors. Under that Virginia statute, shares acquired in a control share acquisition have no voting rights unless granted by a majority vote of all outstanding shares entitled to vote in the election of directors other than those held by the acquiring person or held by any officer or employee director of the corporation, unless at the time of any control share acquisition, the articles of incorporation or bylaws of the corporation provide that this statute does not

apply to acquisitions of its shares. An acquiring person that owns five percent or more of the corporation's voting stock may require that a special meeting of the shareholders be held, within 50 days of the acquiring person's request, to consider the grant of voting rights to the shares acquired or to be acquired in the control share acquisition. If voting rights are not granted and the corporation's articles of incorporation or bylaws permit, the acquiring person's shares may be redeemed by the corporation, at the corporation's option, at a price per share equal to the acquiring person's cost. Unless otherwise provided in the corporation's articles of incorporation or bylaws, the VSCA grants appraisal rights to any shareholder who objects to a control share acquisition that is approved by a vote of disinterested shareholders and that gives the acquiring person control of a majority of the corporation's voting shares. This regulation was designed to deter certain takeovers of Virginia public corporations.

We are subject to Article 14 of the VSCA, a Virginia statute regulating "affiliated transactions." An affiliated transaction is generally defined as a merger, a share exchange, a material disposition of corporate assets not in the ordinary course of business, any dissolution of the corporation proposed by or on behalf of a holder of more than 10 percent of any class of the corporation's outstanding voting shares (an "interested shareholder") or any reclassification, including reverse stock splits, recapitalization or merger of the corporation with its subsidiaries, that increases the percentage of voting shares owned beneficially by an interested shareholder by more than five percent. In general, these provisions prohibit a Virginia corporation from engaging in affiliated transactions with any interested shareholder for a period of three years following the date that such person became an interested shareholder unless (1) a majority of the disinterested directors on the board of directors of the corporation and the holders of two-thirds of the voting shares, other than the shares beneficially owned by the interested shareholder, approve the affiliated transaction or (2) before the date the person became an interested shareholder, a majority of the disinterested directors on the board of directors approved the transaction that resulted in the shareholder becoming an interested shareholder.

After three years, any such transaction must be at a "fair price," as described in the VSCA, or must be approved by a majority of the disinterested directors or the holders of two-thirds of the voting shares, other than the shares beneficially owned by the interested shareholder.

Shareholder Action by Written Consent

The VSCA provides that, unless provided otherwise in a Virginia corporation's articles of incorporation, any action that may be authorized or taken at a meeting of shareholders may be authorized or taken without a meeting only by unanimous written consent of the shareholders who would be entitled to vote on the action. The Articles of Incorporation do not include a provision that permits shareholders to take action without a meeting other than by unanimous written consent.

Certain Provisions of the Articles of Incorporation and the Bylaws

We are subject to the following provisions of the Articles of Incorporation and the Bylaws, which may have the effect of discouraging unsolicited acquisition proposals or delaying or preventing a change in control of our board of directors, including:

Board of Directors. Subject to the rights granted to holders of any preferred stock, directors may be removed only with cause, and vacancies on our board of directors, including any vacancy created by an increase in the number of directors, may be filled at an annual meeting by shareholders entitled to vote in the election of directors or by a majority of the directors remaining in office, even though less than a quorum. If our board of directors fills a vacancy, the director's term expires at the next shareholders' meeting at which directors are elected.

Shareholder Nominations and Proposals. The Bylaws require that shareholders seeking to nominate candidates to election as directors at a meeting of shareholders or to present proposals before a meeting of shareholders provide advance notice in a timely manner, and also specific requirements as to the form and contents of a shareholder's notice.

Special Meetings of Shareholders. Special meetings of our shareholders may be called only by our board of directors, the chair of our board of directors, our president or our corporate secretary, on the written demand by the holders of a majority of the shares entitled to vote at the special meeting.

No Cumulative Voting. Neither the Articles of Incorporation or the Bylaws authorize cumulative voting in the election of directors.

Preferred Stock. Our board of directors has the authority without any vote or action by shareholders, to issue one or more series of preferred stock and to fix and determine the terms, including the preferences and rights, of any series of preferred stock.

Amendments to the Articles of Incorporation

Under Virginia law, unless a Virginia corporation's articles of incorporation provide for a greater or lesser vote, amendments of the articles of incorporation must be approved by each voting group entitled to vote on the proposed amendment by more than two-thirds of all the votes entitled to be cast by that voting group. However, the vote specified in the articles of incorporation may not be reduced to less than a majority of all votes cast by the voting group at a meeting at which a quorum of the voting group exists.

Our Articles of Incorporation provide that any amendment to our Articles of Incorporation is required to be approved only by a majority of the votes entitled to be cast by each voting group that is entitled to vote on the matter, unless in submitting an amendment or restatement to the shareholders our board of directors shall require a greater vote.

