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

Form 10-K

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

For the Fiscal Year Ended December 31, 2019

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 No. 001-32260

Westlake Chemical Corporation
(Exact name of registrant as specified in its charter)

Delaware	**76-0346924**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

2801 Post Oak Boulevard, Suite 600
Houston, Texas 77056
(Address of principal executive offices, including zip code)
(713) 960-9111
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value	WLK	The New York Stock Exchange
1.625% Senior Notes due 2029	WLK29	The New York Stock Exchange

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

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

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange 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 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 definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act:

Large accelerated filer	Accelerated filer
Non-accelerated filer	Smaller reporting company
	Emerging growth company

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

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

The aggregate market value of the registrant's voting stock held by non-affiliates of the registrant on June 30, 2019, the end of the registrant's most recently completed second fiscal quarter, based on a closing price on June 28, 2019 of $69.46 on the New York Stock Exchange was approximately $2.5 billion.

There were 128,392,753 shares of the registrant's common stock outstanding as ofFebruary 12, 2020.

DOCUMENTS INCORPORATED BY REFERENCE:

Certain information required by Part II and Part III of this Form 10-K is incorporated by reference from the registrant's definitive Proxy Statement to be filed pursuant to Regulation 14A with respect to the registrant's 2020 Annual Meeting of Stockholders to be held onMay 15, 2020.

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Explanatory Note

References in this Annual Report on Form 10-K (this "report") to "we," "our," "us" or like terms refer to Westlake Chemical Corporation ("Westlake" or the "Company").

Cautionary Statements about Forward-Looking Statements

The Private Securities Litigation Reform Act of 1995 provides safe harbor provisions for forward-looking information. Certain of the statements contained in this Form 10-K are forward-looking statements. All statements, other than statements of historical facts, included in this Form 10-K that address activities, events or developments that we expect, project, believe or anticipate will or may occur in the future are forward-looking statements. Forward-looking statements can be identified by the use of words such as "believes," "intends," "may," "should," "could," "anticipates," "expected" or comparable terminology, or by discussions of strategies or trends. Although we believe that the expectations reflected in such forward-looking statements are reasonable, we cannot give any assurances that these expectations will prove to be correct. Forward-looking statements relate to matters such as:

- future operating rates, margins, cash flows and demand for our products;
- industry market outlook, including the price of crude oil;
- production capacities;
- currency devaluation;
- our ability to borrow additional funds under our credit agreement;
- our ability to meet our liquidity needs;
- our ability to meet debt obligations under our debt instruments;
- our intended quarterly dividends;
- future capacity additions and expansions in the industries in which we compete;
- results of acquisitions;
- timing, funding and results of capital projects;
- pension plan obligations, funding requirements and investment policies;
- compliance with present and future environmental regulations and costs associated with environmentally-related penalties, capital expenditures, remedial actions and proceedings, including any new laws, regulations or treaties that may come into force to limit or control carbon dioxide and other GHG emissions or to address other issues of climate change;
- effects of pending legal proceedings; and
- timing of and amount of capital expenditures.

We have based these statements on assumptions and analyses in light of our experience and perception of historical trends, current conditions, expected future developments and other factors we believe were appropriate in the circumstances when the statements were made. Forward-looking statements by their nature involve substantial risks and uncertainties that could significantly impact expected results, and actual future results could differ materially from those described in such statements. While it is not possible to identify all factors, we continue to face many risks and uncertainties. Among the factors that could cause actual future results to differ materially are the risks and uncertainties discussed under "Risk Factors" and those described from time to time in our other filings with the SEC including, but not limited to, the following:

- general economic and business conditions;
- the cyclical nature of the chemical and building products industries;
- the availability, cost and volatility of raw materials and energy;
- uncertainties associated with the United States, European and worldwide economies, including those due to political tensions and unrest in the Middle East and elsewhere;
- current and potential governmental regulatory actions in the United States and other countries;
- industry production capacity and operating rates;
- the supply/demand balance for our products;
- competitive products and pricing pressures;

- instability in the credit and financial markets;
- access to capital markets;
- terrorist acts;
- operating interruptions (including leaks, explosions, fires, weather-related incidents, mechanical failure, unscheduled downtime, labor difficulties, transportation interruptions, spills and releases and other environmental risks);
- changes in laws or regulations, including trade policies;
- technological developments;
- foreign currency exchange risks;
- our ability to implement our business strategies; and
- creditworthiness of our customers.

Many of such factors are beyond our ability to control or predict. Any of the factors, or a combination of these factors, could materially affect our future results of operations and the ultimate accuracy of the forward-looking statements. These forward-looking statements are not guarantees of our future performance, and our actual results and future developments may differ materially from those projected in the forward-looking statements. Management cautions against putting undue reliance on forward-looking statements or projecting any future results based on such statements or present or prior earnings levels. Every forward-looking statement speaks only as of the date of the particular statement, and we undertake no obligation to publicly update or revise any forward-looking statements.

Industry and Market Data

Industry and market data used throughout this Form 10-K were obtained through internal company research, surveys and studies conducted by unrelated third parties and publicly available industry and general publications, including information from IHS Markit ("IHS"). We have not independently verified market and industry data from external sources. While we believe internal company estimates are reliable and market definitions are appropriate, neither such estimates nor these definitions have been verified by any independent sources.

Production Capacity

Unless we state otherwise, annual production capacity estimates used throughout this Form 10-K represent rated capacity of the facilities at December 31, 2019. We calculated rated capacity by estimating the number of days in a typical year that a production unit of a plant is expected to operate, after allowing for downtime for regular maintenance, and multiplying that number by an amount equal to the unit's optimal daily output based on the design feedstock mix. Because the rated capacity of a production unit is an estimated amount, actual production volumes may be more or less than the rated capacity.

PART I

Item 1. Business

General

We are a vertically integrated global manufacturer and marketer of basic chemicals, vinyls, polymers and building products. Our products include some of the most widely used materials in the world, which are fundamental to many diverse consumer and industrial markets, including flexible and rigid packaging, automotive products, coatings, water treatment, refrigerants, residential and commercial construction as well as other durable and non-durable goods. We operate in two principal operating segments, Olefins and Vinyls. We are highly integrated along our olefins product chain with significant downstream integration into polyethylene and styrene monomer. We are also an integrated global producer of vinyls with substantial downstream integration into polyvinyl chloride ("PVC") building products.

We began operations in 1986 after our first polyethylene plant, an Olefins segment business, near Lake Charles, Louisiana was acquired from Occidental Petroleum Corporation. We began our vinyls operations in 1990 with the acquisition of a vinyl chloride monomer ("VCM") plant in Calvert City, Kentucky from The B.F.Goodrich Company. In 1992, we commenced our Vinyls segment's building products operations after acquiring three PVC pipe plants. Since 1986, we have grown rapidly into an integrated global producer of basic chemicals, vinyls, polymers and building products. We achieved this growth by acquiring existing plants or constructing new plants and completing numerous capacity or production line expansions. We regularly consider acquisitions and other internal and external growth opportunities that would be consistent with, or complementary to, our overall business strategy.

In 2014, we formed Westlake Chemical Partners LP ("Westlake Partners") to operate, acquire and develop ethylene production facilities and related assets. Also in 2014, Westlake Partners completed an initial public offering. As of February 12, 2020, Westlake Partners' assets consisted of a 22.8% limited partner interest in Westlake Chemical OpCo LP ("OpCo"), as well as the general partner interest in OpCo. Prior to the Westlake Partners IPO, OpCo's assets were wholly-owned by us. OpCo's assets include two ethylene production facilities at our olefins facility in Lake Charles, one ethylene production facility at our Calvert City site and a 200-mile common carrier ethylene pipeline that runs from Mont Belvieu, Texas to the Longview, Texas site, which includes our Longview polyethylene production facility. We retain a 77.2% limited partner interest in OpCo, a 40.1% limited partner interest in Westlake Partners (consisting of 14,122,230 common units), a general partner interest in Westlake Partners and incentive distribution rights. The operations of Westlake Partners are consolidated in our financial statements. We are party to certain agreements with Westlake Partners and OpCo whereby, among other things, OpCo sells us 95% of the ethylene it produces on a cost-plus basis that is expected to generate a fixed margin per pound of $0.10. We use this ethylene in the production processes of both our Olefins and Vinyls segments. For more information, see "—Olefins Business" and "—Vinyls Business" below.

On January 2, 2019, we completed the acquisition of NAKAN™, a global compounding solutions business. NAKANs products are used in a wide-variety of applications, including in the automotive, building and construction, and medical industries. With this acquisition, our compounding business now has facilities worldwide in China, France, Germany, Italy, Japan, Mexico, Spain, the United States and Vietnam, as well as a world-class research facility in France and several application laboratories.

On November 12, 2019, we, through one of our subsidiaries, Eagle US 2 LLC ("Eagle"), completed the acquisition of an additional 34.8% of the membership interests in LACC, LLC ("LACC") from Lotte Chemical USA Corporation, a subsidiary of Lotte Chemical Corporation ("Lotte"), for approximately $817 million (the "Transaction"). Prior to the Transaction, Eagle owned approximately 12% of the membership interests in LACC. As of December 31, 2019, we owned an aggregate 46.8% membership interest in LACC. The LACC ethylene plant has 2.2 billion pounds per year of ethylene production capacity and is adjacent to our chlor-alkali facility in Lake Charles. During the third quarter of 2019, the LACC ethylene plant began commercial operations. As a result of the Transaction, we will receive our proportionate share of LACC's ethylene production on a cash-cost basis, which is expected to benefit our integrated downstream operations.

We benefit from highly integrated production facilities that allow us to process raw materials into higher value-added chemicals and building products. As of February 12, 2020, we (directly and through OpCo, our investment in LACC, and our 95%- and 60%-owned joint ventures in China and Taiwan, respectively) had approximately 44.0 billion pounds per year of aggregate production capacity at numerous manufacturing sites in North America, Europe and Asia.

Olefins Business

Products

Olefins are the basic building blocks used to create a wide variety of petrochemical products. We manufacture ethylene (through OpCo), polyethylene, styrene and associated co-products at our manufacturing facility in Lake Charles and polyethylene at our Longview facility. We have two ethylene plants, which are owned by OpCo, two polyethylene plants and one styrene monomer plant at our olefins facility in Lake Charles. We have three polyethylene plants and a specialty polyethylene wax plant at our Longview site.

The following table illustrates our production capacities atFebruary 12, 2020 by principal product and the primary end uses of these materials:

Product	Annual Capacity	End Uses	Principal Manufacturing Facilities (2) (3)
	(Millions of pounds)		
Ethylene (1)	2,990	Polyethylene, ethylene dichloride ("EDC"), styrene, ethylene oxide/ethylene glycol	Lake Charles, Louisiana
Low-Density Polyethylene ("LDPE")	1,500	High clarity packaging and bags, shrink films, food packaging, coated paper board, cup stock, paper folding cartons, lids, closures and general purpose molding	Lake Charles, Louisiana Longview, Texas
Linear Low-Density Polyethylene ("LLDPE")	1,070	Heavy-duty films and bags, general purpose liners	Lake Charles, Louisiana Longview, Texas
Styrene	570	Consumer disposables, packaging material, appliances, paints and coatings, resins and building materials	Lake Charles, Louisiana

(1) Production capacity owned by OpCo.

(2) We lease the land on which our Longview, Texas facility is located.

(3) We own the Lake Charles, Louisiana facility.

Ethylene. Ethylene is the world's most widely used petrochemical in terms of volume. It is the key building block used to produce a large number of higher value-added chemicals including polyethylene, EDC, VCM and styrene. OpCo has the capacity to produce approximately 3.0 billion pounds of ethylene per year at our olefins facility at our Lake Charles site, and we have the capability to consume all of OpCo's production that we purchase at Lake Charles to produce polyethylene and styrene monomer in our Olefins business and to produce VCM and EDC in our Vinyls business. OpCo also produces ethylene for our Vinyls segment at our Calvert City site, and substantially all of the ethylene we purchase from OpCo at Calvert City is used internally in the production of VCM. For OpCo's annual ethylene production that is purchased by us for our Vinyls business, see "Business—Vinyls Business." In addition, we (through OpCo) produce ethylene co-products including chemical grade propylene, crude butadiene, pyrolysis gasoline and hydrogen. We (through OpCo) sell our entire output of these co-products to external customers.

Polyethylene. Polyethylene, the world's most widely consumed polymer, is used in the manufacture of a wide variety of film, coatings and molded product applications primarily used in packaging. Polyethylene is generally classified as either LDPE, LLDPE or high-density polyethylene ("HDPE"). The density correlates to the relative stiffness of the end-use products. The difference between LDPE and LLDPE is molecular, and products produced from LLDPE, in general, have higher strength properties than products produced from LDPE. LDPE exhibits better clarity and other physical properties and is used in end products such as bread bags, food wraps, milk carton coatings and food packaging. LLDPE is used for higher film strength applications such as stretch film and heavy duty sacks. HDPE is used to manufacture products such as grocery, merchandise and trash bags, rigid plastic containers, plastic closures and pipe.

We are the second-largest producer of LDPE by capacity in North America and predominantly use the autoclave technology (versus tubular technology), which is capable of producing higher-margin specialty polyethylene products. In 2019, our annual capacity of approximately 1.5 billion pounds was available in numerous formulations to meet the needs of our diverse customer base. We also have the capacity to produce approximately 1.1 billion pounds of LLDPE per year in various formulations. We produce LDPE and LLDPE at both the Lake Charles and Longview facilities. Our Lake Charles and Longview facilities also have the capability to produce HDPE. We sell polyethylene to external customers as a final product in pellet form.

Styrene. Styrene is used to produce derivatives such as polystyrene, acrylonitrile butadiene styrene, unsaturated polyester and synthetic rubber. These derivatives are used in a number of applications including consumer disposables, food packaging, housewares, paints and coatings, building materials, tires and toys. We produce styrene at our Lake Charles plant, where we have the capacity to produce approximately 570 million pounds of styrene per year, all of which is sold to external customers.

Feedstocks

We are highly integrated along our olefins product chain. We (through OpCo) produce most of the ethylene required to produce our polyethylene and styrene. Ethylene can be produced from either petroleum liquid feedstocks, such as naphtha, condensates and gas oils, or from natural gas liquid feedstocks, such as ethane, propane and butane. Both of OpCo's Lake Charles ethylene plants use ethane as the primary feedstock. Pursuant to a feedstock supply agreement between us and OpCo, OpCo receives ethane feedstock at the olefins facility at our Lake Charles site through several pipelines from a variety of suppliers in Texas and Louisiana. We own a 50% interest in a 104-mile natural gas liquids pipeline from Mont Belvieu to our Lake Charles site. OpCo owns a 200-mile ethylene pipeline that runs from Mont Belvieu to our Longview site.

In addition to ethylene supplied by OpCo, we also acquire ethylene from third parties in order to supply a portion of our Vinyls segment ethylene requirements. We acquire butene and hexene to manufacture polyethylene and benzene to manufacture styrene. We receive butene and hexene at the Lake Charles site and hexene at the Longview site via rail car from several suppliers. We receive benzene via barges, ships and pipeline pursuant to short-term arrangements. We purchase butene and hexene pursuant to multi-year contracts, some of which are renewable for an additional term subject to either party to the contract notifying the other party that it does not wish to renew the contract. We purchase electricity for our Lake Charles facility under long-term industrial contracts.

Marketing, Sales and Distribution

We have an internal sales force that sells our products directly to our customers. Our polyethylene customers are some of the nation's largest producers of film and flexible packaging.

We and OpCo sell ethylene and ethylene co-products to external customers. OpCo's primary ethylene co-products are chemical grade propylene, crude butadiene, pyrolysis gasoline and hydrogen.

We have storage agreements and exchange agreements that allow us and OpCo access to customers who are not directly connected to the pipeline system that we own. OpCo ships crude butadiene and pyrolysis gasoline by rail or truck. Additionally, we transport our polyethylene and styrene by rail or truck. Further, styrene can be transported by barge or ship.

No single customer accounted for 10% or more of net sales for the Olefins segment in2019.

Competition

The markets in which our Olefins business operates are highly competitive. We compete on the basis of customer service, product deliverability, quality, consistency, performance and price. Our competitors in the ethylene, polyethylene and styrene markets are some of the world's largest chemical companies, including Chevron Phillips Chemical Company, Dow Inc., ExxonMobil Chemical Company, Formosa Plastics Corporation, LyondellBasell Industries, N.V., NOVA Chemicals Corporation and Sasol Limited.

Vinyls Business

Products

Principal products in our integrated Vinyls segment include PVC, VCM, EDC, chlor-alkali (chlorine and caustic soda) and chlorinated derivative products and, through OpCo and LACC, ethylene. We also manufacture and sell PVC compounds and building products fabricated primarily from PVC, including residential siding, trim and moldings; pipe and fittings for various water, sewer, electrical and industrial applications; profiles for windows and doors; decking; films for various inflatables, wallcovering, tape and roofing applications; and composite roof tiles. We manage our integrated Vinyls production chain, from the basic chemicals to finished building products, to optimize product margins and capacity utilization. Our primary North American chemical manufacturing facilities are located in our Calvert City, Kentucky and Lake Charles, Plaquemine and Geismar, Louisiana sites. Our Calvert City site includes an ethylene plant, which is owned by OpCo, a chlor-alkali plant, a VCM plant and a PVC plant. Our Lake Charles site includes three chlor-alkali plants, two VCM plants, a chlorinated derivative products plant and cogeneration assets. Our Plaquemine site includes a chlor-alkali plant, a VCM plant, a PVC plant and cogeneration assets. Our Geismar site includes a chlor-alkali plant, a VCM plant and a PVC plant. We also produce chlorine, caustic soda, hydrogen and chlorinated derivative products at our Natrium, West Virginia; Longview, Washington and Beauharnois, Quebec facilities and PVC resin at our facility in Aberdeen, Mississippi. Our European chemical manufacturing facilities are located in Germany and include two chlor-alkali plants, two VCM plants and five PVC plants. As of February 12, 2020, we owned 36 building product and PVC compound facilities in North America, Europe and Asia. Our Asian vinyls chemical manufacturing facilities are located near Shanghai, in China, and in Kaohsiung, Taiwan, through our 95%- and 60%-owned joint ventures, respectively, and include a PVC plant, a PVC film and sheet plant, a chlor-alkali plant and a chlorinated derivative products plant.

The following table illustrates our production capacities at February 12, 2020 by principal product and the end uses of these products:

Product [(1)]	**Annual Capacity** [(2)]	**End Uses**	**Principal Manufacturing Facilities** [(4) (5) (6)]
	(Millions of pounds)		
Specialty PVC	1,090	Automotive sealants, cable sheathing, medical applications and other applications	Burghausen, Gendorf, Schkopau and Cologne, Germany
Commodity PVC	6,700	Construction materials including pipe, siding, profiles for windows and doors, film and sheet for packaging and other applications	Calvert City, Kentucky, Geismar, Louisiana, Plaquemine, Louisiana, Aberdeen, Mississippi, Cologne and Knapsack, Germany
VCM	7,630	PVC, PVC Compounds	Calvert City, Kentucky, Geismar, Louisiana, Plaquemine, Louisiana, Lake Charles, Louisiana, Gendorf and Knapsack, Germany
Chlorine	7,140	VCM, organic/inorganic chemicals, bleach	Calvert City, Kentucky, Geismar, Louisiana, Plaquemine, Louisiana, Lake Charles, Louisiana, Natrium, West Virginia, Gendorf and Knapsack, Germany
Caustic Soda	7,860	Pulp and paper, organic/inorganic chemicals, neutralization, alumina	Calvert City, Kentucky, Geismar, Louisiana, Plaquemine, Louisiana, Lake Charles, Louisiana, Natrium, West Virginia, Gendorf and Knapsack, Germany
Chlorinated Derivative Products	2,290	Coatings, flavorants, films, refrigerants, water treatment applications, chemicals and pharmaceutical production	Lake Charles, Louisiana, Natrium, West Virginia, Plaquemine, Louisiana, Longview, Washington, Beauharnois, Canada
Ethylene [(3)]	1,760	VCM	Calvert City, Kentucky
Building Products and PVC Compounds	3,380	Pipe: water and sewer, plumbing, irrigation, conduit; fittings; profiles and foundation building products; exteriors; window and door components; deck components; siding, trim and mouldings; film and sheet; composite roof tiles; Compounds: automotive interior, automotive exterior, stabilizers, medical applications, profiles, moldings, electrical products, casing and packaging	

(1) EDC, a VCM intermediate product, is not included in the table.