Amendments to the Bylaws

Under Virginia law, a corporation's shareholders or board of directors may amend or repeal bylaws, except to the extent that the corporation's articles of incorporation or Virginia law reserve the power exclusively to the shareholders. A corporation's shareholders may amend or repeal bylaws even though the bylaws may also be amended or repealed by its board of directors.

Our Bylaws may be altered, amended or repealed by our board of directors, subject to the power of the shareholders to alter or repeal the Bylaws made by the board of directors at any annual or special meeting of the shareholders. Subject to certain limitations, shareholders in altering, amending or repealing our Bylaws may provide that our board of directors may not subsequently alter, amend or repeal our Bylaws.

**DESCRIPTION OF
RESTRICTED STOCK UNIT AWARD
GRANTED UNDER THE
OLIN CORPORATION 2021 LONG TERM INCENTIVE PLAN**

1. Terms

The terms and conditions of these Restricted Stock Units are contained in the Award Certificate evidencing the grant of such Award, this Award Description and in the Olin Corporation 2021 Long Term Incentive Plan (the "Plan").

2. Definition

"Vesting Date" means with respect to a Restricted Stock Unit, the date on which you become entitled to receive the shares underlying the Restricted Stock Unit, as set forth in your Award Certificate.

Other capitalized terms used but not defined herein have the meanings specified in the Plan.

3. Vesting and Payment

- (a) Except as otherwise provided in the Plan or in this Award Description, your interest in the Restricted Stock Units awarded to you will vest only at the close of business on the Vesting Date for such Restricted Stock Units, if you are employed by Olin from the grant date through the Vesting Date. Each Restricted Stock Unit not vested shall be forfeited.
- (b) Each vested Restricted Stock Unit shall be payable by delivery of one share of Olin Common Stock (subject to adjustment as provided in the Plan), except as otherwise provided in the Plan.
- (c) Each outstanding Restricted Stock Unit shall accrue Dividend Equivalents (amounts equivalent to the cash dividends payable in cash), deferred in the form of cash. Such Dividend Equivalents shall be paid only when and if the Restricted Stock Unit on which such Dividend Equivalents were accrued vests. To the extent a Restricted Stock Unit does not vest or is otherwise forfeited, any accrued and unpaid Dividend Equivalents shall be forfeited.
- (d) Except as otherwise specifically provided in the Plan, the total number of Restricted Stock Units (and Dividend Equivalents) that vest as of the Vesting Date shall be paid on or as soon as administratively feasible after such Vesting Date, but no later than March 15th of the calendar year following the calendar year of the Vesting Date.
- (e) Restricted Stock Units shall carry no voting rights nor, except as specifically provided herein, be entitled to receive any dividends or other rights enjoyed by shareholders.

4. Termination of Employment

- (a) Any Restricted Stock Units not yet vested shall be forfeited if your employment terminates either for cause or without Olin's written consent. If your employment should terminate before the applicable Vesting Date without cause and with Olin's written consent or by virtue of your death or total disability or retirement under an Olin benefit plan, the Committee shall determine, in its sole discretion, which outstanding Restricted Stock Units not yet vested (including Dividend Equivalents), if any, shall not be forfeited provided that if you are not a Section 16 officer or director of Olin when your employment terminates, the Chief Executive Officer of Olin shall be authorized to make such determination.
- (b) With respect to any non-forfeited Restricted Stock Units (and Dividend Equivalents) of a terminated Participant relating to incomplete Vesting Period, you will receive shares in payment of such Restricted Stock Units (and related Dividend Equivalents) on or as soon as administratively feasible

after your termination, but no later than March 15th of the calendar year following the calendar year of your termination, subject to the provisions of the Plan.

5. Tax Withholding

Olin will withhold from the payout of the Restricted Stock Units (and/or related Dividend Equivalents) the amount necessary to satisfy your federal, state and local withholding tax requirements.

6. Miscellaneous

By accepting the Award of Restricted Stock Units, you agree that such Award is special compensation, and that any amount paid will not affect

- (a) The amount of any pension under any pension or retirement plan in which you participate as an employee of Olin,
- (b) The amount of coverage under any group life insurance plan in which you participate as an employee of Olin, or
- (c) The benefits under any other benefit plan or any kind heretofore or hereafter in effect, under which the availability or amount of benefits is related to compensation.
- (d) To the extent any provision of this Award Description would subject any Participant to liability for interest or additional taxes under Code Section 409A, it will be deemed null and void, to the extent permitted by law and deemed advisable by the Committee. It is intended that this Award will be exempt from Code Section 409A (or to the extent applicable, comply with Code Section 409A), and this Award Description shall be interpreted and construed on a basis consistent with such intent. This Award Description may be amended in any respect deemed necessary (including retroactively) by the Committee in order to preserve exemption (or, if applicable, compliance) with Code Section 409A.
- (e) This provision under Section 6(e) shall apply if any right you may have pursuant to this Award is considered deferred compensation under Code Section 409A.
 - (i) Notwithstanding Section 3(d), the payment made under Section 3(d) shall be paid no later than 60 days after the Vesting Date.
 - (ii) Notwithstanding Section 4(b), and subject to paragraph (iii) below, the payment made under Section 4(b) shall be paid no later than 60 days after your termination.
 - (iii) If you are a Specified Employee (as defined and determined under Code Section 409A) at the time you become entitled to payment under Section 4(b), then no payment which is payable upon your termination of employment as determined under Code Section 409A and not subject to an exception or exemption thereunder, shall be paid to you until the date that is six (6) months after your termination. Any such payment that would otherwise have been paid to you during this six-month period shall instead be paid to you on or as soon as administratively feasible following the date that is six (6) months after your termination, but no later than 60 days after such date. Until payment, you will continue to accrue Dividend Equivalents on the Restricted Stock Units as provided in Section 3(c).
 - (iv) A "termination of employment", "termination", or "retirement" (or other similar term having a similar import) under this Award shall have the same meaning as a "separation from service" as defined in Code Section 409A.

OLIN CORPORATION
PERFORMANCE SHARE PROGRAM
As Amended through February 22, 2023

1. *Terms and Conditions*

The terms and conditions of the Performance Share Awards granted under this Program are contained in the Performance Share Award certificate evidencing such Award, this Program and the LTIP.

2. *Definitions*

"Common Stock" means the common stock of Olin, par value \$1.00 per share.

"Final Share Number" has the meaning specified in Section 3 of this Program.

"LTIP" means the Olin Corporation 2021 Long Term Incentive Plan and any successor plan.

"Net Income" means Olin's actual net income for the relevant Performance Cycle, (or if applicable, for the relevant period in such Performance Cycle), calculated in accordance with generally accepted accounting principles, adjusted to exclude unusual gains and losses (as determined by the Committee).

"Net Income Goal" means each Net Income target set by the Committee for one or more periods included in the relevant three-year Performance Cycle, with the total number of target Net Income Performance Shares allocated among the Net Income Goals if more than one such goal is established for a Performance Cycle.

"Net Income Performance Shares" means the total number of Performance Shares awarded based on Olin's Net Income performance against the Net Income Goals for the relevant Performance Cycle, allocated among the Net Income Goals by the Committee as established by the Committee if the Committee establishes more than one Net Income Goal for a Performance Cycle.

"Olin" or the "Company" means Olin Corporation.

"Performance Cycle" means, with respect to a Performance Share Award, a period of three calendar years, beginning with the calendar year in which such Performance Share Award is granted.

"Performance Share Award" means grants of "Performance Shares."

"Performance Share" means a unit granted under the LTIP and this Program, maintained on the books of the Company during the Performance Cycle, denominated as one phantom share of Common Stock, and paid in cash or Common Stock in accordance with this Program, and includes both TSR Performance Shares and Net Income Performance Shares.

"Performance Share Comparison Group" means the Standard & Poor's 1500 Material companies plus Westlake Chemical Corporation and Huntsman Corporation.

"Program" means this Performance Share Program.

"TSR" means total shareholder return, calculated as the change in the fair market value of the common stock, including reinvestment of dividends, over the relevant Performance Cycle.

"TSR Performance Shares" means the Performance Shares awarded based on Olin's relative TSR compared to the Performance Share Comparison Group.

Capitalized terms not otherwise defined in this Program shall have the meaning specified in the LTIP.

3. *Performance Share Awards*

- a. One-half (1/2) of the total target Performance Share Award shall be designated in TSR Performance Shares, and the remaining one-half in Net Income Performance Shares.
- b. The number of target TSR Performance Shares for each Participant shall be adjusted based upon a comparison of Olin's TSR during the Performance Cycle with the TSR of the Performance Share Comparison Group over the same period, in accordance with the following chart:

<i>If Olin's TSR for a Performance Cycle is:</i>	<i>The number of TSR Performance Shares paid as a percentage of the target TSR Performance Share Award will be:</i>
At or above the 80th Percentile of the Performance Share Comparison Group	200%
Above the 50th Percentile, but below the 80th Percentile of the TSR for the Performance Share Comparison Group	100% of target number of TSR Performance Shares plus 3.33% of the target number of TSR Performance Shares for each incremental percentile position above the 50th Percentile
At the 50th Percentile of the TSR for the Performance Share Comparison Group	100% of the target number of TSR Performance Shares
Above the 20th Percentile, but below the 50th Percentile of the TSR for the Performance Share Comparison Group	25% of the target number of TSR Performance Shares plus 2.5% of the target number of TSR Performance Shares for each incremental percentile position above the 20th Percentile

At the 20th Percentile of the TSR for the Performance Share Comparison Group	25% of the target number of TSR Performance Shares
Below the 20th Percentile of the TSR for the Performance Share Comparison Group	0

- c. The number of target Net Income Performance Shares awarded to each Participant for each Net Income Goal shall be adjusted based upon a comparison of Olin's actual Net Income with that Net Income Goal, in accordance with the following chart:

<i>If Olin's Net Income for the relevant portion of the Performance Cycle is:</i>	<i>The number of Net Income Performance Shares paid as a percentage of the target Net Income Performance Shares allocated to that Net Income Goal will be:</i>
At least 140% of the relevant Net Income Goal	200% of the target number of Net Income Performance Shares allocated to that Net Income Goal
More than 100% but less than 140% of the relevant Net Income Goal	100% of the target number of Net Income Performance Shares allocated to that Net Income Goal plus a proportionate number of target Net Income Performance Shares determined using linear interpolation
100% of the Net Income Goal	100% of the target number of Net Income Performance Shares allocated to that Net Income Goal
More than 60% but less than 100% of the relevant Net Income Goal	50% of the target number of Net Income Performance Shares allocated to that Net Income Goal plus a proportionate number of target Net Income Performance Shares determined using linear interpolation
60% of the relevant Net Income Goal	50% of the target number of Net Income Performance Shares allocated to that Net Income Goal
Less than 60% of the relevant Net Income Goal	0

- d. The Company shall use linear interpolation to determine the number of additional Net Income Performance Shares for performance between 60% and 100% and for 100% and 140% of each Net Income Goal.
- e. As soon as practicable in the calendar year following the end of the Performance Cycle, the Company shall calculate the number of Performance Shares that vested (the "Final Share Number") for all Participants whose Performance Share Awards have vested during or at the end of such Performance Cycle.

4. *Vesting and Forfeiture*

- a. Except as otherwise provided by the Committee, the LTIP, this Program or the Performance Share Award certificate, an interest in a Performance Share Award shall vest only if the Participant is an employee of the Company or a subsidiary on the last day of the relevant Performance Cycle. In accordance with the LTIP, upon a "Change in Control" (as defined in the LTIP), all Performance Shares outstanding on the date of such Change in Control shall become vested and deemed earned or satisfied in full, notwithstanding that the applicable performance cycle, retention cycle or restriction conditions shall not have been completed or met, and such Performance Shares shall be paid in cash or as otherwise provided in the LTIP.
- b. If a Participant's employment with the Company or a subsidiary terminates for cause or without the Company's consent (other than as the result of the Participant's death, disability or retirement) before a Performance Share Award has vested, his or her Performance Share Award shall terminate and all rights under such Award shall be forfeited.
- c. If a Participant's employment with the Company or a subsidiary terminates as the result of his or her disability, (as that term is defined in Section 409A of the Code or any successor provision), or retirement under any of the Company's retirement plans before a Performance Share Award has vested, the Participant shall be entitled to a pro rata Performance Share Award, payable solely in cash at the time that the Performance Share Award would otherwise be payable under Section 5 of this Program. The cash payment shall be equal to the Final Share Number calculated in accordance with Sections 3 and 5 of this Program, multiplied by the Fair Market Value on the last day of the relevant Performance Cycle, multiplied by a fraction with a numerator equal to the number of months during the Performance Cycle the Participant was employed by the Company or a subsidiary (rounded up to the nearest whole month) and a denominator of 36.
- d. If a Participant's employment with the Company or a subsidiary terminates as the result of his or her death before a Performance Share Award has vested, the Participant shall be entitled to a pro rata Performance Share Award, payable solely in cash within ninety (90) days of the Participant's death. The cash payment shall be equal to the Participant's target number of Performance Shares, as the case may be, multiplied by the Fair Market Value on the date of the Participant's death (or the next trading day, if the Common Stock was not traded

on such date), multiplied by a fraction with a numerator equal to the number of months during the Performance Cycle the Participant was employed by the Company or a subsidiary (rounded up to the nearest whole month) and a denominator of 36.

- e. If a Participant's employment with the Company or a subsidiary terminates for any other reason, the Company shall determine the portion, if any, of the Performance Share Award that shall not be forfeited, and the form of payment (cash or shares or a combination) that the Participant shall receive. That determination shall be made by the Committee in the case of any officer, and by the Chairman of the Board, President, Chief Executive Officer, or any Vice President, in the case of any non-officer employee. Notwithstanding this Section 4, payment shall be made pursuant to Section 5 of this Program.

5. *Payment and Timing*

- a. As soon as is administratively practicable after the determination of the Final Share Number, but not later than the last day of the calendar year following the Performance Cycle, the Company will (i) issue to each Participant a number of shares of Common Stock equal to one-half of the Final Share Number, rounded down to the nearest whole share if such number is not a whole number, and (ii) pay the Participant in cash an amount equal to the Fair Market Value of one-half of the Final Share Number of shares of Common Stock on the last day of the Performance Cycle, rounded up to the nearest whole share if such number is not a whole number.
- b. No dividends or dividend equivalents shall be paid on any Performance Shares.
- c. In calculating the number of Performance Shares, all percentages and percentile numbers will be rounded to the nearest one-hundredth of a percent.