(2) Includes capacity related to our 95%- and 60%-owned Asian joint ventures.

(3) Includes production capacity in Calvert City owned by OpCo and our portion of LACC's production capacity in Lake Charles.

(4) Except as noted in notes (5) and (6) below, we own each of these facilities.

(5) We lease the land on which our Gendorf, Burghausen, Knapsack, Schkopau and Cologne, Germany and Longview, Washington facilities are located.

(6) We lease a portion of the land on which our Aberdeen and Calvert City facilities are located.

PVC. PVC, the world's third most widely used plastic, is an attractive alternative to traditional materials such as glass, metal, wood, concrete and other plastic materials because of its versatility, durability and cost-competitiveness. PVC is produced from VCM, which is, in turn, made from chlorine and ethylene. PVC compounds are highly customized formulations that offer specific end-use properties based on customer-determined manufacturing specifications. PVC compounds are made by combining PVC resin with various additives in order to make either rigid and impact-resistant or soft and flexible compounds. The various compounds are then fabricated into end-products through extrusion, calendering, injection-molding or blow-molding.

We are the second-largest PVC producer in the world. With the completion of our previously announced expansion projects at our Geismar and Burghausen plants in 2019, we have the capacity to produce approximately 6.7 billion pounds and 1.1 billion pounds of commodity and specialty PVC per year, respectively, at our various facilities globally. We use some of our PVC internally in the production of our building products and PVC compounds. The remainder of our PVC is sold to downstream fabricators and the international markets.

VCM. VCM is used to produce PVC, solvents and PVC-related products. We use ethylene and chlorine to produce EDC, which is used in turn, to produce VCM. We have the capacity to produce approximately 6.1 billion pounds and 1.5 billion pounds of VCM per year at our North American and European facilities, respectively. The majority of our VCM is used internally in our PVC operations. VCM and EDC not used internally are sold externally.

Chlorine and Caustic Soda. We combine salt and electricity to produce chlorine and caustic soda, commonly referred to as chlor-alkali, at our Lake Charles, Plaquemine, Natrium, Calvert City, Geismar, Beauharnois, Longview (WA), Gendorf, Knapsack and Kaohsiung facilities. We are the second-largest chlor-alkali producer in the world. We use our chlorine production in our VCM and chlorinated derivative products plants. We currently have the capacity to supply all of our chlorine requirements internally. Any remaining chlorine is sold into the merchant chlorine market. Our caustic soda is sold to external customers who use it for, among other things, the production of pulp and paper, organic and inorganic chemicals and alumina.

Chlorinated Derivative Products. Our chlorinated derivative products include ethyl chloride, perchloroethylene, trichloroethylene, tri-ethane® solvents, VersaTRANS® solvents, calcium hypochlorite, hydrochloric acid ("HCL") and pelletized caustic soda ("PELS"). We have the capacity to produce approximately 2.3 billion pounds of chlorinated derivative products per year, primarily at our Lake Charles, Natrium, Beauharnois and Longview (WA) facilities. The majority of our chlorinated derivative products are sold to external customers who use these products for, among other things, refrigerants, water treatment applications, chemicals and pharmaceutical production, food processing, steel pickling, solvent and cleaning chemicals and natural gas and oil production.

Ethylene. We utilize ethylene from OpCo's facility in Calvert City and LACC to produce VCM at our facilities. We obtain the remainder of the ethylene we need for our Vinyls business from third party purchases. The use of ethane feedstock by our ethylene plants enables us to enhance our low cost vinyl chain integration.

Building Products and PVC Compounds. Products made from PVC are used in materials ranging from water and sewer systems to home and commercial applications for siding, trim, mouldings, deck, window and door profiles. Our building products consist of two primary product groups: (i) exterior products, which includes siding, trim, mouldings, window profiles, decking products and roofing applications; and (ii) PVC pipe, specialty PVC pipe and fittings. We manufacture and market exterior products under the Royal Building Products®, Celect Cellular Exteriors by Royal®, Zuri Premium Decking by Royal®, Royal S4S Trim Board®, Exterior Portfolio® and DaVinci® brand names. We manufacture and market specialty pipe and fittings, water, sewer, irrigation and conduit pipe products under the NAPCO™ brand name. We manufacture film and sheet at our Shanghai facility for both Asian and global markets. Flexible PVC compounds are used for wire and cable insulation, medical films and packaging, flooring, wall coverings, automotive interior and exterior trims and packaging. Rigid extrusion PVC compounds are commonly used in window and door profiles, vertical blinds and construction products, including pipe and siding. Injection-molding PVC compounds are used in specialty products such as computer housings and keyboards, appliance parts and containers. Powder compounds are primarily used in window and door profiles and pipe and fittings. The combined capacity of our 36 building products and PVC compounds plants is approximately 3.4 billion pounds per year.

Electricity. Our Lake Charles, Plaquemine and Natrium cogeneration assets have the capacity to generate electricity of approximately 420, 240 and 100 megawatts, respectively, per year. Our North American joint ventures include a 50% interest in RS Cogen LLC ("RS Cogen") that generates electricity, of which our share is approximately 212 megawatts.

Feedstocks

We are highly integrated along our vinyls production chain. We produce most of the ethylene required at our Calvert City and Lake Charles facilities utilizing ethane feedstock. The LACC ethylene facility is located adjacent to our vinyls facility in Lake Charles and has an ethylene production capacity of 2.2 billion pounds per year. During the third quarter of 2019, the LACC ethylene plant began its commercial operations. At December 31, 2019, we, through one of our subsidiaries, own 46.8% of the membership interests in LACC. We receive our proportionate share in ethylene production on a cash-cost basis and primarily use it to produce VCM. In Germany, we have access to, and partially own, an ethylene pipeline. The salt requirements for several of our larger chlor-alkali plants are supplied internally from salt domes we either own or lease and is transported by pipelines we own. We purchase the salt required for our other chlor-alkali plants pursuant to long-term contracts. Electricity and steam for one of our Lake Charles facilities are produced by both on-site cogeneration units and through a toll arrangement with RS Cogen, a joint venture in which we own a 50% interest. RS Cogen operates a process steam, natural gas-fired cogeneration facility adjacent to the site. Electricity and steam for the Plaquemine facility is supplied internally by our on-site cogeneration unit. A portion of our Natrium facility's electricity requirements is produced by our on-site generation unit, and the remainder is purchased. We purchase electricity for our remaining facilities under long-term contracts. We purchase VCM for our Asian PVC plant on a contract and spot basis.

Our North American and Asian PVC facilities supply predominantly all of the PVC required for our building products plants. PVC required for the PVC compounds plants is either internally sourced or externally purchased at market prices based on the location of the plants. The remaining feedstocks include pigments, fillers, stabilizers and other ingredients, which we purchase under short-term contracts based on prevailing market prices.

Marketing, Sales and Distribution

We have a dedicated sales force for our business, organized by product line and region. In addition, we rely on distributors to market products to smaller customers. We use some of our PVC internally in the production of our building products and PVC compounds. The remainder of our PVC is sold to downstream fabricators and the international markets. We have the capacity to use a majority of our chlorine internally to produce VCM and EDC, most of which, in turn, is used to produce PVC. We also use our chlorine internally to produce chlorinated derivative products. We sell the remainder of our chlorine and substantially all of our caustic soda production to external customers. The majority of our products are shipped from production facilities directly to the customer via pipeline, truck, rail, barge and/or ship. The remaining products are shipped from production facilities to third party chemical terminals and warehouses until being sold to customers.

We are the second largest manufacturer of PVC pipe by capacity in North America. We sell a majority of our siding, trim and mouldings products, PVC pipe, specialty PVC pipe and fittings, and film and sheet products through a combination of our internal sales force and manufacturer's representatives. In Canada, we operate 18 company-owned distribution branches that sell our vinyl siding and accessories and trim and mouldings products, as well as pipe and fittings. We also engage in advertising programs primarily directed at trade professionals that are intended to develop awareness and interest in our products. In addition, we display our building products at trade shows.

No single customer accounted for 10% or more of net sales for the Vinyls segment in2019.

Competition

The markets in which our Vinyls business operates are highly competitive. Competition in the vinyls market is based on product availability, product performance, customer service and price. We compete in the vinyls market with other producers including Formosa Plastics Corporation, Oxy Chem, LP, Shintech, Inc., Olin Corporation, GEON Performance Solutions, Teknor Apex Company, Inc., Orbia Advanced Corporation, S.A.B. de C.V., INOVYN ChlorVinyls Limited, VYNOVA Group and KEM ONE Group SAS.

Competition in the building products market is based on on-time delivery, product quality, product innovation, customer service, product consistency and price. We compete in the building products market with other producers and fabricators including Diamond Plastics Corporation, JM Eagle Inc., Cornerstone Building Brands, Inc., CertainTeed Corporation, IPEX Inc., Associated Materials LLC and the Azek Company.

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. National, state or provincial and local standards regulating air, water and land quality affect substantially all of our manufacturing locations around the world. Compliance with such laws and regulations has required and will continue to require capital expenditures and increase operating costs.

It is our policy to comply with all environmental, health and safety requirements and to provide safe and environmentally sound workplaces for our employees. In some cases, compliance can be achieved only by incurring capital expenditures. In 2019, we made capital expenditures of $28 million related to environmental compliance. We estimate that we will make capital expenditures of approximately $40 million in 2020 and $34 million in 2021, respectively, related to environmental compliance. The expected 2020 and 2021 capital expenditures are relatively higher than the amounts we have spent related to environmental compliance in recent years in large part due to capital expenditures related to Environmental Protection Agency (the "EPA") regulations. The remainder of the 2020 and 2021 estimated expenditures are related to equipment replacement and upgrades. We anticipate that stringent environmental regulations will continue to be imposed on us and the industry in general. Although we cannot predict with certainty future expenditures, management believes that our current spending trends will continue.

From time to time, we receive notices or inquiries from government entities regarding alleged violations of environmental laws and regulations pertaining to, among other things, the disposal, emission and storage of chemical substances, including hazardous wastes. Item 103 of the SEC's Regulation S-K requires disclosure of certain environmental matters when a governmental authority is a party to the proceedings and the proceedings involve potential monetary sanctions, unless we reasonably believe such sanctions would not exceed $100,000.

- In May 2013, an amendment to an existing consent order agreed to by the West Virginia Department of Environmental Protection and a predecessor of Axiall required that it, among other things, pay a penalty in the amount of $449,000 and continue certain corrective actions associated with discharges of hexachlorocyclohexane (commonly referred to as BHC) from the Natrium facility's effluent discharge outfalls. The penalty was paid and corrective actions required are on-going per a December 2018 agreement to extend the compliance date under the amended consent order. The amended consent order also imposes stipulated penalties for exceedances of the facility's interim effluent discharge limits, which penalties we believe may, in the aggregate, reach or exceed $100,000.

- During September 2010, our vinyls facilities in Lake Charles and Plaquemine each received a Consolidated Compliance Order and Notice of Potential Penalty, alleging violations of various requirements of those facilities' air permits, based largely on self-reported permit deviations related to record-keeping violations. In May 2018, we reached an agreement in principal with the Louisiana Department of Environmental Quality to resolve these consolidated enforcement matters for a penalty of $162,500. The settlement agreement is subject to public comment and approval by the Louisiana Attorney General.

- For several years, the EPA has been conducting an enforcement initiative against petroleum refineries and petrochemical plants with respect to emissions from flares. On April 21, 2014, we received a Clean Air Act Section 114 Information Request from the EPA which sought information regarding flares at the Calvert City facility and certain Lake Charles facilities. The EPA has informed us that the information provided leads the EPA to believe that some of the flares are out of compliance with applicable standards. The EPA has indicated that it is seeking a consent decree that would obligate us to take corrective actions relating to the alleged noncompliance. We believe the resolution of these matters may require the payment of a monetary sanction in excess of $100,000.

- Region Six of the EPA has investigated and inspected our compliance with Risk Management Program requirements under the Clean Air Act at our Geismar facility. In November 2019, we reached an agreement in principle with the EPA to resolve this matter by consent agreement and final order for a penalty in the amount of $132,000, in addition to a supplemental environmental project with a cost to us of $116,200.

- On November 15, 2019, the EPA issued a notice of violation and opportunity to show cause letter alleging violations of certain requirements under the Toxic Substances Control Act identified during the agency's inspection of one of our Lake Charles facilities. We believe the resolution of this matter may require payment of a monetary sanction in excess of $100,000.

- On November 24, 2014, we entered into an agreed order with the Kentucky Energy and Environmental Cabinet ("KEEC") regarding our Kentucky Pollutant Discharge Elimination System permit limits for hexachlorobenzene and mercury at our Calvert City, Kentucky facility. We and the KEEC entered into a new agreed order under which we will be subject to new interim discharge limits for hexachlorobenzene in addition to accompanying stipulated penalties for exceedances of those interim discharge limits, which penalties we believe may, in the aggregate, reach or exceed $100,000.

We do not believe that the resolution of any or all of these matters will have a material adverse effect on our financial condition, results of operations or cash flows.

Also see our discussion of our environmental matters contained in Item 1A, "Risk Factors" below, Item 3, "Legal Proceedings" below and Note 22 to our consolidated financial statements included in Item 8 of this Form 10-K.

Employees

As of December 31, 2019, we had approximately 9,430 employees in the following areas:

Category	Number
Olefins segment	840
Vinyls segment	8,250
Corporate and other	340

Approximately 38% of our employees are represented by labor unions, and all of these union employees are working under collective bargaining agreements that expire at various times through 2024. We have multiple collective bargaining agreements in Europe, North America and Asia, covering different groups of our work force. There were no strikes, lockouts or work stoppages in 2019, and we believe that our relationship with our employees and unions is open and positive.

Technology

Historically, our technology strategy has been to selectively acquire licenses from third-parties, as well as develop our own proprietary technology. Our selection process incorporates many factors, including the cost of the technology, the ability to meet our customers' requirements, raw material and energy consumption rates, product quality, capital costs, maintenance requirements and reliability. Most of the technology licensed from third-party providers is perpetual and has been paid in full. We own an intellectual property portfolio developed from focused research in both process and product technology. After acquiring or developing a technology, we devote considerable effort to effectively employ the technology and further its development, with a focus towards continuous improvement of our competitive positions.

Conversely, we have selectively granted licenses to our patented Energx® technology for LLDPE production and for proprietary LDPE reactor mixing technology. We have also granted several licenses for EDC/VCM technology, including the direct chlorination process and catalyst, and S-PVC (Suspension PVC for thermoplastic process) process and technology.

Available Information

Our website address is www.westlake.com. Our website content is available for information purposes only. It should not be relied upon for investment purposes, nor is it incorporated by reference in this Form 10-K. We make available on this website under "Investor Relations/SEC Filings," free of charge, our proxy statements, annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those materials as soon as reasonably practicable after we electronically file those materials with, or furnish those materials to, the SEC. The SEC also maintains a website at www.sec.gov that contains reports, proxy statements and other information regarding SEC registrants, including us.

We intend to satisfy the requirement under Item 5.05 of Form 8-K to disclose any amendments to our Code of Ethics and any waiver from a provision of our Code of Ethics by posting such information on our website at www.westlake.com under "Investor Relations/Corporate Governance."

Item 1A. Risk Factors

Cyclicality in the petrochemical industry has in the past, and may in the future, result in reduced operating margins or operating losses.

Our historical operating results reflect the cyclical and volatile nature of the petrochemical industry. The industry is mature and capital intensive. Margins in this industry are sensitive to supply and demand balances both domestically and internationally, which historically have been cyclical. The cycles are generally characterized by periods of tight supply, leading to high operating rates and margins, followed by periods of oversupply primarily resulting from excess new capacity additions, leading to reduced operating rates and lower margins.

Moreover, profitability in the petrochemical industry is affected by the worldwide level of demand along with vigorous price competition which may intensify due to, among other things, new industry capacity. In general, weak economic conditions reduce demand and put pressure on margins. It is not possible to predict accurately the supply and demand balances, market conditions and other factors that will affect industry operating margins in the future.

New capacity additions, principally of olefins in North America, Asia and the Middle East, a number of which have been recently completed, may lead to periods of over-supply and lower profitability. As a result, our Olefins segment operating margins may be negatively impacted.

We sell commodity products in highly competitive markets and face significant competition and price pressure.

We sell our products in highly competitive markets. Due to the commodity nature of many of our products, competition in these markets is based primarily on price and to a lesser extent on performance, product quality, product deliverability and customer service. As a result, we generally are not able to protect our market position for these products by product differentiation and may not be able to pass on cost increases to our customers. Accordingly, increases in raw material and other costs may not necessarily correlate with changes in prices for these products, either in the direction of the price change or in magnitude. Specifically, timing differences in pricing between raw material prices, which may change daily, and contract product prices, which in many cases are negotiated monthly or less often, sometimes with an additional lag in effective dates for increases, have had and may continue to have a negative effect on profitability. Significant volatility in raw material costs tends to place pressure on product margins as sales price increases could lag behind raw material cost increases. Conversely, when raw material costs decrease, customers could seek relief in the form of lower sales prices.

Volatility in costs of raw materials and energy may result in increased operating expenses and adversely affect our results of operations and cash flows.

Significant variations in the costs and availability of raw materials and energy may negatively affect our results of operations. These costs have risen significantly in the past due primarily to oil and natural gas cost increases. We purchase significant amounts of ethane feedstock, natural gas, ethylene and salt to produce several basic chemicals. We also purchase significant amounts of electricity to supply the energy required in our production processes. The cost of these raw materials and energy, in the aggregate, represents a substantial portion of our operating expenses. The prices of raw materials and energy generally follow price trends of, and vary with market conditions for, crude oil and natural gas, which are highly volatile and cyclical. Changes to regulatory policies applicable to the German energy sector for industrial users have contributed to higher prices for industrial users of energy in the past and may continue to do so in the future. Our results of operations have been and could in the future be significantly affected by increases in these costs.

Price increases increase our working capital needs and, accordingly, can adversely affect our liquidity and cash flows. In addition, because we utilize the first-in, first-out ("FIFO") method of inventory accounting, during periods of falling raw material prices and declining sales prices, our results of operations for a particular reporting period could be negatively impacted as the lower sales prices would be reflected in operating income more quickly than the corresponding drop in feedstock costs. We use derivative instruments in an attempt to reduce price volatility risk on some feedstock commodities. In the future, we may decide not to hedge any of our raw material costs or any hedges we enter into may not have successful results. Also, our hedging activities involve credit risk associated with our hedging counterparties, and a deterioration in the financial markets could adversely affect our hedging counterparties and their abilities to fulfill their obligations to us.