6. *Miscellaneous*

- a. By acceptance of the Performance Share Award, each Participant agrees that such Award is special compensation, and that any amount paid will not affect:
 - i. the amount of any pension under any pension or retirement plan in which he or she participates as an employee of Olin,
 - ii. the amount of coverage under any group life insurance plan in which he or she participates as an employee of Olin, or
 - iii. the benefits under any other benefit plan of any kind heretofore or hereafter in effect, under which the availability or amount of benefits is related to compensation.

- b. The Company will withhold from the distribution of any cash pursuant to Performance Share Awards the amount necessary to satisfy the Participant's federal, state and local withholding tax requirements. It is the Company's intention that all income tax liability on Performance Share Awards be deferred in accordance with the applicable requirements of Code Section 409A, until the Participant actually receives such shares or payment thereof.

- c. To the extent any provision of the Program (or any Performance Share Award) or action by the Board or Committee would subject any Participant to liability for interest or additional taxes under Code Section 409A, it will be deemed null and void, to the extent permitted by law and deemed advisable by the Committee. It is intended that the Program (and any Performance Share Award) will comply with Code Section 409A, and the Program (and any Performance Share Award) shall be interpreted and construed on a basis consistent with such intent. The Program (and any Performance Share Award) may be amended in any respect deemed necessary (including retroactively) by the Committee in order to preserve compliance with Code Section 409A. The preceding shall not be construed as a guarantee of any particular tax effect for Program benefits or Performance Share Awards. Except as specifically provided in the LTIP, a Participant (or beneficiary) is solely responsible and liable for the satisfaction of all taxes and penalties that may be imposed on the Participant (or beneficiary) in connection with any distributions to such Participant (or beneficiary) under the Program (including any taxes and penalties under Code Section 409A), and neither Olin nor any Affiliate shall have any obligation to indemnify or otherwise hold a Participant (or beneficiary) harmless from any or all of such taxes or penalties.

OLIN CORPORATION
Non-Qualified Stock Option Agreement

The optionee named below is hereby granted an option to purchase the number of shares of Common Stock of Olin Corporation ("Shares") at the price set forth below, in accordance with and subject to the terms and restrictions of the Olin Corporation 20«PLANYEAR» Long Term Incentive Plan (the "Plan"), and of this option:

OPTIONEE:

<i>Number of Shares for which Option is Granted</i>	<i>Option Price Per Share</i>	<i>Exercise Date</i>
	\$	

Date of Grant: Date Option Expires:

This option becomes exercisable on the dates shown above for the Shares shown above, and is subject to all of the terms of the Plan.

The option price may be paid with Shares in accordance with the relevant provisions of the Plan.

This option may be exercised by you, or, if applicable, your estate, executor, administrator, personal representative, heirs, or beneficiaries by giving written notice to Olin of the intention to exercise the option, accompanied by full payment of the purchase price of the Shares with respect to which the option is exercised. Ownership of the Shares acquired upon exercise of this option shall vest when Olin's secretary or transfer agent (as the case may be) records the transfer of such Shares to you on the stock records of Olin. This option is exercisable as to full Shares only, and may not be exercised as to less than twenty-five (25) at any one time.¹ You shall not have any of the rights of a shareholder with respect to the Shares covered by the option until Shares are issued upon the due exercise of the option.

This option shall not be transferable otherwise than by will or the laws of descent and distribution, and may be exercised during the lifetime of the optionee only by the optionee.

It is the parties' intention that all income tax liability on these options be deferred in accordance with the requirements of Section 409A of the Internal Revenue Code of 1986, as amended, for nonqualified deferred compensation plans, until the participant exercises such options. To the extent Section 409A applies to these stock options, this award and the Plan shall be deemed amended to comply to the extent permitted by law and this option and the Plan shall be construed in favor of meeting the requirements for deferral of compensation under Section 409A.

OLIN CORPORATION

By the Compensation Committee

Authorized Signature

I hereby accept the above option and agree that, during my employment, I will devote the expected time, energy and effort to the service of Olin Corporation or a subsidiary and the promotion of its interests. I further state that I am familiar with the Plan and agree to be bound by the terms and restrictions of the Plan.

Optionee

**OLIN CORPORATION
2021 Long Term Incentive Plan
Restricted Stock Unit Award**

Restricted Stock Unit Certificate

This certificate certifies that the employee named below has been awarded on the date hereof the number of Restricted Stock Units shown below.

Subject to the terms and conditions of the Olin Corporation 2021 Long Term Incentive Plan and related Award Description and the rules adopted by the Committee administering such Plan, this certificate will entitle the recipient following employment through the Vesting Date, to a payment of one share of Olin Common Stock for each Restricted Stock Unit awarded.

Employee: «PARTICIPANT»

Number of Restricted Stock Units: «SHARES»

Vesting Date:

*OLIN CORPORATION
By the Compensation Committee*

Authorized Signature

Employee Signature

Dated:

OLIN CORPORATION
PERFORMANCE SHARE AWARD CERTIFICATE
Under Performance Share Program

This certifies that _____ has been awarded:

_____ TSR Performance
_____ Shares, and
_____ Net Income Performance Shares,

subject to the terms and conditions of the Olin Corporation Performance Share Program (the "Program"), a copy of which is attached. This Performance Share Award has been issued pursuant to the Olin Corporation 2021 Long Term Incentive Plan (the "Plan") and is also subject to the provisions of the Plan.