Lower prices of crude oil, such as those experienced from the third quarter of 2014 through 2019 (atDecember 31, 2019, approximately 43% lower than their 2014 peak levels), led to a reduction in the cost advantage for natural gas liquids-based ethylene crackers in North America, such as ours, as compared to naphtha-based ethylene crackers. As a result, our margins and cash flows were negatively impacted. Lower crude oil and natural gas prices could lead to a reduction in hydraulic fracturing in the United States, which could reduce the availability of feedstock and increase prices of feedstock for our operations. Higher natural gas prices could also adversely affect our ability to export products that we produce in the United States outside of the United States. In addition to the impact that this has on our exports from the United States, reduced competitiveness of U.S. producers also has in the past increased the availability of chemicals in North America, as U.S. production that would otherwise have been sold overseas was instead offered for sale domestically, resulting in excess supply and lower prices in North America. We could also face the threat of imported products from countries that have a cost advantage. Additionally, the export of natural gas liquids from the United States or greater restrictions on hydraulic fracturing could restrict the availability of our raw materials in the United States, thereby increasing our costs.

External factors beyond our control can cause fluctuations in demand for our products and in our prices and margins, which may negatively affect our results of operations and cash flows.

External factors beyond our control can cause volatility in raw material prices, demand for our products, product prices and volumes and deterioration in operating margins. These factors can also magnify the impact of economic cycles on our business and results of operations. Examples of external factors include:

- general economic conditions, including in the United States, Europe and Asia;
- new capacity additions in North America, Europe, Asia and the Middle East;
- the level of business activity in the industries that use our products;
- competitor action;
- technological innovations;
- currency fluctuations;
- increases in interest rates;
- international events and circumstances;
- pandemics and other public health threats;
- war, sabotage, terrorism and civil unrest;
- governmental regulation, including in the United States, Europe and Asia;
- public attitude towards climate change and safety, health and the environment;
- perceptions of our products by potential buyers of our products, as well as the public generally, and related changes in behavior, including with respect to recycling;
- severe weather and natural disasters; and
- credit worthiness of customers and vendors.

A number of our products are highly dependent on durable goods markets, such as housing and construction, which are themselves particularly cyclical. Weakness in the U.S. residential housing market and economic weakness in Europe could have an adverse effect on demand and margins for our products. If the global economy worsens in general, or the U.S. residential housing market or the European economy worsens in particular, demand for our products and our results of operations and cash flows could be adversely affected.

We may reduce production at or idle a facility for an extended period of time or exit a business because of high raw material prices, an oversupply of a particular product and/or a lack of demand for that particular product, which makes production uneconomical. Temporary outages sometimes last for several quarters or, in certain cases, longer and cause us to incur costs, including the expenses of maintaining and restarting these facilities. Factors such as increases in raw material costs or lower demand in the future may cause us to further reduce operating rates, idle facilities or exit uncompetitive businesses.

Hostilities in the Middle East or elsewhere or the occurrence, or threat of occurrence, of terrorist attacks could adversely affect the economies of the United States, Europe and other developed countries. A lower level of economic activity could result in a decline in demand for our products, which could adversely affect our net sales and margins and limit our future growth prospects. Volatility in prices for crude oil and natural gas could also result in increased feedstock costs. Furthermore, sustained lower prices of crude oil, such as the prices experienced from the third quarter of 2014 through 2019, have led and may lead to lower margins in the United States. In addition, these risks could cause increased instability in the financial and insurance markets and could adversely affect our ability to access capital and to obtain insurance coverage that we consider adequate or is otherwise required by our contracts with third parties.

We operate internationally and are subject to related risks, including exchange rate fluctuations, exchange controls, political risk and other risks relating to international operations.

We operate internationally and are subject to the risks of doing business on a global basis. These risks include, but are not limited to, fluctuations in currency exchange rates, currency devaluations, imposition or the threat of trade barriers (which could, among other things, negatively impact our ability to export our products outside of the U.S.), imposition or the threat of tariffs and duties (which could, among other things, lead to lower demand for our products outside of the U.S.), restrictions on the transfer of funds, changes in law and regulatory requirements, involvement in judicial proceedings in unfavorable jurisdictions, economic instability and disruptions, political unrest and epidemics. U.S. foreign trade policies could lead to the imposition of additional trade barriers and tariffs on us in foreign jurisdictions. Our operating results could be negatively affected by any of these risks.

Our inability to compete successfully may reduce our operating profits.

The petrochemical industry is highly competitive. Historically, there have been a number of mergers, acquisitions, spin-offs and joint ventures in the industry. This restructuring activity has resulted in fewer but more competitive producers, many of which are larger than we are and have greater financial resources than we do. Among our competitors are some of the world's largest chemical companies and chemical industry joint ventures. Competition within the petrochemical industry and in the manufacturing of building products is affected by a variety of factors, including:

- product price;
- balance of product supply/demand;
- material, technology and process innovation;
- technical support and customer service;
- quality;
- reliability of raw material and utility supply;
- availability of potential substitute materials; and
- product performance.

Changes in the competitive environment could have a material adverse effect on our business and our operations. These changes could include:

- the emergence of new domestic and international competitors;
- the rate of capacity additions by competitors;
- changes in customer base due to mergers;
- the intensification of price competition in our markets;
- the introduction of new or substitute products by competitors; and
- the technological innovations of competitors.

Our production facilities process some volatile and hazardous materials that subject us to operating risks that could adversely affect our operating results.

We have manufacturing sites in North America, Europe and Asia. Our operations are subject to the usual hazards associated with chemical, plastics and building products manufacturing and the related use, storage, transportation and disposal of feedstocks, products and wastes, including:

- pipeline leaks and ruptures;
- explosions;
- fires;
- severe weather and natural disasters;
- mechanical failure;
- unscheduled downtime;
- labor difficulties;
- transportation interruptions;

- transportation accidents involving our products;
- remediation complications;
- chemical spills, discharges or releases of toxic or hazardous substances or gases;
- other environmental risks;
- sabotage;
- terrorist attacks; and
- political unrest.

According to some experts, global climate change could result in heightened hurricane activity in the Gulf of Mexico and other weather and natural disaster hazards worldwide. If this materializes, severe weather and natural disaster hazards could pose an even greater risk for our facilities, particularly those in Louisiana.

All these hazards can cause personal injury and loss of life, catastrophic damage to or destruction of property and equipment and environmental damage, and may result in a suspension of operations and the imposition of civil or criminal penalties. We could become subject to environmental claims brought by governmental entities or third parties. A loss or shutdown over an extended period of operations at any one of our chemical manufacturing facilities would have a material adverse effect on us. We maintain property, business interruption and casualty insurance that we believe is in accordance with customary industry practices, but we cannot be fully insured against all potential hazards incident to our business, including losses resulting from war risks or terrorist acts. As a result of market conditions, premiums and deductibles for certain insurance policies can increase substantially and, in some instances, certain insurance may become unavailable or available only for reduced amounts of coverage. If we were to incur a significant liability for which we were not fully insured, it could have a material adverse effect on our financial condition, results of operations or cash flows.

We are exposed to significant losses from products liability, personal injury and other claims relating to the products we manufacture. Additionally, individuals currently seek, and likely will continue to seek, damages for alleged personal injury or property damage due to alleged exposure to chemicals at our facilities or to chemicals otherwise owned, controlled or manufactured by us. We are also subject to present and future claims with respect to workplace exposure, workers' compensation and other matters. Any such claims, whether with or without merit, could be time consuming, expensive to defend and could divert management's attention and resources. We maintain and expect to continue to maintain insurance for products liability, workplace exposure, workers' compensation and other claims, but the amount and scope of such insurance may not be adequate or available to cover a claim that is successfully asserted against us. In addition, such insurance could become more expensive and difficult to maintain and may not be available to us on commercially reasonable terms or at all. The results of any future litigation or claims are inherently unpredictable, but such outcomes could have a material adverse effect on our financial condition, results of operations or cash flows.

We rely on a limited number of outside 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 is unable to meet its obligations under any present or future supply agreements, we may be forced to pay higher prices 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 and results of operations. A vendor may choose, subject to existing contracts, to modify its relationship 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, or any significant additional requirements from our suppliers that we provide them additional security in the form of prepayments or with letters of credits, could materially adversely affect our financial condition, results of operations or cash flows.

We rely heavily on third party transportation, which subjects us to risks and costs that we cannot control. Such risks and costs may materially adversely affect our operations.

We rely heavily on railroads, barges, pipelines, ships, trucks and other shipping companies to transport raw materials to the manufacturing facilities used by our businesses and to ship finished products to customers. These transport operations are subject to various hazards and risks, including extreme weather conditions, work stoppages and operating hazards (including pipeline leaks and ruptures and storage tank leaks), as well as interstate transportation regulations. In addition, the methods of transportation we utilize, including shipping chlorine and other chemicals by railroad, 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 regulations or public policy changes related to transportation safety, or these transportation companies fail to operate properly, or if there were significant changes in the cost of these services due to new or 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 and results of operations.

We may pursue acquisitions, dispositions and joint ventures and/or other transactions that may impact our results of operations and financial condition.

We seek opportunities to maximize efficiency and create stockholder value through various transactions. These transactions may include domestic and international business combinations, purchases or sales of assets or contractual arrangements or joint ventures that are intended to result in the realization of synergies, the creation of efficiencies or the generation of cash to reduce debt. In this regard, we regularly consider acquisition opportunities that would be consistent or complementary to our existing business strategies. To the extent permitted under our credit facility, the indenture governing our senior notes and other debt agreements, some of these transactions may be financed by additional borrowings by us. Although we would pursue these transactions because we expect them to yield longer-term benefits if the efficiencies and synergies we expect are realized, they could adversely affect our results of operations in the short term because of the costs associated with such transactions and because they may divert management's attention from existing business operations. Other transactions may advance future cash flows from some of our businesses, thereby yielding increased short-term liquidity, but consequently resulting in lower cash flows from these operations over the longer term. These transactions may not yield the business benefits, synergies or financial benefits anticipated by management. Integration of other acquired operations can lead to restructuring charges or other costs. We may have difficulties integrating the operations of other acquired businesses.

Our operations and assets are subject to extensive environmental, health and safety laws and regulations.

We use large quantities of hazardous substances and generate hazardous wastes and emissions in our manufacturing operations. Due to the associated quantities of hazardous substances and wastes, our industry is highly regulated and monitored by various environmental regulatory authorities such as the EPA, federal or state analogs in other countries and the European Union, which promulgated the Industrial Emission Directive ("IED"). As such, we are subject to extensive international, national, state and local laws, regulations and directives pertaining to pollution and protection of the environment, health and safety, which govern, among other things, emissions to the air, discharges onto land or waters, the maintenance of safe conditions in the workplace, the remediation of contaminated sites, and the generation, handling, storage, transportation, treatment and disposal of waste materials. Some of these laws, regulations and directives are subject to varying and conflicting interpretations. Many of these laws, regulations and directives provide for substantial fines and potential criminal sanctions for violations and require the installation of costly pollution control equipment or operational changes to limit pollution emissions or reduce the likelihood or impact of hazardous substance releases, whether permitted or not. For example, all of our petrochemical facilities in the United States and Europe may require improvements to comply with certain changes in process safety management requirements.

New laws, rules and regulations as well as changes to laws, rules and regulations may also affect us. For example, on April 17, 2012, the EPA promulgated maximum achievable control technology ("MACT") standards for major sources and generally available control technology ("GACT") standards for area sources of PVC production. The rule sets emission limits and work practice standards for total organic air toxics and for three specific air toxics: vinyl chloride, chlorinated di-benzo dioxins and furans ("CD/DF") and hydrogen chloride and includes requirements to demonstrate initial and continuous compliance with the emission standards. While this rule is the subject of legal challenge and EPA reconsideration, the rule has not been stayed.

In March 2011, the EPA proposed amendments to the emission standards for hazardous air pollutants for mercury emissions from mercury cell chlor-alkali plants. These proposed amendments would require improvements in work practices to reduce fugitive mercury emissions. We operate a mercury cell production unit at our Natrium facility. We cannot predict the timing or content of the final regulation, or its ultimate cost to, or impact on us.

Our operations produce greenhouse gas ("GHG") emissions, which have been the subject of increased scrutiny and regulation. In December 2015, the United States joined the international community at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change in Paris, France. The resulting Paris Agreement calls for the parties to undertake "ambitious efforts" to limit the average global temperature and to conserve and enhance sinks and reservoirs of greenhouse gases. The United States signed the Paris Agreement in April 2016, and the Paris Agreement went into effect in November 2016. However, in November 2019, the United States submitted formal notification to the United Nations that it intends to withdraw from the Paris Agreement. Pursuant to the terms of the Paris Agreement, the withdrawal will take effect in November 2020. Legislation to regulate GHG emissions has also been introduced in the United States Congress, and there has been a wide-ranging policy debate regarding the impact of these gases and possible means for their regulation. Some of the proposals would require industries to meet stringent new standards that would require substantial reductions in carbon emissions. Those reductions could be costly and difficult to implement.

Various jurisdictions have considered or adopted laws and regulations on GHG emissions, with the general aim of reducing such emissions. The EPA currently requires certain industrial facilities to report their GHG emissions, and to obtain permits with stringent control requirements before constructing or modifying new facilities with significant GHG emissions. In the European Union, the Emissions Trading Scheme obligates certain emitters to obtain GHG emission allowances to comply with a cap and trade system for GHG emissions. In addition, the European Union has committed to reduce domestic GHG emissions by at least 40% below the 1990 level by 2030. As our chemical manufacturing processes result in GHG emissions, these and other GHG laws and regulations could affect our costs of doing business.

Similarly, the Toxic Substances Control Act ("TSCA") imposes reporting, record-keeping and testing requirements, and restrictions relating to the production, handling, and use of chemical substances. The TSCA reform legislation enacted in June 2016 expanded the EPA's authority to review and regulate new and existing chemicals. Under the reform legislation, the EPA is required to, among other things, undertake rule making within statutory time frames related to: (1) chemical risk evaluation, designation and management; (2) reporting of mercury supply, use and trade; and (3) management of persistent, bioaccumulative, and toxic chemical substances ("PBTs"). In response to this mandate, the EPA issued rules establishing the EPA's process and criteria for identifying high priority chemicals for risk evaluation and setting the EPA's approach for determining whether these high priority chemicals present an unreasonable risk to health or the environment. In December 2019, the EPA designated certain chemical substances as high priority for risk evaluation. We manufacture several of these chemical substances. Although we cannot predict with certainty the extent of our future liabilities and costs at this time, we do not anticipate that the evaluation of these chemical substances will have a material adverse effect on our business, financial condition, operating results or cash flows. In addition, the TSCA inventory reset rule required industry reporting of chemicals manufactured or processed in the United States over the past 10 years, from which the EPA will determine which substances are active or inactive on the existing inventory. Beginning in August 2019, manufacturers and processors are required to notify the EPA before reintroducing into commerce a substance currently identified as "inactive" on the TSCA inventory. A final mercury reporting rule published in June 2018 requires manufacturers, including manufacturers who intentionally use mercury in a manufacturing process, to report information about their mercury supply, use and trade. The first periodic report under the new mercury reporting rule was due July 1, 2019. The EPA will use the information collected to develop an inventory of mercury and mercury-added products as well as mercury-use manufacturing processes. The EPA may then recommend actions or promulgate further rules aimed at reducing mercury use. We cannot predict the timing or content of these actions or rules, or their ultimate cost to, or impact on us.

Under the IED, European Union member state governments are expected to adopt rules and implement environmental permitting programs relating to air, water and waste for industrial facilities. In this context, concepts such as the "best available technique" are being explored. Future implementation of these concepts may result in technical modifications in our European facilities. In addition, under the Environmental Liability Directive, European Union member states can require the remediation of soil and groundwater contamination in certain circumstances, under the "polluter pays principle." We are unable to predict the impact these requirements and concepts may have on our future costs of compliance.

These rules or future new, amended or proposed laws or rules could increase our costs or reduce our production, which could have a material adverse effect on our business, financial condition, operating results or cash flows. In addition, we cannot accurately predict future developments, such as increasingly strict environmental and safety laws or regulations, and inspection and enforcement policies, as well as resulting higher compliance costs, which might affect the handling, manufacture, use, emission, disposal or remediation of products, other materials or hazardous and non-hazardous waste, and we cannot predict with certainty the extent of our future liabilities and costs under environmental, health and safety laws and regulations. These liabilities and costs may be material.

We also may face liability for alleged personal injury or property damage due to exposure to chemicals or other hazardous substances at our facilities or to chemicals that we otherwise manufacture, handle or own. Although these types of claims have not historically had a material impact on our operations, a significant increase in the success of these types of claims could have a material adverse effect on our business, financial condition, operating results or cash flows.

Environmental laws may have a significant effect on the nature and scope of, and responsibility for, cleanup of contamination at our current and former operating facilities, the costs of transportation and storage of raw materials and finished products, the costs of reducing emissions and the costs of the storage and disposal of wastewater. The U.S. Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), similar state laws and certain European directives impose joint and several liability for the costs of remedial investigations and actions on the entities that generated waste, arranged for disposal of the wastes, transported to or selected the disposal sites and the past and present owners and operators of such sites. All such potentially responsible parties (or any one of them, including us) may be required to bear all of such costs regardless of fault, legality of the original disposal or ownership of the disposal site. In addition, CERCLA, similar state laws and certain European directives could impose liability for damages to natural resources caused by contamination.

Although we seek to take preventive action, our operations are inherently subject to accidental spills, discharges or other releases of hazardous substances that may make us liable to governmental entities or private parties. This may involve contamination associated with our current and former facilities, facilities to which we sent wastes or by-products for treatment or disposal and other contamination. Accidental discharges may occur in the future, future action may be taken in connection with past discharges, governmental agencies may assess damages or penalties against us in connection with any past or future contamination, or third parties may assert claims against us for damages allegedly arising out of any past or future contamination. In addition, we may be liable for existing contamination related to certain of our facilities for which, in some cases, we believe third parties are liable in the event such third parties fail to perform their obligations.

Capital projects are subject to risks, including delays and cost overruns, which could have an adverse impact on our financial condition and results of operations.

We have capital expansion plans for our facilities. Expansion projects may be subject to delays or cost overruns, including delays or cost overruns resulting from any one or more of the following:

- unexpectedly long delivery times for, or shortages of, key equipment, parts or materials;
- shortages of skilled labor and other personnel necessary to perform the work;
- delays and performance issues;
- failures or delays of third-party equipment vendors or service providers;
- unforeseen increases in the cost of equipment, labor and raw materials;
- work stoppages and other labor disputes;
- unanticipated actual or purported change orders;
- disputes with contractors and suppliers;
- design and engineering problems;
- latent damages or deterioration to equipment and machinery in excess of engineering estimates and assumptions;
- financial or other difficulties of our contractors and suppliers;
- sabotage;
- terrorist attacks;
- interference from adverse weather conditions; and
- difficulties in obtaining necessary permits or in meeting permit conditions.

Significant cost overruns or delays could materially affect our financial condition and results of operations. Additionally, actual capital expenditures could materially exceed our planned capital expenditures.

Our level of debt could adversely affect our ability to operate our business.

As of December 31, 2019, our indebtedness, including the current portion, totaled$3.4 billion, and our debt represented approximately35% of our total capitalization. Our annual interest expense for 2019 was $124 million, net of interest capitalized of$9 million. Our level of debt and the limitations imposed on us by our existing or future debt agreements could have significant consequences on our business and future prospects, including the following:

- a portion of our cash flows from operations will be dedicated to the payment of interest and principal on our debt and will not be available for other purposes;
- we may not be able to obtain necessary financing in the future for working capital, capital expenditures, acquisitions, debt service requirements or other purposes;
- our less leveraged competitors could have a competitive advantage because they have greater flexibility to utilize their cash flows to improve their operations;
- we may be exposed to risks inherent in interest rate fluctuations because some of our borrowings are at variable rates of interest, which would result in higher interest expense in the event of increases in interest rates;
- we could be vulnerable in the event of a downturn in our business that would leave us less able to take advantage of significant business opportunities and to react to changes in our business and in market or industry conditions; and
- should we pursue additional expansions of existing assets or acquisition of third party assets, we may not be able to obtain additional liquidity at cost effective interest rates.

These factors could be magnified or accelerated to the extent we were to finance future acquisitions with significant amounts of debt.

To service our indebtedness and fund our capital requirements, we will require a significant amount of cash. Our ability to generate cash depends on many factors beyond our control.

Our ability to make payments on and to refinance our indebtedness and to fund planned capital expenditures and pay cash dividends will depend on our ability to generate cash in the future, including any distributions that we may receive from Westlake Partners. This is subject to general economic, financial, currency, competitive, legislative, regulatory and other factors that are beyond our control.

Our business may not generate sufficient cash flows from operations, we may not receive sufficient distributions from Westlake Partners, and currently anticipated cost savings and operating improvements may not be realized on schedule. We also generate revenues denominated in currencies other than that of our indebtedness and may have difficulty converting those revenues into the currency of our indebtedness. We may need to refinance all or a portion of our indebtedness on or before maturity. In addition, we may not be able to refinance any of our indebtedness, including our credit facility and our senior notes, on commercially reasonable terms or at all. All of these factors could be magnified if we were to finance any future acquisitions with significant amounts of debt.

The Credit Agreement and the indenture governing certain of our senior notes impose significant operating and financial restrictions, which may prevent us from capitalizing on business opportunities and taking some actions.

The Credit Agreement and the indenture governing certain of our senior notes impose significant operating and financial restrictions on us. These restrictions limit our ability to:

- pay dividends on, redeem or repurchase our capital stock;
- make investments and other restricted payments;
- incur additional indebtedness or issue preferred stock;
- create liens;
- permit dividend or other payment restrictions on our restricted subsidiaries;
- sell all or substantially all of our assets or consolidate or merge with or into other companies;
- engage in transactions with affiliates; and
- engage in sale-leaseback transactions.

These limitations are subject to a number of important qualifications and exceptions. Currently, many of these restrictions in the indenture governing certain of our senior notes are suspended under the indenture because those notes are currently rated investment grade by at least two nationally recognized credit rating agencies. The Credit Agreement also requires us to maintain a quarterly total leverage ratio.

These covenants may adversely affect our ability to finance future business opportunities or acquisitions. A breach of any of these covenants could result in a default in respect of the related debt. If a default occurred, the relevant lenders could elect to declare the debt, together with accrued interest and other fees, to be immediately due and payable. In addition, any acceleration of debt under the Credit Agreement will constitute a default under some of our other debt, including the indentures governing our senior notes.

Our participation in joint ventures and similar arrangements exposes us to a number of risks, including risks of shared control.

We are party to several joint ventures and similar arrangements, including an investment, together with Lotte Chemical USA Corporation ("Lotte"), in a joint venture, LACC, LLC ("LACC"), to build and operate an ethylene facility. Our participation in joint ventures and similar arrangements, by their nature, requires us to share control with unaffiliated third parties. In particular, with respect to our investment in LACC, we are a 46.8% holder and, therefore, our partner Lotte has primary control over operations and was primarily responsible for the management of the contractors during construction of the ethylene facility. If there are differences in views among joint venture participants in how to operate a joint venture that result in delayed decisions or the failure to make decisions, or our joint venture partners do not fulfill their obligations, the affected joint venture may not be able to operate according to its business plan and fulfill its obligations. In that case, we may be required to write down the value of our investment in a joint venture, increase the level of financial or other commitments to the joint venture or, if we have contractual agreements with the joint venture, our operations may be materially adversely affected. Any of the foregoing could have a material adverse effect on our financial condition, results of operations or cash flows.

Regulations concerning the transportation of hazardous chemicals and the security of chemical manufacturing facilities could result in higher operating costs.

Targets such as chemical manufacturing facilities may be at greater risk of terrorist attacks than other targets. As a result, the chemical industry responded to the issues surrounding the terrorist attacks of September 11, 2001 by implementing initiatives relating to the security of chemicals industry facilities and the transportation of hazardous chemicals. Simultaneously, local, state, national and international governments put into effect a regulatory process that led to new regulations impacting the security of chemical plant locations and the transportation of hazardous chemicals. Our business or our customers' businesses could be adversely affected because of the cost of complying with these regulations.

A change in tax laws, treaties or regulations, or their interpretation or application, could have a negative impact on our business and results of operations.

We are subject to changes in applicable tax laws, treaties or regulations in the jurisdictions in which we operate. A material change in these tax laws, treaties or regulations, or their interpretation or application, could have a negative impact on our business and results of operations.

We may have difficulties integrating the operations of future acquired businesses.

If we are unable to integrate or to successfully manage businesses that we may acquire in the future, our business, financial condition and results of operations could be adversely affected. We may not be able to realize the operating efficiencies, synergies, cost savings or other benefits expected from acquisitions for a number of reasons, including the following:

- we may fail to integrate the businesses we acquire into a cohesive, efficient enterprise;
- our resources, including management resources, are limited and may be strained if we engage in a large acquisition or significant number of acquisitions, and acquisitions may divert our management's attention from initiating or carrying out programs to save costs or enhance revenues; and
- our failure to retain key employees and contracts of the businesses we acquire.

Future acquisitions could lead to significant restructuring or other changes.

Regulations related to "conflict minerals" could adversely impact our business.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank Act") contains provisions to improve transparency and accountability concerning the supply of certain minerals, known as conflict minerals, originating from the Democratic Republic of Congo and adjoining countries (collectively, the "Covered Countries"). The term "conflict minerals" encompasses tantalum, tin, tungsten (and their ores) and gold.

In August 2012, pursuant to the Dodd-Frank Act, the SEC adopted annual disclosure and reporting requirements applicable to any company that files periodic public reports with the SEC, if any conflicts minerals are necessary to the functionality or production of a product manufactured, or contracted to be manufactured, by that company. These annual reporting requirements require companies to describe reasonable country of origin inquiries, due diligence measures and the results of those activities and related determinations.

Because we have a highly complex, multi-layered supply chain, we may incur significant costs to comply with these requirements. In addition, the implementation of procedures to comply with these requirements could adversely affect the sourcing, supply and pricing of materials, including components, used in our products. Our suppliers (or suppliers to our suppliers) may not be able or willing to provide all requested information or to take other steps necessary to ensure that no conflict minerals financing or benefiting armed groups are included in materials or components supplied to us for our manufacturing purposes. Also, we may encounter challenges to satisfy customers that may require all of the components of products purchased by them to be certified as conflict free. If we are not able to meet customer certification requirements, customers may choose to disqualify us as a supplier. In addition, since the applicability of the new conflict minerals requirements is limited to companies that file periodic reports with the SEC, not all of our competitors will need to comply with these requirements unless they are imposed by customers. As a result, those competitors may have cost and other advantages over us.

Our operations could be adversely affected by labor relations.

The vast majority of our employees in Europe and Asia, and some of our employees in North America, are represented by labor unions and works councils. Our operations may be adversely affected by strikes, work stoppages and other labor disputes.

We have certain material pension and other post-retirement employment benefit ("OPEB") obligations. Future funding obligations related to these obligations could restrict cash available for our operations, capital expenditures or other requirements or require us to borrow additional funds.

We have U.S. and non-U.S. defined benefit pension plans covering certain current and former employees. Certain non-U.S. defined benefit plans associated with our European operations have not been funded and we are not obligated to fund those plans under applicable law. As of December 31, 2019, the projected benefit obligations for our pension and OPEB plans were $847 million and $69 million, respectively. The fair value of pension investment assets was $545 million as of December 31, 2019. The total underfunded status of the pension obligations calculated on a projected benefit obligation basis as of December 31, 2019 was $302 million, including the Westlake Defined Benefit Plan, which was underfunded by $148 million on an individual plan basis.

The unfunded OPEB obligations as of December 31, 2019 were $69 million. We will require future operating cash flows to fund our pension and OPEB obligations, which could restrict available cash for our operations, capital expenditures and other requirements. We may also not generate sufficient cash to satisfy these obligations, which could require us to seek funding from other sources, including through additional borrowings, which could materially increase our outstanding debt or debt service requirements.

If our goodwill, indefinite-lived intangible assets or other intangible assets become impaired in the future, we may be required to record non-cash charges to earnings, which could be significant.

Under GAAP, we review goodwill and indefinite-lived intangible assets for impairment on an annual basis or more frequently if events or circumstances indicate that their carrying value may not be recoverable. Other intangible assets are reviewed if events or circumstances indicate that their carrying value may not be recoverable. The process of impairment testing for our goodwill and intangible assets involves a number of judgments and estimates made by management including the fair values of assets and liabilities, future cash flows, our interpretation of current economic indicators and market conditions, overall economic conditions and our strategic operational plans with regards to our business units. If the judgments and estimates used in our analysis are not realized or change due to external factors, then actual results may not be consistent with these judgments and estimates, and our goodwill and intangible assets may become impaired in future periods. If our goodwill, indefinite-lived intangible assets or other 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 condition and results of operations.

Failure to adequately protect critical data and technology systems could materially affect our operations.

Information technology system failures, network disruptions and breaches of data security due to internal or external factors including cyber-attacks could disrupt our operations by causing delays or cancellation of customer orders, impede the manufacture or shipment of products or cause standard business processes to become ineffective, resulting in the unintentional disclosure of information or damage to our reputation. While we have taken steps to address these concerns by implementing network security and internal control measures, including employee training, comprehensive monitoring of our networks and systems, maintenance of backup and protective systems and disaster recovery and incident response plans, our employees, systems, networks, products, facilities and services remain potentially vulnerable to sophisticated cyber-assault, and, as such, there can be no assurance that a system failure, network disruption or data security breach will not have a material adverse effect on our business, financial condition, operating results or cash flows.

Fluctuations in foreign currency exchange and interest rates could affect our consolidated financial results.

We earn revenues, pay expenses, own assets and incur liabilities in countries using currencies other than the U.S. dollar. Because our consolidated financial statements are presented in U.S. dollars, we must translate revenues and expenses into U.S. dollars at the average exchange rate during each reporting period, as well as assets and liabilities into U.S. dollars at exchange rates in effect at the end of each reporting period. Therefore, increases or decreases in the value of the U.S. dollar against other major currencies will affect our net sales, operating income and the value of balance sheet items denominated in foreign currencies. Because of the geographic diversity of our operations, weaknesses in various currencies might occur in one or many of such currencies over time. From time to time, we may use derivative financial instruments to further reduce our net exposure to currency exchange rate fluctuations. However, fluctuations in foreign currency exchange rates, such as the strengthening of the U.S. dollar against major currencies, including, in particular, the Euro and the Canadian dollar, could nevertheless materially adversely affect our financial results.

In addition, we are exposed to volatility in interest rates. When appropriate, we may use derivative financial instruments to reduce our exposure to interest rate risks. However, our financial risk management program may not be successful in reducing the risks inherent in exposures to interest rate fluctuations.

Our property insurance has only partial coverage for acts of terrorism and, in the event of terrorist attack, we could lose net sales and our facilities.

As a result of the terrorist attacks of September 11, 2001 and other events, our insurance carriers created certain exclusions for losses from terrorism from our property insurance policies. While separate terrorism insurance coverage is available, premiums for full coverage are very expensive, especially for chemical facilities, and the policies are subject to high deductibles. Available terrorism coverage typically excludes coverage for losses from acts of war and from acts of foreign governments as well as nuclear, biological and chemical attacks. We have determined that it is not economically prudent to obtain full terrorism insurance, especially given the significant risks that are not covered by such insurance. Where feasible we have secured some limited terrorism insurance coverage on our property where insurers have included it in their overall programs. In the event of a terrorist attack impacting one or more of our facilities, we could lose the net sales from the facilities and the facilities themselves, and could become liable for any contamination or for personal or property damage due to exposure to hazardous materials caused by any catastrophic release that may result from a terrorist attack.

Westlake Partners' tax treatment depends on its status as a partnership for federal income tax purposes, and it not being subject to a material amount of entity-level taxation. We depend in part on distributions from Westlake Partners to generate cash for our operations, capital expenditures, debt service and other uses. If the Internal Revenue Service ("IRS") were to treat Westlake Partners as a corporation for federal income tax purposes, or if Westlake Partners became subject to entity-level taxation for state tax purposes, its cash available for distribution would be substantially reduced, which would also likely cause a substantial reduction in the value of its common units that we hold.

The anticipated after-tax economic benefit of an investment in the common units of Westlake Partners depends largely on Westlake Partners being treated as a partnership for U.S. federal income tax purposes. Despite the fact that Westlake Partners is organized as a limited partnership under Delaware law, it would be treated as a corporation for U.S. federal income tax purposes unless it satisfies a "qualifying income" requirement (the "Qualifying Income Exception") under Section 7704 of the Internal Revenue Code of 1986, as amended (the "Code"). Failure to meet the Qualifying Income Exception would cause Westlake Partners to be treated as a corporation for U.S. federal income tax purposes.

Prior to its initial public offering, Westlake Partners requested and obtained a favorable private letter ruling from the IRS to the effect that, based on facts presented in the private letter ruling request, income from the production, transportation, storage and marketing of ethylene and its co-products constitutes "qualifying income" within the meaning of Section 7704 of the Code. However, no ruling has been or will be required regarding Westlake Partners' treatment as a partnership for U.S. federal income tax purposes. Failure to meet the Qualifying Income Exception or a change in current law could cause Westlake Partners to be treated as a corporation for U.S. federal income tax purposes or otherwise subject Westlake Partners to taxation as an entity.

We will be controlled by our principal stockholder and its affiliates as long as they own a majority of our common stock, and our other stockholders will be unable to affect the outcome of stockholder voting during that time. Our interests may conflict with those of the principal stockholder and its affiliates, and we may not be able to resolve these conflicts on terms possible in arms-length transactions.

As long as TTWF LP (the "principal stockholder") and its affiliates (the "principal stockholder affiliates") own a majority of our outstanding common stock, they will be able to exert significant control over us, and our other stockholders, by themselves, will not be able to affect the outcome of any stockholder vote. As a result, the principal stockholder, subject to any fiduciary duty owed to our minority stockholders under Delaware law, will be able to control all matters affecting us (some of which may present conflicts of interest), including:

- the composition of our Board of Directors and, through the Board, any determination with respect to our business direction and policies, including the appointment and removal of officers and the determination of compensation;
- any determinations with respect to mergers or other business combinations or the acquisition or disposition of assets;
- our financing decisions, capital raising activities and the payment of dividends; and
- amendments to our amended and restated certificate of incorporation or amended and restated bylaws.

The principal stockholder will be permitted to transfer a controlling interest in us without being required to offer our other stockholders the ability to participate or realize a premium for their shares of common stock. A sale of a controlling interest to a third party may adversely affect the market price of our common stock and our business and results of operations because the change in control may result in a change of management decisions and business policy. Because we have elected not to be subject to Section 203 of the General Corporation Law of the State of Delaware, the principal stockholder may find it easier to sell its controlling interest to a third party than if we had not so elected.

In addition to any conflicts of interest that arise in the foregoing areas, our interests may conflict with those of the principal stockholder affiliates in a number of other areas, including:

- business opportunities that may be presented to the principal stockholder affiliates and to our officers and directors associated with the principal stockholder affiliates, and competition between the principal stockholder affiliates and us within the same lines of business;
- the solicitation and hiring of employees from each other; and
- agreements with the principal stockholder affiliates relating to corporate services that may be material to our business.

We may not be able to resolve any potential conflicts with the principal stockholder affiliates, and even if we do, the resolution may be less favorable than if we were dealing with an unaffiliated party, particularly if the conflicts are resolved while we are controlled by the principal stockholder affiliates. Our amended and restated certificate of incorporation provides that the principal stockholder affiliates have no duty to refrain from engaging in activities or lines of business similar to ours and that the principal stockholder affiliates will not be liable to us or our stockholders for failing to present specified corporate opportunities to us.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Information concerning the principal locations from which our products are manufactured are included in the tables set forth under the captions "Olefins Business—Products" and "Vinyls Business—Products" contained in Item 1-"Business."

Headquarters

Our principal executive offices are located in Houston, Texas. Some of our office space is leased, at market rates, from an affiliate of our principal stockholder. See Note 20 to the consolidated financial statements appearing elsewhere in this Form 10-K and "Certain Relationships and Related Transactions" in our proxy statement to be filed with the SEC pursuant to Regulation 14A with respect to our 2020 annual meeting of stockholders (the "Proxy Statement").

Item 3. Legal Proceedings

In addition to the matters described under Item 1. Business—Environmental and Note 22 to our consolidated financial statements included in Item 8 of this Form 10-K, we are involved in various legal proceedings incidental to the conduct of our business. We do not believe that any of these legal proceedings will have a material adverse effect on our financial condition, results of operations or cash flows.

Item 4. Mine Safety Disclosure

Not Applicable.

Information about our Executive Officers

James Chao (age 72). Mr. Chao has been our Chairman of the Board of Directors since July 2004 and became a director in June 2003. From May 1996 to July 2004, he served as our Vice Chairman. Mr. Chao has over 45 years of global experience in the chemical industry. In addition, Mr. Chao has been the Chairman of the Board of Westlake Partners' general partner since its formation in March 2014. From June 2003 until November 2010, Mr. Chao was the executive chairman of Titan Chemicals Corp. Bhd. He has served as a Special Assistant to the Chairman of China General Plastics Group and worked in various financial, managerial and technical positions at Mattel Incorporated, Developmental Bank of Singapore, Singapore Gulf Plastics Pte. Ltd. and Gulf Oil Corporation. Mr. Chao, along with his brother Albert Chao, assisted their father T.T. Chao in founding Westlake Chemical Corporation. Mr. Chao received his B.S. degree from Massachusetts Institute of Technology and an M.B.A. from Columbia University.

Albert Chao (age 70). Mr. Chao has been our President since May 1996 and a director since June 2003. Mr. Chao became our Chief Executive Officer in July 2004. Mr. Chao has over 40 years of global experience in the chemical industry. In 1985, Mr. Chao assisted his father T.T. Chao and his brother James Chao in founding Westlake Chemical Corporation, where he served as Executive Vice President until he succeeded James Chao as President. In addition, Mr. Chao has been the President, Chief Executive Officer and a director of Westlake Partners' general partner since its formation in March 2014. He has held positions in the Controller's Group of Mobil Oil Corporation, in the Technical Department of Hercules Incorporated, in the Plastics Group of Gulf Oil Corporation and has served as Assistant to the Chairman of China General Plastics Group and Deputy Managing Director of a plastics fabrication business in Singapore. Mr. Chao is a trustee of Rice University. Mr. Chao received a bachelor's degree from Brandeis University and an M.B.A. from Columbia University.

M. Steven Bender (age 63). Mr. Bender has been our Executive Vice President and Chief Financial Officer since July 2017. From February 2008 to July 2017, Mr. Bender served as our Senior Vice President and Chief Financial Officer. In addition, Mr. Bender served as our Treasurer from July 2011 to April 2017, a position he also held from February 2008 until December 2010. From February 2007 to February 2008, Mr. Bender served as our Vice President, Chief Financial Officer and Treasurer and from June 2005 to February 2007, he served as our Vice President and Treasurer. In addition, Mr. Bender has been the Senior Vice President, Chief Financial Officer and a director of Westlake Partners' general partner since its formation in March 2014, and its Treasurer since April 2015. Prior to joining Westlake, from June 2002 until June 2005, Mr. Bender served as Vice President and Treasurer of KBR, Inc., and from 1996 to 2002 he held the position of Assistant Treasurer for Halliburton Company. Prior to that, he held various financial positions within that company. Additionally, he was employed by Texas Eastern Corporation for over a decade in a variety of increasingly responsible audit, finance and treasury positions. Mr. Bender received a Bachelor of Business Administration from Texas A&M University and an M.B.A. from Southern Methodist University. Mr. Bender is also a Certified Public Accountant.