The Performance Shares vest on December 31, _____. The number of Performance Shares will be adjusted as set forth in the Program, and will be paid as soon as practicable after December 31, _____ but no later than December 31, _____.

The Performance Shares are not transferable other than by will or the laws of descent and distribution. In case of termination of employment, paragraph 4 of the Program applies.

OLIN CORPORATION
By the Compensation Committee

Authorized Signature

I hereby accept the above Performance Share Award and agree that, during my employment, I will devote the expected time, energy and effort to the service of Olin Corporation or a subsidiary and the promotion of its interests. I further state that I am familiar with the Plan and the Program and agree to be bound by the terms and restrictions of the Plan and the Program.

Participant

**OLIN STOCK OPTION/PERFORMANCE SHARE
CONTINUATION PROVISIONS FOR OLIN EMPLOYEES
September 1, 2021**

After the end of an employee's employment at Olin or a subsidiary, the employee's vested Olin stock options remain exercisable for a specified period of time. The various plans permit that period to be extended by Olin. The continuation provisions included in the Long Term Incentive Plans (LTIP) for 2000, 2003, 2006, 2009, 2014, 2016, 2018 and 2021, or under Olin's stock option extension policy are summarized in the chart below.

Performance share awards that are vested at the time employment terminates pay out as scheduled, and so there is no extension policy. The relevant provisions of the performance share program are summarized below.

	Plan Provisions		Olin's General Extension Policy
	Options	Performance Shares	
Termination by Olin			
– Without cause	3 mos. (1)	(6)	1 yr.
– With cause	Immediate expiration	(7)	N/A
– In sale or shut-down of business or spin-off	3 mos. (1)	(6)	2 yrs.
Quitting			
– Without consent	Immediate expiration	(7)	N/A
– With consent	3 mos. (1)	(6)	1 yr.
Death			
– While Olin Employee (2)	1 yr. (1)	(8)	Term of option
– While not an Olin Employee	(3)	(7)	N/A
Retires under Pension Plan (55 or over and at least 5 years' service)	3 mos. (1)	(8)	Term of option
Disability	1 yr.	(8)	N/A
Transfer to JV			
– Transfer to JV with Consent	3 mos. (1)	(6)	Term of option
– JV Termination without cause or with JV consent	(4)	(6)	(5)
– JV Termination with cause or without JV consent	Immediate expiration	(7)	N/A
Transfer to Sold Business (SB)			
– Transfer to SB with Consent	3 mos. (1)	(6)	2 yrs.
– SB Termination without cause or with SB consent	(4)	(6)	(5)
– SB Termination with cause or without SB consent	Immediate expiration	(7)	N/A

- (1) Under the 2006 LTIP, 2009 LTIP, 2014 LTIP, 2016 LTIP and 2018 LTIP, vested options automatically extend to term upon retirement, unless the Committee determines otherwise. Under the terms of the other LTIPs, Olin may extend this period until the expiration of the option, as specified in the option agreement.
- (2) All unvested options vest automatically upon death of an employee and then all options may be exercised by the option holder's executor, administrator, personal representative or permitted transferee.
- (3) Only options held by a former employee that were exercisable at the time of death may be exercised for the longer of the period the optionee could have exercised option had optionee not died or 1 year (which may be extended but not beyond the term of the option agreement).
- (4) Although not addressed in the respective plan documents, after an employee leaves Olin to go to a joint venture or a sold business, Olin historically has considered the employee's termination to be a termination with consent. If the joint venture or the sold business terminates the employee without cause or the employee quits without consent, see note 5.
- (5) The employee may exercise any exercisable options until the earlier of 2 years after transfer to the joint venture/sold business or 1 year after termination from the joint venture/sold business.
- (6) If performance award has not vested, Olin will determine the portion, if any, of the performance share award which will be forfeited and the form of payment the employee will receive. If the performance shares have vested, but have not been issued or paid, the employee is entitled to them and the performance share award will be paid as specified in the performance share program
- (7) If the performance shares have vested, but have not been issued or paid, the employee is entitled to them and the performance share award will be paid as specified in the performance share program. If they have not vested, then they expire immediately.
- (8) If performance share award has not vested, employee will be entitled to a pro rata performance share award payable in cash. If the performance shares have vested, but have not been issued or paid, the employee is entitled to them and the performance share award will be paid as specified in the performance share program. (Refer to Performance Share Program for additional details.)

N.B. Options may never extend beyond the original term of the options under an employee's option agreement. Except as noted above in Note (2), all extensions apply only to exercisable options; all unexercisable options expire.