Robert F. Buesinger (age 63). Mr. Buesinger has been our Executive Vice President, Vinyl Products since July 2017. From April 2010 to July 2017, Mr. Buesinger served as our Senior Vice President, Vinyls. Prior to joining us, Mr. Buesinger served as the General Manager and President of Chevron Phillips Chemical Company L.P.'s Performance Pipe Division from February 2010 to March 2010. From June 2008 to January 2010, Mr. Buesinger held the position of General Manager in the Alpha Olefins and Poly Alpha Olefins business of Chevron Phillips Chemical Company L.P. From April 2005 to May 2008, he served as the President and Managing Director of Chevron Phillips Singapore Chemicals Pte. Ltd. and Asia Region General Manager for Chevron Phillips Chemical Company L.P. Prior to that, he held various technical and sales management positions within that company. Mr. Buesinger holds a B.S. in Chemical Engineering from Tulane University.

Roger L. Kearns (age 56). Mr. Kearns has been our Executive Vice President, Vinyls Chemicals since April 2018. Prior to joining Westlake, from 2008 to April 2018, he was a member of the Executive Committee at Solvay S.A. in Belgium. From 2013 to 2018, he had responsibility for Solvay's advanced materials business cluster, as well as its corporate research organization and its North America region. From 2008 to 2012 he was responsible for overseeing Solvay's Asia-Pacific businesses, including its vinyls operations in the region. Prior to that, from 2004 through 2007, he was President of Solvay Advanced Polymers in the United States and earlier, from 2001 through 2003, he led Solvay's performance compounds business unit. Since beginning his career with Solvay in 1986, he has held a series of manufacturing, technical, corporate development, marketing and business management positions in the United States, Europe and Asia. Mr. Kearns holds a bachelor's degree in Chemical Engineering from the Georgia Institute of Technology and an MBA from Stanford University.

Lawrence E. (Skip) Teel (age 61). Mr. Teel has been our Executive Vice President, Olefins since July 2017. From July 2014 to July 2017, Mr. Teel served as our Senior Vice President, Olefins and, from July 2012 to July 2014, he served as our Vice President, Olefins. In addition, Mr. Teel has been the Senior Vice President, Olefins of Westlake Partners' general partner since July 2014. Mr. Teel joined us in September 2009 as Director, Olefins and Feedstock after a 23-year career with Lyondell Chemical Company where he served as the Vice President, Refining from August 2006 to May 2008. From 2001 to 2006, Mr. Teel held the position of Director, Corporate Planning and Business Development at Lyondell Chemical Company. During his career, he has held a variety of marketing, operations and general management assignments. Mr. Teel received a B.S. in Chemical Engineering from New Mexico State University and an M.S. in Finance from the University of Houston.

L. Benjamin Ederington (age 49). Mr. Ederington has been our Senior Vice President, General Counsel, Chief Administrative Officer and Corporate Secretary since July 2017. From December 2015 to July 2017, Mr. Ederington served as our Vice President, General Counsel, Chief Administrative Officer and Corporate Secretary and, from October 2013 to December 2015, he served as our Vice President, General Counsel and Corporate Secretary. In addition, Mr. Ederington has been the Vice President, General Counsel, Secretary and a director of Westlake Partners' general partner since its formation in March 2014. Prior to joining Westlake, he held a variety of senior legal positions at LyondellBasell Industries, N.V. and its predecessor companies, LyondellBasell Industries AF SCA and Lyondell Chemical Company, including most recently as Associate General Counsel, Commercial & Strategic Transactions from March 2010 to September 2013. He began his legal career more than 20 years ago at the law firm of Steptoe & Johnson, LLP. Mr. Ederington holds a B.A. from Yale University and received his J.D. from Harvard University.

Andrew Kenner (age 55). Mr. Kenner has been our Senior Vice President, Chemical Manufacturing since July 2017. From July 2008 to July 2017, Mr. Kenner served as our Vice President, Manufacturing. Mr. Kenner joined us after a 19-year career at Valero Energy Corporation where he served as Vice President and General Manager of Valero's Delaware City Refinery from 2005 to 2008. Prior to 2005, Mr. Kenner held the position of Vice President and General Manager of Valero's Houston Refinery as well as other leadership positions in Valero's refining system. Mr. Kenner holds a B.S. in Aerospace Engineering from Texas A&M University and a M.S. in Chemical Engineering from the University of Texas at Austin.

George J. Mangieri (age 69). Mr. Mangieri has been our Senior Vice President and Chief Accounting Officer since July 2017. From February 2007 to July 2017, Mr. Mangieri served as our Vice President and Chief Accounting Officer and, from April 2000 to February 2007, he served as our Vice President and Controller. In addition, Mr. Mangieri has been the Vice President and Chief Accounting Officer of Westlake Partners' general partner since its formation in March 2014. Prior to joining us, Mr. Mangieri served as Vice President and Controller of Zurn Industries, Inc. from 1998 to 2000. He previously was employed as Vice President and Controller for Imo Industries, Inc. in New Jersey, and spent over 10 years in public accounting with Ernst & Young LLP, where he served as Senior Manager. He received his Bachelor of Science degree from Monmouth College and is a Certified Public Accountant.

PART II

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

Stockholder Matters

As of February 12, 2020, there were 36 holders of record of our common stock. Our common stock is listed on the New York Stock Exchange under the symbol "WLK."

Issuer Purchases of Equity Securities

The following table provides information on our purchase of equity securities during the quarter ended December 31, 2019:

Period	Total Number of Shares Purchased [(1)]	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs [(2)]	Maximum Number (or Approximate Dollar Value) of Shares that May Yet Be Purchased Under the Plans or Programs [(2)]
October 2019	60,758	$ 60.30	—	$ 184,872,000
November 2019	32	73.95	—	184,872,000
December 2019	10,537	67.01	—	184,872,000
Total	71,327	$ 61.30	—	

(1) Includes 60,758, 32 and 10,537 shares withheld in October 2019, November 2019 and December 2019, respectively, in satisfaction of withholding taxes due upon the vesting of restricted stock units granted to our employees under the 2013 Plan.

(2) In November 2014, our Board of Directors authorized a $250 million stock repurchase program (the "2014 Program"). In November 2015, our Board of Directors approved the expansion of the 2014 Program by an additional $150 million. In August 2018, our Board of Directors approved the further expansion of the existing 2014 Program by an additional $150 million. As of December 31, 2019, 6,080,191 shares of our common stock had been acquired at an aggregate purchase price of approximately $365 million under the 2014 Program. Transaction fees and commissions are not reported in the average price paid per share in the table above. Decisions regarding the amount and the timing of purchases under the 2014 Program will be influenced by our cash on hand, our cash flows from operations, general market conditions and other factors. The 2014 Program may be discontinued by our Board of Directors at any time.

Equity Compensation Plan Information

Securities authorized for issuance under equity compensation plans are as follows:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	1,926,448 (1)	$ 60.29 (2)	4,009,687
Equity compensation plans not approved by security holders	N/A	N/A	N/A
Total	1,926,448	$ 60.29 (2)	4,009,687

(1) Includes shares reserved for issuance pursuant to restricted stock units, stock options and performance stock units.

(2) Price applies only to the stock options included in column (a). Exercise price is not applicable to the other awards included in column (a).

Other information regarding our equity compensation plans is set forth in the section entitled "Executive Compensation" in our Proxy Statement, which information is incorporated herein by reference.

Item 6. Selected Financial and Operational Data [1]

	Year Ended December 31,				
	2019	2018	2017	2016	2015
	(dollars in millions, except share amounts, per share data and volume data)				
Statement of Operations Data:					
Net sales	$ 8,118	$ 8,635	$ 8,041	$ 5,076	$ 4,463
Gross profit	1,260	1,987	1,761	983	1,190
Selling, general and administrative expenses	458	445	399	258	218
Amortization of intangibles	109	101	108	38	7
Restructuring, transaction and integration-related costs	37	33	29	104	—
Income from operations	656	1,408	1,225	583	965
Interest expense	(124)	(126)	(159)	(79)	(35)
Other income, net	38	52	15	54	33
Income before income taxes	570	1,334	1,081	558	963
Provision for (benefit from) income taxes	108	300	(258)	138	298
Net income	462	1,034	1,339	420	665
Net income attributable to noncontrolling interests	41	38	35	21	19
Net income attributable to Westlake Chemical Corporation	$ 421	$ 996	$ 1,304	$ 399	$ 646
Earnings Per Share Attributable to Westlake Chemical Corporation:					
Basic	$ 3.26	$ 7.66	$ 10.05	$ 3.07	$ 4.88
Diluted	$ 3.25	$ 7.62	$ 10.00	$ 3.06	$ 4.86
Weighted average shares outstanding					
Basic	128,395,184	129,401,823	129,087,043	129,367,712	131,823,707
Diluted	128,757,293	129,985,753	129,540,013	129,974,822	132,301,812
Balance Sheet Data (end of period):					
Cash and cash equivalents	$ 728	$ 753	$ 1,531	$ 459	$ 663
Marketable securities	—	—	—	—	520
Working capital [2]	1,501	1,659	1,496	1,225	1,652
Total assets	13,261	11,602	12,076	10,890	5,569
Total long-term debt, net	3,445	2,668	3,127	3,679	758
Total Westlake Chemical Corporation stockholders' equity	5,860	5,590	4,874	3,524	3,266
Cash dividends declared per share	$ 1.0250	$ 0.9200	$ 0.8012	$ 0.7442	$ 0.6393
Other Operating Data:					
Cash flows from:					
Operating activities	$ 1,301	$ 1,409	$ 1,528	$ 867	$ 1,079
Investing activities	(1,954)	(754)	(652)	(2,563)	(1,006)
Financing activities	630	(1,427)	6	1,687	(287)
Depreciation and amortization	713	641	601	378	246
Capital expenditures	787	702	577	629	491
EBITDA [3]	1,407	2,101	1,841	1,015	1,244

	Year Ended December 31,				
	2019	2018	2017	2016	2015
External Sales Volume (millions of pounds):					
Olefins Segment					
Polyethylene	2,565	2,438	2,363	2,392	2,445
Styrene, feedstock and other	880	671	828	794	1,182
Vinyls Segment					
PVC, caustic soda and other	16,712	16,629	15,997	8,118	5,026
Building products	1,178	1,180	1,193	770	629

(1) The historical selected financial and operational data should be read together with Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, and Item 8, Financial Statements and Supplementary Data included in this Form 10-K.

(2) Working capital equals current assets less current liabilities.

(3) EBITDA (a non-GAAP financial measure) is calculated as net income before interest expense, income taxes, depreciation and amortization. The body of accounting principles generally accepted in the United States is commonly referred to as "GAAP." For this purpose, a non-GAAP financial measure is generally defined by the Securities and Exchange Commission ("SEC") as one that purports to measure historical or future financial performance, financial position or cash flows that (1) excludes amounts, or is subject to adjustments that have the effect of excluding amounts, that are included in the most directly comparable measure calculated and presented in accordance with GAAP in the statement of income, balance sheet or statement of cash flows (or equivalent statements) of the registrant; or (2) includes amounts, or is subject to adjustments that have the effect of including amounts, that are excluded from the most directly comparable measure so calculated and presented. In this report, we disclose non-GAAP financial measures, primarily earnings before interest, taxes, depreciation and amortization ("EBITDA"). The non-GAAP financial measures described in this Form 10-K are not substitutes for the GAAP measures of earnings and cash flows. EBITDA is included in this Form 10-K because our management considers it an important supplemental measure of our performance and believes that it is frequently used by securities analysts, investors and other interested parties in the evaluation of companies in our industry, some of which present EBITDA when reporting their results. We regularly evaluate our performance as compared to other companies in our industry that have different financing and capital structures and/or tax rates by using EBITDA. In addition, we utilize EBITDA in evaluating acquisition targets. Management also believes that EBITDA is a useful tool for measuring our ability to meet our future debt service, capital expenditures and working capital requirements, and EBITDA is commonly used by us and our investors to measure our ability to service indebtedness. EBITDA is not a substitute for the GAAP measures of net income, income from operations and net cash provided by operating activities and is not necessarily a measure of our ability to fund our cash needs. In addition, it should be noted that companies calculate EBITDA differently and, therefore, EBITDA as presented for us may not be comparable to EBITDA reported by other companies. EBITDA has material limitations as a performance measure because it excludes interest expense, depreciation and amortization and income taxes. The following table reconciles EBITDA to net income, income from operations and net cash provided by operating activities.

Reconciliation of EBITDA to Net Income, Income from Operations and Net Cash Provided by Operating Activities

	Year Ended December 31,				
	2019	2018	2017	2016	2015
			(dollars in millions)		
Net cash provided by operating activities	$ 1,301	$ 1,409	$ 1,528	$ 867	$ 1,079
Changes in operating assets and liabilities and other	(785)	(313)	(723)	(346)	(374)
Deferred income taxes	(54)	(62)	534	(101)	(40)
Net income	462	1,034	1,339	420	665
Less:					
Other income, net	38	52	15	54	33
Interest expense	(124)	(126)	(159)	(79)	(35)
(Provision for) benefit from income taxes	(108)	(300)	258	(138)	(298)
Income from operations	656	1,408	1,225	583	965
Add:					
Depreciation and amortization	713	641	601	378	246
Other income, net	38	52	15	54	33
EBITDA	$ 1,407	$ 2,101	$ 1,841	$ 1,015	$ 1,244

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

Overview

We are a vertically-integrated global manufacturer and marketer of chemicals, polymers and building products. Our two principal operating segments are Olefins and Vinyls. We use the majority of our internally-produced basic chemicals to produce higher value-added chemicals and building products.

Consumption of the basic chemicals that we manufacture in the commodity portions of our olefins and vinyls processes has increased significantly since we began operations in 1986. Our olefins and vinyls products are some of the most widely used chemicals in the world and are upgraded into a wide variety of higher value-added chemical products used in many end-markets. Petrochemicals are typically manufactured in large volume by a number of different producers using widely available technologies. The petrochemical industry exhibits cyclical commodity characteristics, and margins are influenced by changes in the balance between supply and demand and the resulting operating rates, the level of general economic activity and the price of raw materials. Due to the significant size of new plants, capacity additions are built in large increments and typically require several years of demand growth to be absorbed. The cycle is generally characterized by periods of tight supply, leading to high operating rates and margins, followed by a decline in operating rates and margins primarily as a result of excess new capacity additions.

Ethane-based ethylene producers have in the recent past experienced a cost advantage over naphtha-based ethylene producers during periods of higher crude oil prices. This cost advantage has resulted in a strong export market for polyethylene and other ethylene derivatives and has benefited operating margins and cash flows for our Olefins segment during such periods. However, we have seen a significant reduction in the cost advantage enjoyed by North American ethane-based ethylene producers due to lower crude oil prices from the third quarter of 2014 through 2019, which has resulted in reduced prices and lower margins for our Olefins segment. Further, our Olefins segment has experienced lower profitability in recent periods due to several new ethylene and polyethylene capacity additions in North America and Asia that have led to additional supply of ethylene and polyethylene. In recent months, we have seen volatility in ethane and ethylene prices, primarily due to changes in the anticipated timing for some of the new ethylene capacity additions and availability of natural gas liquids, as well as fluctuation in the price of crude oil. Looking forward, new ethylene and polyethylene capacity additions in North America, Asia and the Middle East will add additional supply and may continue to contribute to periods of lower profitability in our Olefins segment.

Since late 2010, the PVC industry in the U.S. has experienced an increase in PVC resin exports, driven largely by more competitive feedstock and energy cost positions in the U.S. As a consequence, the U.S. PVC resin industry operating rates have improved since 2010. Westlake is the second-largest chlor-alkali producer and the second-largest PVC producer in the world. Globally, there were large chlor-alkali capacity additions between 2008 and 2015 resulting in excess capacity and lower industry operating rates which exerted downward pressure on caustic soda pricing. From 2015 through the end of 2018, the capacity additions have been outpaced by an increase in demand driven by improving economic growth and U.S. producers' competitive export position, which resulted in improved operating rates and caustic soda pricing. Since the end of 2018, the uncertainties surrounding international trade have impacted both domestic and export prices for our products. Depending on the performance of the global economy, potential changes in international trade and tariffs policies, the trend of crude oil prices and the timing of the new ethylene capacity additions in 2020 and beyond, our financial condition, results of operations or cash flows could be negatively or positively impacted.

We purchase significant amounts of ethane feedstock, natural gas, ethylene and salt from external suppliers for use in production of basic chemicals in the olefins and vinyls chains. We also purchase significant amounts of electricity to supply the energy required in our production processes. While we have agreements providing for the supply of ethane feedstock, natural gas, ethylene, salt and electricity, the contractual prices for these raw materials and energy vary with market conditions and may be highly volatile. Factors that have caused volatility in our raw material prices in the past, and which may do so in the future include:

- the availability of feedstock from shale gas and oil drilling;
- supply and demand for crude oil;
- shortages of raw materials due to increasing demand;
- ethane and liquefied natural gas exports;
- capacity constraints due to higher construction costs for investments, construction delays, strike action or involuntary shutdowns;
- the general level of business and economic activity; and
- the direct or indirect effect of governmental regulation.

Significant volatility in raw material costs tends to put pressure on product margins as sales price increases could lag behind raw material cost increases. Conversely, when raw material costs decrease, customers may seek immediate relief in the form of lower sales prices. We currently use derivative instruments to reduce price volatility risk on feedstock commodities and lower overall costs. Normally, there is a pricing relationship between a commodity that we process and the feedstock from which it is derived. When this pricing relationship deviates from historical norms, we have from time to time entered into derivative instruments and physical positions in an attempt to take advantage of this relationship.

Our historical results have been significantly affected by our plant production capacity, our efficient use of that capacity and our ability to increase capacity. Since our inception, we have followed a disciplined growth strategy that focuses on plant acquisitions, new plant construction and internal expansion. We evaluate each expansion project on the basis of its ability to produce sustained returns in excess of our cost of capital and its ability to improve efficiency or reduce operating costs. We also regularly look at acquisition opportunities that would be consistent with, or complimentary to, our overall business strategies. Depending on the size of the acquisition, any such acquisitions could require external financing.

As noted above in Item 1A, "Risk Factors," we are subject to extensive environmental regulations, which may impose significant additional costs on our operations in the future. Further, concerns about GHG emissions and their possible effects on climate change has led to the enactment of regulations, and to proposed legislation and additional regulations, that could affect us in the form of increased cost of feedstocks and fuel, other increased costs of production and decreased demand for our products. While we do not expect any of these enactments or proposals to have a material adverse effect on us in the near term, we cannot predict the longer-term effect of any of these regulations or proposals on our future financial condition, results of operations or cash flows.

Non-GAAP Financial Measures

The body of accounting principles generally accepted in the United States is commonly referred to as "GAAP." For this purpose, a non-GAAP financial measure is generally defined by the SEC as one that purports to measure historical or future financial performance, financial position or cash flows that (1) excludes amounts, or is subject to adjustments that have the effect of excluding amounts, that are included in the most directly comparable measure calculated and presented in accordance with GAAP in the statement of income, balance sheet or statement of cash flows (or equivalent statements) of the registrant; or (2) includes amounts, or is subject to adjustments that have the effect of including amounts, that are excluded from the most directly comparable measure so calculated and presented. In this report, we disclose non-GAAP financial measures, primarily earnings before interest, taxes, depreciation and amortization ("EBITDA"). We define EBITDA as net income before interest expense, income taxes, depreciation and amortization. The non-GAAP financial measures described in this Form 10-K are not substitutes for the GAAP measures of earnings and cash flows.

EBITDA is included in this Form 10-K because our management considers it an important supplemental measure of our performance and believes that it is frequently used by securities analysts, investors and other interested parties in the evaluation of companies in our industry, some of which present EBITDA when reporting their results. We regularly evaluate our performance as compared to other companies in our industry that have different financing and capital structures and/or tax rates by using EBITDA. In addition, we utilize EBITDA in evaluating acquisition targets. Management also believes that EBITDA is a useful tool for measuring our ability to meet our future debt service, capital expenditures and working capital requirements, and EBITDA is commonly used by us and our investors to measure our ability to service indebtedness. EBITDA is not a substitute for the GAAP measures of net income, income from operations and net cash provided by operating activities and is not necessarily a measure of our ability to fund our cash needs. In addition, it should be noted that companies calculate EBITDA differently and, therefore, EBITDA as presented for us may not be comparable to EBITDA reported by other companies. EBITDA has material limitations as a performance measure because it excludes interest expense, depreciation and amortization and income taxes.

Recent Developments

On November 12, 2019, we, through one of our subsidiaries, Eagle US 2 LLC ("Eagle"), completed the acquisition of an additional 34.8% of the membership interests in LACC, LLC ("LACC") from Lotte Chemical USA Corporation, a subsidiary of Lotte Chemical Corporation ("Lotte") for approximately $817 million (the "Transaction"). Prior to the Transaction, Eagle owned approximately 12% of the membership interests in LACC.

On July 17, 2019, we completed the registered public offering of €700 million aggregate principal amount of the 1.625% 2029 Senior Notes.

Results of Operations

Segment Data

	Year Ended December 31,		
	2019	2018	2017
	(dollars in millions, except per share data)		
Net external sales			
Olefins			
Polyethylene	$ 1,301	$ 1,519	$ 1,518
Styrene, feedstock and other	481	500	533
Total Olefins	1,782	2,019	2,051
Vinyls			
PVC, caustic soda and other	5,068	5,359	4,769
Building products	1,268	1,257	1,221
Total Vinyls	6,336	6,616	5,990
Total	$ 8,118	$ 8,635	$ 8,041
Income (loss) from operations			
Olefins	$ 260	$ 573	$ 655
Vinyls	451	913	639
Corporate and other	(55)	(78)	(69)
Total income from operations	656	1,408	1,225
Interest expense	(124)	(126)	(159)
Other income, net	38	52	15
Provision for (benefit from) income taxes	108	300	(258)
Net income	462	1,034	1,339
Net income attributable to noncontrolling interests	41	38	35
Net income attributable to Westlake Chemical Corporation	$ 421	$ 996	$ 1,304
Diluted earnings per share	$ 3.25	$ 7.62	$ 10.00

	Year Ended December 31,			
	2019		2018	
	Average Sales Price	Volume	Average Sales Price	Volume
Product sales price and volume percentage change from prior year				
Olefins	-21 %	+9%	-1 %	—%
Vinyls	-8 %	+3%	+7 %	+4%
Company average	-11 %	+5%	+5 %	+3%

Average Industry Prices [(1)]

	Year Ended December 31,		
	2019	**2018**	**2017**
Average domestic prices			
Ethane (cents/lb) [(2)]	7.3	11.0	8.3
Propane (cents/lb) [(3)]	12.7	20.8	18.1
Ethylene (cents/lb) [(4)]	18.5	19.0	28.0
Polyethylene (cents/lb) [(5)]	59.0	71.3	71.1
Styrene (cents/lb) [(6)]	79.1	91.4	86.5
Caustic soda ($/short ton) [(7)]	692	768	635
Chlorine ($/short ton) [(8)]	175	171	151
PVC (cents/lb) [(9)]	68.4	67.4	62.6
Average export prices			
Polyethylene (cents/lb) [(10)]	41.0	55.8	58.8
Caustic soda ($/short ton) [(11)]	273	474	436
PVC (cents/lb) [(12)]	34.9	36.9	38.0

(1) Industry pricing data was obtained through IHS Markit ("IHS"). We have not independently verified the data.

(2) Average Mont Belvieu spot prices of purity ethane over the period.

(3) Average Mont Belvieu spot prices of non-TET propane over the period.

(4) Average North American spot prices of ethylene over the period.

(5) Average North American Net Transaction prices of polyethylene low density GP-Film grade over the period.

(6) Average North American contract prices of styrene over the period.

(7) Average USGC-CSLi index values for caustic soda over the period. As stated by IHS, "the caustic soda price listing represents the USGC-CSLi values. USGC-CSLi does not reflect contract price discounts, implementation lags, caps or other adjustments factors. Additionally, it is not intended to represent a simple arithmetic average of all market transactions occurring during the month. Rather, the USGC-CSLi is most representative of the month-to-month caustic soda price movement for contract volumes of liquid 50% caustic soda rather than the absolute value of contract prices at a particular point in time. It is intended to serve only as a benchmark."

(8) Average North American contract prices of chlorine over the period. Effective January 1, 2019, IHS made a non-market average downward adjustment of $172.50 per short ton to chlorine prices. For comparability, we adjusted the prior period's chlorine price downward by $172.50 per short ton consistent with the IHS non-market adjustment.

(9) Average North American contract prices of pipe grade PVC over the period. As stated by IHS, "the contract resin prices posted reflect an "index" or "market" for prices before discounts, rebates, incentives, etc."

(10) Average North American export price for low density polyethylene GP-Film grade over the period.

(11) Average North American low spot export prices of caustic soda over the period.

(12) Average North American spot export prices of PVC over the period.

Summary

For the year ended December 31, 2019, net income attributable to Westlake Chemical Corporation was $421 million, or $3.25 per diluted share, on net sales of $8,118 million. This represents a decrease in net income attributable to Westlake Chemical Corporation of $575 million, or $4.37 per diluted share, compared to 2018 net income attributable to Westlake Chemical Corporation of $996 million, or $7.62 per diluted share, on net sales of $8,635 million. Net income for the year ended December 31, 2019 decreased versus the prior year primarily due to lower sales prices for our major products resulting from international trade uncertainties and slower global economic growth, partially offset by lower purchased ethylene, feedstock and fuel costs and a lower effective income tax rate. Net sales for the year ended December 31, 2019 decreased $517 million to $8,118 million compared to net sales for the year ended December 31, 2018 of $8,635 million, mainly due to lower sales prices for our major products and lower sales volumes for PVC resin, partially offset by an increase in sales volumes for polyethylene, styrene and PVC compounds. Income from operations was $656 million for the year ended December 31, 2019 as compared to $1,408 million for the year ended December 31, 2018, a decrease of $752 million. The decrease in income from operations versus the prior year was primarily due to lower sales prices for our major products, partially offset by lower purchased ethylene, ethane and fuel costs. Pre-tax restructuring, transaction and integration-related costs for the year ended December 31, 2019 were $37 million, or $0.23 per diluted share after tax, as compared to $33 million in 2018.

2019 Compared with 2018

Net Sales. Net sales decreased by $517 million, or 6%, to $8,118 million in 2019 from $8,635 million in 2018, primarily attributable to lower sales prices for our major products and lower sales volumes for PVC resin, partially offset by higher sales volumes for polyethylene, styrene and PVC compounds. Average sales prices for 2019 decreased by 11% as compared to 2018. Sales volumes increased by 5% in 2019 as compared to 2018.

Gross Profit. Gross profit margin percentage decreased to 16% in 2019 from 23% in 2018. The gross profit margin decreased primarily due to lower sales prices for our major products (resulting in lower margins), partially offset by lower ethane feedstock, purchased ethylene and fuel costs, as compared to 2018.

Selling, General and Administrative Expenses. Selling, general and administrative expenses increased by $13 million to $458 million in 2019 from $445 million in 2018. This increase was mainly due to selling, general and administrative expenses related to the acquisition of NAKAN, partially offset by lower professional consulting fees.

Amortization of Intangibles. Amortization expense for 2019 was $109 million, as compared to $101 million for 2018. The increase in amortization expense was primarily due to intangible assets related to the acquisition of NAKAN.

Restructuring, Transaction and Integration-related Costs. Restructuring, transaction and integration-related costs of $37 million in 2019 were higher as compared to $33 million in 2018. The restructuring, transaction and integration-related costs for 2019 primarily consisted of restructuring expenses of $26 million and acquisition costs. The restructuring expenses primarily represent charges associated with the write-off of certain assets. The restructuring, transaction and integration-related costs for 2018 of $33 million primarily consisted of integration-related consulting fees and acquisition costs.

Interest Expense. Interest expense decreased by $2 million to $124 million in 2019 from $126 million in 2018, primarily as a result of a lower average interest rate for the outstanding debt in 2019 as compared to 2018. The lower average interest rate was primarily due to the redemption of the 4.875% 2023 Notes and the 4.625% 2021 Notes in 2018 and the issuance of the 1.625% 2029 Senior Notes in July 2019. See "Liquidity and Capital Resources—Debt" below and Note 11 to the consolidated financial statements included in this Form 10-K for further discussion of our indebtedness.

Other Income, Net. Other income, net decreased by $14 million to $38 million in 2019 from $52 million in 2018. This decrease was primarily due to the recognition of a one-time pension settlement gain of $14 million in 2018.

Income Taxes. The effective income tax expense rate was 19% in 2019 as compared to 22% in 2018. The effective income tax rate in 2019 was lower as compared to 2018 and lower compared to the U.S. federal statutory rate of 21%, primarily due to the reduction of a valuation allowance recorded against foreign NOL and credit carryforwards and the reduction in accrual of withholding tax on unremitted foreign earnings, partially offset by an increase in state tax expense.

Olefins Segment

Net Sales. Net sales decreased by $237 million, or 12%, to $1,782 million in 2019 from $2,019 million in 2018. The decrease was mainly due to lower sales prices for our major products, partially offset by higher polyethylene and styrene sales volumes, as compared to 2018. Average sales prices for the Olefins segment decreased by 21% in 2019 as compared to 2018, primarily due to increased olefins production from new industry capacity. Sales volumes for the Olefins segment increased by 9% in 2019, as compared to 2018.

Income from Operations. Income from operations decreased by $313 million to $260 million in 2019 from $573 million in 2018. The decrease in income from operations was primarily due to the lower sales prices for our major products, partially offset by higher sales volumes for our major products and lower feedstock and fuel costs. Trading activity in 2019 resulted in a loss of approximately $26 million as compared to a gain of $3 million in 2018.

Vinyls Segment

Net Sales. Net sales decreased by $280 million, or 4%, to $6,336 million in 2019 from $6,616 million in 2018. Average sales prices for the Vinyls segment decreased by 8% in 2019, as compared to 2018, mainly due to lower sales prices for caustic soda and lower sales prices and volumes for PVC resins, partially offset by higher PVC compounds sales volumes. Average sales volumes increased by 3% in 2019, as compared to 2018.

Income from Operations. Income from operations decreased by $462 million to $451 million in 2019 from $913 million in 2018. This decrease in income from operations was primarily due to lower caustic soda and PVC resin sales prices, partially offset by lower purchased ethylene, ethane feedstock and fuel costs.

2018 Compared with 2017

Net Sales. Net sales increased by $594 million, or 7%, to $8,635 million in 2018 from $8,041 million in 2017, primarily attributable to higher sales prices and volumes for caustic soda and higher sales volumes for PVC resin and polyethylene, partially offset by lower polyethylene sales prices and lower styrene sales volumes. Average sales prices for 2018 increased by 5% as compared to 2017. Sales volumes increased by 3% in 2018 as compared to 2017.

Gross Profit. Gross profit margin percentage increased to 23% in 2018 from 22% in 2017. The gross profit margin for 2018 was higher primarily due to higher sales prices and volumes for caustic soda, lower purchased ethylene costs and improved operating rates in the Vinyls segment due to fewer planned turnarounds and unplanned outages, partially offset by higher ethane feedstock costs, as compared to 2017.

Selling, General and Administrative Expenses. Selling, general and administrative expenses increased by $46 million, or 12%, to $445 million in 2018 from $399 million in 2017. This increase was mainly due to an increase in employee compensation and professional consulting fees.

Amortization of Intangibles. Amortization expense for 2018 was comparable to 2017.

Restructuring, Transaction and Integration-related Costs. Restructuring, transaction and integration-related costs were $33 million in 2018 as compared to $29 million in 2017. The restructuring, transaction and integration-related costs primarily consisted of integration-related consulting fees, severance benefits provided in conjunction with acquisition and reorganization charges.

Interest Expense. Interest expense decreased by $33 million to $126 million in 2018 from $159 million in 2017, primarily as a result of lower average debt outstanding for 2018 as compared to 2017. The lower average debt balance in 2018 was mainly due to the redemption of the 2023 Notes in May 2018 and the 2021 Notes in February 2018. See "Liquidity and Capital Resources—Debt" below for further discussion of our indebtedness.

Other Income, Net. Other income, net increased by $37 million to $52 million in 2018 from $15 million in 2017. The increase was primarily attributable to a one-time pension settlement gain of $14 million, an increase in interest income of $13 million, a net gain of $6 million recognized on the redemption of the 2021 Notes and an increase in income from unconsolidated subsidiaries of $6 million.

Income Taxes. The effective income tax rate was an expense of 22% in 2018 as compared to a benefit of 24% in 2017. The effective tax rate in 2018 was higher as compared to 2017, primarily due to the recognition of a $591 million income tax benefit in 2017 as a result of the revaluation of deferred tax assets and liabilities. In addition, the U.S. corporate income tax rate was lower in 2018 as compared to 2017. The effective income tax rate in 2018 was above the U.S. federal statutory rate of 21% primarily due to state and foreign taxes.

Olefins Segment

Net Sales. Net sales decreased by $32 million, or 2%, to $2,019 million in 2018 from $2,051 million in 2017. This decrease was mainly due to lower sales volumes for styrene as a result of a planned turnaround in the second quarter of 2018 and lower polyethylene sales prices, partially offset by higher sales volumes for polyethylene and higher sales prices for styrene, as compared to 2017. Average sales prices for the Olefins segment decreased by 1% in 2018 as compared to 2017, while average sales volumes in 2018 were consistent with 2017.

Income from Operations. Income from operations was $573 million in 2018 as compared to $655 million in 2017. This decrease was primarily due to lower margins resulting from higher ethane feedstock costs and lower polyethylene sales prices, partially offset by higher polyethylene sales volumes.

Vinyls Segment

Net Sales. Net sales increased by $626 million, or 10%, to $6,616 million in 2018 from $5,990 million in 2017. This increase was mainly attributable to higher sales prices and volumes for caustic soda and higher sales volumes for PVC resin as compared to 2017. Average sales volumes increased by 4% in 2018, as compared to 2017 and average sales prices increased by 7% in 2018 as compared to 2017.

Income from Operations. Income from operations was $913 million in 2018 as compared to $639 million in 2017. This increase was mainly attributable to higher sales prices and volumes for caustic soda, lower purchased ethylene costs, improved operating rates and lower costs associated with planned turnarounds and unplanned outages, as compared to 2017.

Cash Flows

Operating Activities

Operating activities provided cash of $1,301 million in 2019 compared to cash provided of $1,409 million in 2018. The $108 million decrease in cash flows from operating activities was mainly due to the decrease in income from operations in 2019, as compared to 2018, partially offset by a decrease in working capital requirements. Income from operations decreased by $752 million in 2019, as compared to 2018. The decrease in income from operations was primarily a result of lower sales prices for our major products and other factors as discussed in "Summary" above. Changes in components of working capital, which we define for purposes of this cash flow discussion as accounts receivable, inventories, prepaid expenses and other current assets, less accounts payable and accrued liabilities, provided cash of $68 million in 2019, compared to $290 million of cash used in 2018, a favorable change of $358 million. The favorable change was driven mainly by changes in accounts receivable and inventories. Favorable changes in accounts receivables and inventories were primarily the result of lower sales prices for our products and lower feedstock costs in 2019, as compared to 2018.

Operating activities provided cash of $1,409 million in 2018 compared to cash provided of $1,528 million in 2017. The $119 million decrease in cash flows from operating activities was mainly due to an increase in working capital requirements, partially offset by an increase in income from operations in 2018 and lower income taxes for 2018 as a result of the Tax Act, as compared to 2017. Income from operations increased by $183 million in 2018, as compared to the prior year 2017. The increase in income from operations was primarily a result of higher sales price and volume for caustic soda, partially offset by higher feedstock costs. Changes in components of working capital, which we define for purposes of this cash flow discussion as accounts receivable, inventories, prepaid expenses and other current assets, less accounts payable and accrued liabilities used cash of $290 million in 2018, compared to $155 million of cash provided in 2017, an unfavorable change of $445 million. The change was mainly driven by unfavorable changes in inventories, accounts payable and accrued liabilities. Unfavorable changes in inventories were primarily the result of higher feedstock costs in 2018 compared to 2017, and the changes in accounts payable and accrued liabilities were primarily due to the timing of purchases and payments to suppliers as well as due to a lower income tax accrual as a result of the lower tax rate under the Tax Act.

Investing Activities

Net cash used for investing activities during 2019 was $1,954 million as compared to net cash used of $754 million in 2018. Capital expenditures were $787 million in 2019 compared to $702 million in 2018. Higher investing activities in 2019 were primarily due to acquisitions for $314 million, net of cash acquired, the purchase of the additional 34.8% interest in LACC for $817 million in November 2019 and payment of $45 million to fund the construction costs of LACC. Capital expenditures in 2019 and 2018 were primarily related to expansion projects as well as projects to improve production capacity or reduce costs, maintenance and safety and environmental projects at our various facilities. The expansion projects include our previously announced expansions of PVC and VCM capacities at our plants in Germany and Geismar, Louisiana. Please see "Liquidity and Capital Resources—Liquidity and Financing Arrangements" below for further discussion.

Net cash used for investing activities during 2018 was $754 million as compared to net cash used of $652 million in 2017. Capital expenditures were $702 million in 2018 compared to $577 million in 2017. Capital expenditures in 2018 were primarily related to expansion projects as well as projects to improve production capacity or reduce costs, maintenance and safety and environmental projects at our various facilities. The expansion projects include our previously announced ongoing expansions of chlor-alkali, PVC and VCM capacities at our plants in Germany and Geismar. Capital expenditures in 2017 were primarily incurred on the upgrade and expansion of OpCo's Calvert City ethylene plant at our Calvert City site. The remaining capital expenditures in 2017 primarily related to projects to improve production capacity or reduce costs, maintenance and safety and environmental projects at our various facilities. We spent $58 million in 2018 to fund the construction costs of our LACC joint venture, as compared to $66 million in 2017. In addition, we invested $10 million in other unconsolidated subsidiaries in 2018. Please see "Liquidity and Capital Resources—Liquidity and Financing Arrangements" below for further discussion.

Financing Activities

Net cash provided by financing activities during 2019 was $630 million as compared to net cash used of $1,427 million in 2018. In 2019, we received proceeds of $784 million from the issuance of the 1.625% 2029 Senior Notes and $63 million from the issuance of Westlake Partners common units. The remaining activities in 2019 were primarily related to the $132 million payment of cash dividends, the $50 million payment of cash distributions to noncontrolling interests, repurchases of common stock of $30 million, repayment of notes payable of $18 million and proceeds of $20 million from the issuance of short-term notes payable. The 2018 activity was mainly related to the redemption of $704 million principal amount of the 2021 Notes in February 2018 and the redemption of $461 million principal amount of the 2023 Notes in May 2018. The remaining activities in 2018 were primarily related to the $120 million payment of cash dividends, the $45 million payment of cash distributions to noncontrolling interests, repurchases of common stock of $106 million and proceeds of $14 million from the issuance of short-term notes payable.