SUBSIDIARIES OF OLIN CORPORATION¹
(As of December 31, 2022)

Company	Shareholders/Members	% Ownership	Jurisdiction
Blue Cube Holding LLC	Blue Cube Spinco LLC	100	DE
Blue Cube Intermediate Holding 2 LLC	Blue Cube International Holdings LLC	100	DE
Blue Cube International Holdings LLC	Blue Cube Spinco LLC	100	DE
Blue Cube IP LLC	Blue Cube Holding LLC	100	DE
Blue Cube Operations LLC	Blue Cube Holding LLC	100	DE
Blue Cube Spinco LLC	Olin	100	DE
Blue Water Alliance JV, LLC	Olin	100	DE
Henderson Groundwater LLC	Pioneer Americas LLC has a 1/3 ownership in this limited liability company that will be treated as a partnership for income tax purposes	33	NV
HPCM LLC	K. A. Steel Chemicals Inc.	100	DE
Hunt Trading Co.	Olin	100	MO
Imperial West Chemical Co.	Pioneer Companies, LLC	100	NV
K. A. Steel Chemicals Inc.	Olin	100	DE
K. A. Steel International Inc.	K. A. Steel Chemicals Inc.	100	DE
KAS Muscatine LLC	K. A. Steel Chemicals Inc.	100	IA
KNA California, Inc. (see footnote 2)	Imperial West Chemical Co.	100	DE
KWT, Inc.	Pioneer Water Technologies, Inc.	100	DE
Monarch Brass & Copper Corp.	Olin	100	NY
Monarch Brass & Copper of New England Corp.	Monarch Brass & Copper Corp.	100	RI
New Haven Copper Company	Monarch Brass & Copper Corp.	100	CT
Niloco Global Holdings LLC	Olin	100	DE
Niloco Hydrogen Holdings LLC	Olin	100	DE
Olin Benefits Management, Inc.	Olin	100	CA
Olin Business Holdings	Olin; Olin Engineered Systems, Inc.; Pioneer Americas LLC	62.05 36.15 1.80	DE
Olin Chlor Alkali Logistics Inc.	Olin Corporation	100	DE
Olin Chlorine 7, LLC	Blue Cube Holding LLC	100	DE
Olin Engineered Systems, Inc.	Olin	100	DE
Olin Far East, Limited	Olin	100	DE
Olin Finance Company, LLC	Olin	100	DE
Olin Financial Services Inc.	Olin	100	DE
Olin Funding Company LLC	Olin	100	DE
Olin North American Holdings, Inc.	Olin	100	DE
Olin Russellville Cell Technologies LLC	Blue Cube Operations LLC	100	DE
Olin Winchester, LLC	Olin	100	DE
Pioneer Americas LLC	Olin Canada ULC	100	DE
Pioneer Companies, LLC	Olin North American Holdings, Inc.	100	DE
Pioneer (East), Inc.	Pioneer Companies, LLC	100	DE
Pioneer Licensing, Inc.	Pioneer Companies, LLC	100	DE
Pioneer Transportation LLC	Olin Business Holdings	100	DE
Pioneer Water Technologies, Inc.	Pioneer Companies, LLC	100	DE
Ravenna Arsenal, Inc.	Olin	100	OH
TriOlin, LLC	Olin	100	DE
Waterbury Rolling Mills, Inc.	Monarch Brass & Copper Corp.	100	CT
Winchester Ammunition, Inc.	Olin Winchester, LLC	100	DE
Winchester Defense, LLC	Olin	100	DE
INTERNATIONAL			
3229897 Nova Scotia Co.	Blue Cube Holding LLC	100	Nova Scotia, Canada