Net cash used by financing activities during 2018 was $1,427 million as compared to net cash provided of $6 million in 2017. We used $1,179 million for the repayment of notes payable, of which $704 million was used for the redemption of the 2021 Notes in February 2018 and $461 million was used for the redemption of the 2023 Notes in May 2018 and the remaining balance was used for the repayment of short-term notes payable. The remaining activities in 2018 were primarily related to the $120 million payment of cash dividends, the $45 million payment of cash distributions to noncontrolling interests, treasury stock repurchases of $106 million and proceeds of $14 million from the issuance of short-term notes payable. The 2017 activity was mainly related to the issuance of notes, drawdown under the Credit Agreement and issuance of Westlake Partners common units, partially offset by repayment of borrowings under the Credit Agreement, the payment of cash dividends, the payment of cash distributions to noncontrolling interests and the payment of debt issuance costs.

Liquidity and Capital Resources

Liquidity and Financing Arrangements

Our principal sources of liquidity are from cash and cash equivalents, cash from operations, short-term borrowings under the Credit Agreement and our long-term financing.

In November 2014, our Board of Directors authorized a $250 million stock repurchase program (the "2014 Program"). In November 2015, our Board of Directors approved the expansion of the 2014 Program by an additional $150 million. In August 2018, our Board of Directors approved the further expansion of the existing 2014 Program by an additional $150 million. As of December 31, 2019, we had repurchased 6,080,191 shares of our common stock for an aggregate purchase price of approximately $365 million under the 2014 Program. During the year ended December 31, 2019, 517,712 shares of our common stock were repurchased under the 2014 Program. Purchases under the 2014 Program may be made either through the open market or in privately negotiated transactions. Decisions regarding the amount and the timing of purchases under the 2014 Program will be influenced by our cash on hand, our cash flow from operations, general market conditions and other factors. The 2014 Program may be discontinued by our Board of Directors at any time.

On January 2, 2019, we acquired NAKAN and paid approximately $249 million as the purchase price.

On July 17, 2019, we closed the public offering of €700 million aggregate principal amount of the 1.625% 2029 Senior Notes.

In 2015, Eagle, a wholly-owned subsidiary of the Company, and Lotte formed a joint venture, LACC, to design, build and operate an ethylene facility with 2.2 billion pounds per year of ethylene production capacity. Pursuant to a contribution and subscription agreement between Eagle and LACC, Eagle contributed $225 million to LACC to fund construction costs of the ethylene plant, representing approximately12% of the membership interests in LACC. As discussed above under "Recent Developments," in November 2019, Eagle acquired an additional 34.8% of the membership interests in LACC from Lotte for approximately $817 million. We funded the purchase price for the transaction with cash on hand.

We believe that our sources of liquidity as described above are adequate to fund our normal operations and ongoing capital expenditures. Funding of any potential large expansions or potential acquisitions would likely necessitate, and therefore depend on our ability to obtain, additional financing in the future. We may not be able to access additional liquidity at cost effective interest rates due to the volatility of the commercial credit markets.

Cash and Cash Equivalents

As of December 31, 2019, our cash and cash equivalents totaled$728 million. In addition, we have the Credit Agreement available to supplement cash if needed, as described under "Debt" below.

Debt

As of December 31, 2019, our indebtedness totaled$3,445 million. See Note 11 to the consolidated financial statements appearing elsewhere in this Form 10-K for a discussion of our long-term indebtedness. Defined terms used in this section have the definitions assigned to such terms in Note 11 to the consolidated financial statements included in Item 8 of this Form 10-K.

Our ability to make payments on our indebtedness and to fund planned capital expenditures will depend on our ability to generate cash in the future, which is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control. Based on our current level of operations and unless we were to undertake a new expansion or large acquisition, we believe our cash flows from operations, available cash and available borrowings under the Credit Agreement will be adequate to meet our normal operating needs for the foreseeable future.

Credit Agreement

On July 24, 2018, we entered into a new$1 billion revolving credit facility that is scheduled to mature on July 24, 2023 (the "Credit Agreement") and, in connection therewith, terminated the existing $1 billion revolving credit facility that was scheduled to mature on August 23, 2021 (the "Prior Credit Agreement"). The Credit Agreement bears interest at either (a) LIBOR plus a spread ranging from 1.00% to 1.75% or (b) Alternate Base Rate plus a spread ranging from 0.00% to 0.75% in each case depending on the credit rating of the Company. At December 31, 2019, we had no borrowings outstanding under the Credit Agreement. As of December 31, 2019, we had no outstanding letters of credit and had borrowing availability of $1 billion under the Credit Agreement. The Credit Agreement contains certain affirmative and negative covenants, including a quarterly total leverage ratio financial maintenance covenant. As of December 31, 2019, we were in compliance with the total leverage ratio financial maintenance covenant.

The Credit Agreement also contains certain events of default and if and for so long as certain events of default have occurred and are continuing, any overdue amounts outstanding under the Credit Agreement will accrue interest at an increased rate, the lenders can terminate their commitments thereunder and payments of any outstanding amounts could be accelerated by the lenders. None of our subsidiaries are required to guarantee our obligations under the Credit Agreement.

The Credit Agreement includes a $150 million sub-limit for letters of credit, and any outstanding letters of credit will be deducted from availability under the facility. The Credit Agreement also provides for a discretionary $50 million commitment for swingline loans to be provided on a same-day basis. We may also increase the size of the facility, in increments of at least $25 million, up to a maximum of $500 million, subject to certain conditions and if certain lenders agree to commit to such an increase.

In connection with our entry into the Credit Agreement and termination of the Prior Credit Agreement on July 24, 2018, all guarantees by our subsidiaries of our payment obligations under the 4.375% 2047 Senior Notes, the 3.60% 2022 Senior Notes, the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes were released.

GO Zone Bonds and IKE Zone Bonds

In November 2017, the Louisiana Local Government Environmental Facility and Development Authority (the "Authority") completed the offering of $250 million aggregate principal amount of 3.50% tax-exempt revenue refunding bonds due November 1, 2032 (the "Refunding Bonds"), the net proceeds of which were used to redeem $250 million aggregate principal amount of the Authority's 6 ¾% tax-exempt revenue bonds due November 1, 2032 issued by the Authority under the Gulf Opportunity Zone Act of 2005 (the "GO Zone Act") in December 2007. In connection with the issuance of the Refunding Bonds, we issued $250 million of the 3.5% 2032 GO Zone Refunding Senior Notes. The Refunding Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time on or after November 1, 2027, for 100% of the principal plus accrued interest.

In July 2010, the Authority completed the reoffering of $100 million of the 6 ½% 2029 GO Zone Bonds. In connection with the reoffering of the 6 ½% 2029 GO Zone Bonds, we issued $100 million of the 6 ½% 2029 GO Zone Senior Notes. In December 2010, the Authority issued $89 million of the 6 ½% 2035 GO Zone Bonds. In connection with the issuance of the 6 ½% 2035 GO Zone Bonds, we issued $89 million of the 6 ½% 2035 GO Zone Senior Notes. In December 2010, the Authority completed the offering of $65 million of the 6 ½% 2035 IKE Zone Bonds under Section 704 of the Emergency Economic Stabilization Act of 2008 (the "IKE Zone Act"). In connection with the issuance of the 6 ½% 2035 IKE Zone Bonds, we issued $65 million of the 6 ½% 2035 IKE Zone Senior Notes.

The 6 ½% 2029 GO Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time prior to August 1, 2020 for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after August 1, 2020, the 6 ½% 2029 GO Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company for 100% of the principal plus accrued interest. The 6 ½% 2035 GO Zone Bonds and the 6 ½% 2035 IKE Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time prior to November 1, 2020 for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after November 1, 2020, the 6 ½% 2035 GO Zone Bonds and the 6 ½% 2035 IKE Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company for 100% of the principal plus accrued interest. See Note 11 to the consolidated financial statements included in Item 8 of this Form 10-K for more information.

3.60% Senior Notes due 2026 and 5.0% Senior Notes due 2046

In August 2016, we completed the private offering of $750 million aggregate principal amount of our 3.60% 2026 Senior Notes and $700 million aggregate principal amount of our 5.0% 2046 Senior Notes. In March 2017, the Company commenced registered exchange offers to exchange the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes for new notes that are identical in all material respects to the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes, except that the offer and issuance of the new Securities and Exchange Commission ("SEC")-registered notes have been registered under the Securities Act of 1933, as amended (the "Securities Act"). The exchange offers expired on April 24, 2017, and approximately 99.97% of the 3.60% 2026 Senior Notes and 100% of the 5.0% 2046 Senior Notes were exchanged. The notes that were not exchanged in the exchange offers have not been registered under the Securities Act or any state securities laws and may not be offered or sold in the U.S. absent registration or an applicable exemption from registration requirements or a transaction not subject to the registration requirements of the Securities Act or any state securities law.

3.60% Senior Notes due 2022

In July 2012, we issued $250 million aggregate principal amount of the 3.60% 2022 Senior Notes. We may optionally redeem the 3.60% 2022 Senior Notes at any time and from time to time prior to April 15, 2022 (three months prior to the maturity date) for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after April 15, 2022, we may optionally redeem the 3.60% 2022 Senior Notes for 100% of the principal plus accrued interest. The holders of the 3.60% 2022 Senior Notes may require us to repurchase the 3.60% 2022 Senior Notes at a price of 101% of their principal amount, plus accrued and unpaid interest to the date of repurchase, upon the occurrence of both a "change of control" and, within 60 days of such change of control, a "below investment grade rating event" (as such terms are defined in the indenture governing the 3.60% 2022 Senior Notes).

4.375% Senior Notes due 2047

In November 2017, we completed the registered public offering of$500 million aggregate principal amount of 4.375% Senior Notes due November 15, 2047. We may optionally redeem the 4.375% 2047 Senior Notes at any time and from time to time prior to May 15, 2047 (six months prior to the maturity date) for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after May 15, 2047, we may optionally redeem the 4.375% 2047 Senior Notes for 100% of the principal amount plus accrued interest. The holders of the 4.375% 2047 Senior Notes may require us to repurchase the 4.375% 2047 Senior Notes at a price of 101% of their principal amount, plus accrued and unpaid interest to, but not including, the date of repurchase, upon the occurrence of both a "change of control" and, within 60 days of such change of control, a "below investment grade rating event" (as such terms are defined in the indenture governing the 4.375% 2047 Senior Notes). See Note 11 to the consolidated financial statements for more information.

Revenue Bonds

In December 1997, we entered into a loan agreement with a public trust established for public purposes for the benefit of the Parish of Calcasieu, Louisiana. The public trust issued $11 million principal amount of tax-exempt waste disposal revenue bonds in order to finance our construction of waste disposal facilities for an ethylene plant. The waste disposal revenue bonds expire in December 2027 and are subject to redemption and mandatory tender for purchase prior to maturity under certain conditions. Interest on the waste disposal revenue bonds accrues at a rate determined by a remarketing agent and is payable quarterly. The interest rate on the waste disposal revenue bonds at December 31, 2019 and 2018 was 1.78% and 1.85%, respectively.

1.625% Senior Notes due 2029

In July 2019, we completed the registered public offering of€700 million aggregate principal amount of the 1.625% 2029 Senior Notes due July 17, 2029. The Company received approximately $779 million of net proceeds from the offering. We may optionally redeem the 1.625% 2029 Senior Notes at any time and from time to time prior to April 17, 2029 (three months prior to the maturity date) for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after April 17, 2029, we may optionally redeem the 1.625% 2029 Senior Notes for 100% of the principal amount plus accrued interest. The holders of the 1.625% 2029 Senior Notes may require us to repurchase the 2029 Senior Notes at a price of 101% of their principal amount, plus accrued and unpaid interest to the date of repurchase, upon the occurrence of both a "change of control" and, within 60 days of such change of control, a "below investment grade rating event" (as such terms are defined in the indenture and supplemental indenture governing the 1.625% 2029 Senior Notes).

The indenture and supplemental indentures governing the 3.60% 2026 Senior Notes, 5.0% 2046 Senior Notes, 3.60% 2022 Senior Notes, 4.375% 2047 Senior Notes and 1.625% 2029 Senior Notes contain customary events of default and covenants that will restrict us and certain of our subsidiaries' ability to (1) incur certain secured indebtedness, (2) engage in certain sale-leaseback transactions and (3) consolidate, merge or transfer all or substantially all of its assets.

As of December 31, 2019, we were in compliance with all of our long-term debt covenants.

Westlake Chemical Partners LP Credit Arrangements

Our subsidiary, Westlake Chemical Finance Corporation, is the lender party to a $600 million revolving credit facility with Westlake Chemical Partners LP ("Westlake Partners"), originally entered into on April 29, 2015. The revolving credit facility is scheduled to mature in April 2021. Borrowings under the revolver bear interest at LIBOR plus a spread ranging from 2.0% to 3.0% (depending on Westlake Partners' consolidated leverage ratio), payable quarterly. Westlake Partners may pay all or a portion of the interest on any borrowings in kind, in which case any such amounts would be added to the principal amount of the loan. As of December 31, 2019, outstanding borrowings under the credit facility totaled $377 million and bore interest at the LIBOR rate plus2.0%.

Our subsidiary, Westlake Polymers LLC, is the administrative agent to a $600 million revolving credit facility with OpCo. The revolving credit facility is scheduled to mature in September 2023. As of December 31, 2019, outstanding borrowings under the credit facility totaled $23 million and bore interest at the LIBOR rate plus 2.0%, which is accrued in arrears quarterly.

We consolidate Westlake Partners and OpCo for financial reporting purposes as we have a controlling financial interest. As such, the revolving credit facilities described above between our subsidiaries and Westlake Partners and OpCo are eliminated upon consolidation.

Contractual Obligations and Commercial Commitments

In addition to long-term debt, we are required to make payments relating to various types of obligations. The following table summarizes our contractual obligations as of December 31, 2019 relating to long-term debt, operating leases, finance leases, pension benefits funding, post-retirement healthcare benefits, purchase obligations and interest payments for the next five years and thereafter. The amounts do not include deferred charges and other items classified in other liabilities in the consolidated balance sheet due to the uncertainty of the future payment schedule.

	Payment Due by Period				
	Total	2020	2021-2022	2023-2024	Thereafter
	(dollars in millions)				
Contractual Obligations					
Long-term debt	$ 3,500	$ —	$ 250	$ —	$ 3,250
Operating leases	545	106	152	98	189
Finance leases	16	3	5	5	3
Pension benefits funding	177	6	28	55	88
Post-retirement healthcare benefits	93	8	16	15	54
Purchase obligations	7,180	1,588	1,986	1,463	2,143
Interest payments	2,198	131	258	244	1,565
Asset retirement obligations	42	7	1	3	31
Total	$ 13,751	$ 1,849	$ 2,696	$ 1,883	$ 7,323
Other Commercial Commitments					
Standby letters of credit	$ 29	$ 23	$ —	$ —	$ 6

Pension Benefits Funding. This represents the projected timing of contributions to our defined benefit pension plans which cover certain eligible employees in the United States and non-U.S. countries.

Post-retirement Healthcare Benefits. This represents the projected timing of contributions to our post-retirement healthcare benefits to the employees of certain subsidiaries who meet certain minimum age and service requirements.

Purchase Obligations. Purchase obligations include agreements to purchase goods and services that are enforceable and legally binding and that specify all significant terms, including a minimum quantity and price. We are party to various obligations to purchase goods and services, including commitments to purchase various feedstock, utilities, nitrogen, oxygen, product storage, pipeline usage and logistic support, in each case in the ordinary course of our business, as well as various purchase commitments for our capital projects. The amounts shown in the table above reflect our estimates based on the contractual quantities and the prices in effect under contractual agreements as of December 31, 2019.

Interest Payments. Interest payments are based on interest rates in effect at December 31, 2019.

Asset Retirement Obligations. This includes the estimated costs and timing of payments to satisfy our recognized asset retirement obligations.

Standby Letters of Credit. This includes (1) our obligation under an $11 million letter of credit issued in connection with the$11 million tax-exempt waste disposal revenue bonds and (2) other letters of credit totaling $18 million issued primarily to support commercial obligations and obligations under our insurance programs, including workers' compensation claims.

Uncertain Income Tax Positions. We have recognized a liability for our uncertain income tax positions of approximately$20 million as of December 31, 2019. We do not believe we are likely to pay any material amounts during the year ending December 31,2020. The ultimate resolution and timing of payment for remaining matters continues to be uncertain and are therefore excluded from the Contractual Obligations table above.

Off-Balance Sheet Arrangements

None.

Critical Accounting Policies

Critical accounting policies are those that are important to our financial condition and require management's most difficult, subjective or complex judgments. Different amounts would be reported under different operating conditions or under alternative assumptions. We have evaluated the accounting policies used in the preparation of the accompanying consolidated financial statements and related notes and believe those policies are reasonable and appropriate.

We apply those accounting policies that we believe best reflect the underlying business and economic events, consistent with GAAP. Our more critical accounting policies include those related to long-lived assets, fair value estimates, accruals for long-term employee benefits, accounts receivable, income taxes and environmental and legal obligations. Inherent in such policies are certain key assumptions and estimates. We periodically update the estimates used in the preparation of the financial statements based on our latest assessment of the current and projected business and general economic environment. Our significant accounting policies are summarized in Note 1 to the consolidated financial statements appearing elsewhere in this Form 10-K. We believe the following to be our most critical accounting policies applied in the preparation of our financial statements.

Long-Lived Assets. Key estimates related to long-lived assets include useful lives, recoverability of carrying values and existence of any retirement obligations. Such estimates could be significantly modified. The carrying values of long-lived assets could be impaired by significant changes or projected changes in supply and demand fundamentals (which would have a negative impact on operating rates or margins), new technological developments, new competitors with significant raw material or other cost advantages, adverse changes associated with the United States and world economies, the cyclical nature of the chemical and refining industries and uncertainties associated with governmental actions.

We evaluate long-lived assets for potential impairment indicators whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable, including when negative conditions such as significant current or projected operating losses exist. Our judgments regarding the existence of impairment indicators are based on legal factors, market conditions and the operational performance of our businesses. Actual impairment losses incurred could vary significantly from amounts estimated. Long-lived assets assessed for impairment are grouped at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. Additionally, future events could cause us to conclude that impairment indicators exist and that associated long-lived assets of our businesses are impaired. Any resulting impairment loss could have a material adverse impact on our financial condition and results of operations.

The estimated useful lives of long-lived assets range from one to 40 years. Depreciation and amortization of these assets, including amortization of deferred turnaround costs, under the straight-line method over their estimated useful lives totaled $713 million, $641 million and $601 million in 2019, 2018 and 2017, respectively. If the useful lives of the assets were found to be shorter than originally estimated, depreciation or amortization charges would be accelerated.

We defer the costs of planned major maintenance activities, or turnarounds, and amortize the costs over the period until the next planned turnaround of the affected unit. Total costs deferred on turnarounds were $40 million, $79 million and $47 million in 2019, 2018 and 2017, respectively. Amortization in 2019, 2018 and 2017 of previously deferred turnaround costs was $55 million, $39 million and $30 million, respectively. As of December 31, 2019, deferred turnaround costs, net of accumulated amortization, totaled $129 million. Expensing turnaround costs as incurred would likely result in greater variability of our quarterly operating results and would adversely affect our financial position and results of operations.

Additional information concerning long-lived assets and related depreciation and amortization appears in Notes 6 and 8 to the consolidated financial statements appearing elsewhere in this Form 10-K.