BC Switzerland GmbH	Nedastra Holding B.V.	100	Switzerland
Blue Cube Australia Pty Ltd	Blue Cube Chemicals Singapore Pte. Ltd.	100	Australia
Blue Cube Brasil Comércio de Produtos Químicos Ltda. (see footnote 3 for Subordinates)	Nedastra Holding B.V.	100	Brazil
Blue Cube Chemicals Hong Kong Limited	Blue Cube Chemicals Singapore Pte. Ltd.	100	Hong Kong
Blue Cube Chemicals India Private Limited	Blue Cube Chemicals Singapore Pte. Ltd. (41,259,999 equity shares) Blue Cube Chemicals Hong Kong Limited (1 equity share)	100	India
Blue Cube Chemicals Italy S.r.l.	Nedastra Holding B.V.	100	Italy
Blue Cube Chemical Korea Ltd.	Blue Cube Chemicals Singapore Pte. Ltd.	100	Korea
Blue Cube Chemicals Singapore Pte. Ltd.	Nedastra Holding B.V.	100	Singapore
Blue Cube Chemicals Singapore Pte. Ltd. Taiwan Branch	Blue Cube Chemicals Singapore Pte. Ltd.	100	Taiwan
Blue Cube Chemicals South Africa Pty Ltd	Nedastra Holding B.V.	100	South Africa
Blue Cube Chemicals (UK) Limited	Nedastra Holding B.V.	100	United Kingdom
Blue Cube Chemicals (Zhangjiagang) Co., Ltd.	Blue Cube Chemicals Singapore Pte. Ltd.	100	China
Blue Cube Chemicals (Zhangjiagang) Co., Ltd. Shanghai Branch	Blue Cube Chemicals (Zhangjiagang) Co., Ltd.	100	China
Blue Cube Denmark ApS	Nedastra Holding B.V.	100	Denmark
Blue Cube Germany Assets GmbH & Co. KG	Blue Cube Germany Assets Management GmbH (General partner); Nedastra Holding B.V. (Limited partner)	0 100	Germany
Blue Cube Germany Assets Management GmbH	Nedastra Holding B.V.	100	Germany
Blue Cube Japan LLC	Blue Cube Chemicals Singapore Pte. Ltd.	100	Japan
Blue Cube Mexico, S. de R.L. de C.V.	Blue Cube Holding LLC; 2% minority interest owned by Blue Cube Operations LLC	98 02	Mexico
Blue Cube Netherlands B.V.	Olin International Holdings Limited	100	Netherlands
Blue Cube Rasha OOO	Nedastra Holding B.V.; Blue Cube Netherlands B.V.	99,995 0.005	Russia
Blue Cube (Thailand) Company Limited	Blue Cube Holding LLC; Blue Cube Operations LLC; Blue Cube IP LLC	99,998 0.001 0.001	Thailand
Blue Cube (Thailand) Company Limited Hong Kong Branch	Blue Cube (Thailand) Company Limited	100	Hong Kong
Blue Cube Turkey Kimyasal Ürünler Limited Şirketi	Nedastra Holding B.V.	100	Turkey
Blue Water Alliance JV LLP	Niloco Global Holdings LLC Olin Corporation	51 49	United Kingdom
CANSO Chemicals Limited	Olin Canada ULC; Northern Pulp is the other 50% owner (Pioneer related)	50 50	Nova Scotia, Canada
Nedastra Holding B.V.	Olin International Holdings Limited	100	Netherlands
Niloco Cyprus Limited	Olin International Holdings Limited	100	Cyprus
Nutmeg Insurance Limited	Olin	100	Bermuda
Olin Canada ULC	Olin North American Holdings, Inc.	100	Nova Scotia, Canada
Olin Germany AP LTP GmbH	Blue Cube Germany Assets GmbH & Co. KG	100	Germany
Olin Germany Upstream GmbH & Co. KG	Blue Cube Germany Assets GmbH & Co. KG	100	Germany
Olin Hunt Specialty Products S.r.l.	Olin; Hunt Trading Co.	99 01	Italy
Olin International Holdings Limited	Blue Cube Intermediate Holding 2 LLC	100	United Kingdom
Winchester Australia Limited	Olin	100	Australia

Footnotes:

- 1 Omitted from the following list are the names of certain subsidiaries which, if considered in the aggregate as a single subsidiary, would not constitute a significant subsidiary
- 2 In California only, this entity conducts business under the name of Kenwater KNA California, Inc.
- 3 Subordinates of Blue Cube Brasil Comércio de Produtos Químicos Ltda.:
 - São Paulo Branch of Blue Cube Brasil Comércio de Produtos Químicos Ltda.
 - Bahia Branch of Blue Cube Brasil Comércio de Produtos Químicos Ltda. (Caustic Soda)
 - Paraná Branch of Blue Cube Brasil Comércio de Produtos Químicos Ltda. (Caustic Soda)

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the registration statements No. 333-237060 on Form S-3 and Nos. 333-18619, 333-39305, 333-35818, 333-97759, 333-110135, 333-110136, 333-124483, 333-133731, 333-148918, 333-158799, 333-166288, 333-176432, 333-195500, 333-209534, 333-211434, 333-224569 and 333-255718 on Form S-8 of our report dated February 23, 2023, with respect to the consolidated financial statements of Olin Corporation and the effectiveness of internal control over financial reporting.

/s/ KPMGLLP

St. Louis, Missouri
February 23, 2023

CERTIFICATIONS

I, Scott Sutton, certify that:

1. I have reviewed this annual report on Form 10-K of Olin Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 23, 2023

/s/ Scott Sutton

Scott Sutton
Chairman, President and Chief Executive Officer

CERTIFICATIONS

I, Todd A. Slater, certify that:

1. I have reviewed this annual report on Form 10-K of Olin Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 23, 2023

/s/ Todd A. Slater

Todd A. Slater
Senior Vice President and Chief Financial Officer

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED
PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Olin Corporation (the "Company") on Form 10-K for the period ended December 31, 2022 as filed with the Securities and Exchange Commission (the "Report"), I, Scott Sutton, President and Chief Executive Officer and I, Todd A. Slater, Senior Vice President and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to our knowledge: (1) the Report fully complies with the requirements of Section 13(a) of the Securities Exchange Act of 1934; and (2) the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its Staff upon request.

/s/ Scott Sutton
Scott Sutton
Chairman, President and Chief Executive
Officer

Dated: February 23, 2023

/s/ Todd A. Slater
Todd A. Slater
Senior Vice President and Chief Financial
Officer

Dated: February 23, 2023