Fair Value Estimates. We develop estimates of fair value to allocate the purchase price paid to acquire a business to the assets acquired and liabilities assumed in an acquisition, to assess impairment of long-lived assets, goodwill and intangible assets and to record marketable securities and pension plan assets. We use all available information to make these fair value determinations, including the engagement of third-party consultants. At December 31, 2019, our recorded goodwill was $1,074 million. In addition, we record all pension plan assets and certain marketable securities at fair value. The fair value of these items is determined by quoted market prices or from observable market-based inputs. See Note 16 to the consolidated financial statements for more information.

Business Combinations and Intangible Assets Including Goodwill. We account for business combinations using the acquisition method of accounting, and accordingly, the assets and liabilities of the acquired business are recorded at their fair values at the date of acquisition. The excess of the purchase price over the estimated fair value is recorded as goodwill. Any changes in the estimated fair values of the net assets recorded for acquisitions prior to the finalization of more detailed analysis, but not to exceed one year from the date of acquisition, will change the amount of the purchase price allocable to goodwill. Any subsequent changes to any purchase price allocations that are material to our consolidated financial results will be adjusted in the same period's financial statements, including the effect on earnings of changes in depreciation, amortization or other income effects, if any, as a result of the change to the provisional amounts, calculated as if the accounting had been completed at the acquisition date. All acquisition costs are expensed as incurred and in-process research and development costs are recorded at fair value as an indefinite-lived intangible asset and assessed for impairment thereafter until completion, at which point the asset is amortized over its expected useful life. Separately recognized transactions associated with business combinations are generally expensed subsequent to the acquisition date. The application of business combination and impairment accounting requires the use of significant estimates and assumptions.

Goodwill is evaluated for impairment at least annually, or when events or changes in circumstances indicate the fair value of a reporting unit with goodwill has been reduced below its carrying value. We perform our annual impairment assessment for the Olefins and Vinyls reporting units in October and April, respectively. We may elect to perform an optional qualitative assessment to determine whether a quantitative impairment analysis is required. The qualitative assessment considers factors such as macroeconomic conditions, industry and market considerations, cost factors related to raw materials and labor, current and projected financial performance, changes in management or strategy, and market capitalization. Alternatively, we may unconditionally elect to bypass the qualitative assessment and perform a quantitative goodwill impairment assessment in any period.

We elected to perform the quantitative assessment for both of our segments' reporting units during 2019. The quantitative analysis compares a reporting unit's fair value to its carrying amount to determine whether goodwill is impaired. The fair values of the reporting units are calculated using both a discounted cash flow methodology and a market value methodology. The discounted cash flow projections are based on a forecast to reflect the cyclicality of the business. The forecast is based on historical results and estimates by management, including its strategic and operational plans, and financial performance of the market. The future cash flows are discounted to present value using an applicable discount rate. The significant assumptions used in determining the fair value of the reporting unit using the market value methodology include the determination of appropriate market comparables and the estimated multiples of EBITDA a willing buyer is likely to pay. Even if the fair values of the reporting units decreased by 10% from the fair values determined in the most recent quantitative tests performed during 2019, the carrying values of the reporting units would not have exceeded their fair values. See Item 1A, "Risk Factors—If our goodwill, indefinite-lived intangible assets or other intangible assets become impaired in the future, we may be required to record non-cash charges to earnings, which could be significant."

The results of operations of acquired businesses are included in our consolidated financial statements from the acquisition date.

Long-Term Employee Benefit Costs. Our costs for long-term employee benefits, particularly pension and postretirement medical and life benefits, are incurred over long periods of time and involve many uncertainties over those periods. The net periodic benefit cost attributable to current periods is based on several assumptions about such future uncertainties and is sensitive to changes in those assumptions. It is our responsibility, often with the assistance of independent experts, to select assumptions that represent the best estimates of those uncertainties. It is also our responsibility to review those assumptions periodically and, if necessary, adjust the assumptions to reflect changes in economic or other factors.

Accounting for employee retirement plans involves estimating the cost of benefits that are to be provided in the future and attempting to match, for each employee, that estimated cost to the period worked. To accomplish this, we rely extensively on advice from actuaries, and we make assumptions about inflation, investment returns, mortality, employee turnover and discount rates that ultimately impact amounts recorded. Changes in these assumptions may result in different expense and liability amounts. One of the more significant assumptions relates to the discount rate for measuring benefit obligations. At December 31, 2019, the projected pension benefit obligations for U.S. and non-U.S. plans were calculated using assumed weighted average discount rates of 3.0% and 1.3%, respectively. The discount rates were determined using a benchmark pension discount curve and applying spot rates from the curve to each year of expected benefit payments to determine the appropriate discount rate. As a result of the funding relief provided by the enactment of the Bipartisan Budget Act of 2015, no minimum funding requirements are expected during 2020 for the U.S. pension plans. Additional information on the2020 funding requirements and key assumptions underlying these benefit costs appear in Note 14 to the consolidated financial statements appearing elsewhere in this Form 10-K.

The following table reflects the sensitivity of the benefit obligation of our pension plans to changes in the actuarial assumptions:

	2019	
	U.S. Plans	Non-U.S. Plans
	(dollars in millions)	
Projected benefit obligation, end of year	$ 703	$ 144
Discount rate increases by 100 basis points	(75)	(21)
Discount rate decreases by 100 basis points	93	26

A one-percentage point increase or decrease in assumed healthcare trend rates would not have a significant effect on the amounts reported for the healthcare plans.

While we believe that the amounts recorded in the consolidated financial statements appearing elsewhere in this Form 10-K related to these retirement plans are based on the best estimates and judgments available, the actual outcomes could differ from these estimates.

Income Taxes. We utilize the liability method of accounting for income taxes. Under the liability method, deferred tax assets or liabilities are recorded based upon temporary differences between the tax basis of assets and liabilities and their carrying values for financial reporting purposes. Deferred tax expense or benefit is the result of changes in the deferred tax assets and liabilities during the period. Valuation allowances are recorded against deferred tax assets when it is considered more likely than not that the deferred tax assets will not be realized.

Environmental and Legal Obligations. We consult with various professionals to assist us in making estimates relating to environmental costs and legal proceedings. We accrue an expense when we determine that it is probable that a liability has been incurred and the amount is reasonably estimable. While we believe that the amounts recorded in the accompanying consolidated financial statements related to these contingencies are based on the best estimates and judgments available, the actual outcomes could differ from our estimates. Additional information about certain legal proceedings and environmental matters appears in Note 22 to the consolidated financial statements appearing elsewhere in this Form 10-K.

Asset Retirement Obligations. We recognize asset retirement obligations in the period in which the liability becomes probable and reasonably estimable. Initially, the asset retirement obligation is recorded at fair value and capitalized as a component of the carrying value of the long-lived asset to which the obligation relates. The liability is recorded at its future value each period, and the capitalized cost is depreciated over the estimated useful life of the related asset. Upon settlement of the liability, a gain or loss is recorded. We have conditional asset retirement obligations for the removal and disposal of hazardous materials from certain of our manufacturing facilities.

We also have conditional asset retirement obligations that have not been recognized because the fair values of the conditional legal obligations cannot be measured due to the indeterminate settlement date of the obligations. Settlements of the unrecognized conditional asset retirement obligations are not expected to have a material adverse effect on our financial condition, results of operations or cash flows in any individual reporting period.

Recent Accounting Pronouncements

See Note 1 to the consolidated financial statements included in Item 8 of this Form 10-K for a full description of recent accounting pronouncements, including expected dates of adoption and estimated effects on results of operations and financial condition.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

Commodity Price Risk

A substantial portion of our products and raw materials are commodities whose prices fluctuate as market supply and demand fundamentals change. Accordingly, product margins and the level of our profitability tend to fluctuate with changes in the business cycle. We try to protect against such instability through various business strategies. Our strategies include ethylene product feedstock flexibility and moving downstream into the olefins and vinyls products where pricing is more stable. We use derivative instruments in certain instances to reduce price volatility risk on feedstocks and products. Based on our open derivative positions on ethane at December 31, 2019, a hypothetical $0.10 increase in the price of a gallon of ethane would have increased our income before income taxes by $11 million. Based on our open derivative positions on ethylene (which are related to OpCo's third party sales), at December 31, 2019, a hypothetical $0.10 decrease in the price of a pound of ethylene would have increased our income before income taxes by $9 million.

Interest Rate Risk

We are exposed to interest rate risk with respect to fixed and variable rate debt. AtDecember 31, 2019, we had $3,489 million aggregate principal amount of fixed rate debt. We are subject to the risk of higher interest cost if and when this debt is refinanced. If interest rates were 1.0% higher at the time of refinancing, our annual interest expense would increase by approximately $35 million. Also, at December 31, 2019, we had $11 million principal amount of variable rate debt outstanding, which represents the tax exempt waste disposal revenue bonds. We do not currently hedge our variable interest rate debt, but we may do so in the future. The average variable interest rate for our variable rate debt of $11 million as of December 31, 2019 was 1.78%. A hypothetical 100 basis point increase in the average interest rate on our variable rate debt would not result in a material change in the interest expense.

LIBOR is used as a reference rate for borrowings under our revolving line of credit, which is currently undrawn. LIBOR is set to be phased out at the end of 2021. We are currently reviewing how the LIBOR phase out will affect us, but we do not expect the impact to be material.

Foreign Currency Exchange Rate Risk

We are exposed to foreign currency exchange rate risk associated with our international operations. However, the effect of fluctuations in foreign currency exchange rates caused by our international operations has not had a material impact on our overall operating results. We may engage in activities to mitigate our exposure to foreign currency exchange risk in certain instances through the use of currency exchange derivative instruments, including forward exchange contracts, cross-currency swaps or spot purchases. A forward exchange contract obligates us to exchange predetermined amounts of specified currencies at a stated exchange rate on a stated date. A cross-currency swap obligates us to make periodic payments in the local currency and receive periodic payments in our functional currency based on the notional amount of the instrument. In January 2018, we entered into foreign exchange hedging contracts designated as net investment hedges with an aggregate notional value of €220 million designed to reduce the volatility in stockholders' equity from changes in currency exchange rates associated with our net investments in foreign operations. In July 2019, we terminated a portion of the foreign exchange hedging contract with a notional value of €70 million. The notional value of the remaining net investment hedges was €150 million at December 31, 2019. The arrangement is scheduled to mature in 2026.

In July 2019, we completed the registered public offering of €700 million aggregate principal amount of the 1.625% Senior Notes. We designated this euro-denominated debt as a non-derivative net investment hedge of a portion of our net investments in euro functional-currency denominated subsidiaries to offset foreign currency fluctuations.

Item 8. Financial Statements and Supplementary Data

Index to Consolidated Financial Statements

Financial statement schedules not included in this Form 10-K have been omitted because they are not applicable or because the required information is shown in the financial statements or notes thereto.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Westlake Chemical Corporation is responsible for establishing and maintaining adequate internal control over financial reporting. Westlake'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.

Westlake management assessed the effectiveness of the Company's internal control over financial reporting as ofDecember 31, 2019. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control—Integrated Framework* (2013). Based on its assessment, Westlake's management has concluded that the Company's internal control over financial reporting was effective as of December 31, 2019 based on those criteria.

PricewaterhouseCoopers LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report on Form 10-K, has also audited the effectiveness of internal control over financial reporting as of December 31, 2019 as stated in their report that appears on the following page.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Westlake Chemical Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Westlake Chemical Corporation and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of operations, of comprehensive income, of changes in stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO").

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, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

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's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and 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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matters

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 (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Goodwill impairment assessment for the North America Vinyls reporting unit

As described in Notes 1 and 8 to the consolidated financial statements, the Company's Vinyls segment goodwill balance was $1,044 million as of December 31, 2019, which includes the goodwill balance associated with the North America Vinyls reporting unit. Management performs its annual impairment assessment for the Vinyls reporting units in April, including the North America Vinyls reporting unit. The quantitative analysis compares the reporting unit's fair value to its carrying amount to determine whether goodwill is impaired. The fair value of the North America Vinyls reporting unit assessed during the April 2019 impairment test was calculated using both a discounted cash flow methodology and a market value methodology. The discounted cash flow projections were based on a nine-year forecast. The forecast was based on prices and spreads projected by third party industry publications, historical results, and estimates by management, including its strategic and operational plans. Significant assumptions used in the discounted cash flow projection included projected sales volumes based on production capacities. The future cash flows were discounted to present value using a discount rate. Significant assumptions used in determining the fair value of the reporting unit using the market value methodology included the determination of market comparables and the estimated multiples of net income before interest expense, income taxes, depreciation and amortization ("EBITDA") a willing buyer is likely to pay.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment for the North America Vinyls reporting unit is a critical audit matter are there was significant judgment by management when developing the fair value estimate of this reporting unit. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating the significant assumptions used in management's discounted cash flow and market value methodologies, including projected sales volumes, discount rate, determination of market comparables and the estimated multiples of EBITDA. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in evaluating the audit evidence obtained from these procedures.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the goodwill impairment assessment for the Company's reporting units, including controls over measurement of the fair value of the North America Vinyls reporting unit. These procedures also included, among others, testing management's process for developing the fair value estimate; evaluating the appropriateness of the discounted cash flow and market value methodologies; testing the completeness, accuracy, and relevance of underlying data used in the model; and evaluating the significant assumptions used by management, including projected sales volumes, discount rate, determination of market comparables and the estimated multiples of EBITDA. When assessing the assumptions related to projected sales volumes, market comparables, and estimated multiples of EBITDA, we evaluated whether the assumptions used by management were reasonable considering (i) the current and past performance of the reporting unit, (ii) the consistency with external market and industry data, and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in evaluating the appropriateness of the Company's discounted cash flow and market value methodologies and certain significant assumptions, including the discount rate.

/s/PricewaterhouseCoopers LLP

Houston, Texas
February 19, 2020

We have served as the Company's auditor since 1986, which includes periods before the Company became subject to SEC reporting requirements.

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WESTLAKE CHEMICAL CORPORATION

CONSOLIDATED BALANCE SHEETS

	December 31, 2019	December 31, 2018
	(in millions of dollars, except par values and share amounts)	
ASSETS		
Current assets		
Cash and cash equivalents	$ 728	$ 753
Accounts receivable, net	1,036	1,037
Inventories	936	1,014
Prepaid expenses and other current assets	42	38
Total current assets	2,742	2,842
Property, plant and equipment, net	6,912	6,595
Operating lease right-of-use assets	443	—
Goodwill	1,074	1,002
Customer relationships, net	523	525
Other intangible assets, net	187	134
Equity method investments	1,112	253
Other assets, net	268	251
Total assets	$ 13,261	$ 11,602
LIABILITIES AND EQUITY		
Current liabilities		
Accounts payable	$ 473	$ 507
Accrued and other liabilities	768	676
Total current liabilities	1,241	1,183
Long-term debt, net	3,445	2,668
Deferred income taxes	1,255	1,159
Pension and other post-retirement benefits	360	337
Operating lease liabilities	355	—
Other liabilities	202	179
Total liabilities	6,858	5,526
Commitments and contingencies (Note 22)		
Stockholders' equity		
Preferred stock, $0.01 par value, 50,000,000 shares authorized; no shares issued and outstanding	—	—
Common stock, $0.01 par value, 300,000,000 shares authorized; 134,651,380 and 134,651,380 shares issued at December 31, 2019 and 2018, respectively	1	1
Common stock, held in treasury, at cost; 6,266,609 and 6,183,125 shares at December 31, 2019 and 2018, respectively	(377)	(382)
Additional paid-in capital	553	556
Retained earnings	5,757	5,477
Accumulated other comprehensive loss	(74)	(62)
Total Westlake Chemical Corporation stockholders' equity	5,860	5,590
Noncontrolling interests	543	486
Total equity	6,403	6,076
Total liabilities and equity	$ 13,261	$ 11,602

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

WESTLAKE CHEMICAL CORPORATION

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2019	2018	2017
	(in millions of dollars, except share amounts and per share data)		
Net sales	$ 8,118	$ 8,635	$ 8,041
Cost of sales	6,858	6,648	6,280
Gross profit	1,260	1,987	1,761
Selling, general and administrative expenses	458	445	399
Amortization of intangibles	109	101	108
Restructuring, transaction and integration-related costs	37	33	29
Income from operations	656	1,408	1,225
Other income (expense)			
Interest expense	(124)	(126)	(159)
Other income, net	38	52	15
Income before income taxes	570	1,334	1,081
Provision for (benefit from) income taxes	108	300	(258)
Net income	462	1,034	1,339
Net income attributable to noncontrolling interests	41	38	35
Net income attributable to Westlake Chemical Corporation	**$ 421**	**$ 996**	**$ 1,304**
Earnings per common share attributable to Westlake Chemical Corporation:			
Basic	$ 3.26	$ 7.66	$ 10.05
Diluted	$ 3.25	$ 7.62	$ 10.00
Weighted average common shares outstanding			
Basic	128,395,184	129,401,823	129,087,043
Diluted	128,757,293	129,985,753	129,540,013

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

WESTLAKE CHEMICAL CORPORATION

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
	2019	2018	2017
	(in millions of dollars)		
Net income	$ 462	$ 1,034	$ 1,339
Other comprehensive income (loss), net of income taxes			
Pension and other post-retirement benefits			
Pension and other post-retirement benefits reserves adjustment	(32)	(33)	19
Amortization of benefits liability	—	—	2
Income tax benefit (provision) on pension and other post-retirement benefits	8	8	(7)
Foreign currency translation adjustments			
Foreign currency translation	17	(59)	124
Income tax provision on foreign currency translation	(4)	—	(5)
Other comprehensive income (loss), net of income taxes	(11)	(84)	133
Comprehensive income	451	950	1,472
Comprehensive income attributable to noncontrolling interests, net of tax of $2, $4 and $1 for 2019, 2018 and 2017, respectively	42	36	40
Comprehensive income attributable to Westlake Chemical Corporation	$ 409	$ 914	$ 1,432

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

WESTLAKE CHEMICAL CORPORATION

CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	Common Stock		Common Stock, Held in Treasury						
	Number of Shares	Amount	Number of Shares	At Cost	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Noncontrolling Interests	Total
	(in millions of dollars, except share amounts)								
Balances at December 31, 2016	134,651,380	$ 1	5,726,377	$ (319)	$ 551	$ 3,412	$ (121)	$ 368	$ 3,892
Net income	—	—	—	—	—	1,304	—	35	1,339
Other comprehensive income	—	—	—	—	—	—	128	5	133
Shares issued—stock-based compensation	—	—	(493,502)	17	(6)	—	—	—	11
Stock-based compensation	—	—	—	—	14	—	—	—	14
Dividends declared	—	—	—	—	—	(103)	—	—	(103)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(28)	(28)
Issuance of Westlake Chemical Partners LP common units	—	—	—	—	(4)	—	—	115	111
Balances at December 31, 2017	134,651,380	1	5,232,875	(302)	555	4,613	7	495	5,369
Cumulative effect of accounting change	—	—	—	—	—	1	—	—	1
Reclassification of certain tax effects to retained earnings	—	—	—	—	—	(13)	13	—	—
Net income	—	—	—	—	—	996	—	38	1,034
Other comprehensive loss	—	—	—	—	—	—	(82)	(2)	(84)
Common stock repurchased	—	—	1,368,881	(106)	—	—	—	—	(106)
Shares issued—stock-based compensation	—	—	(418,631)	26	(17)	—	—	—	9
Stock-based compensation	—	—	—	—	18	—	—	—	18
Dividends declared	—	—	—	—	—	(120)	—	—	(120)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(45)	(45)
Balances at December 31, 2018	134,651,380	1	6,183,125	(382)	556	5,477	(62)	486	6,076
Net income	—	—	—	—	—	421	—	41	462
Other comprehensive income (loss)	—	—	—	—	—	—	(12)	1	(11)

Common stock repurchased	—	—	517,712	(30)	—	—	—	—	(30)
Shares issued—stock-based compensation	—	—	(434,228)	35	(25)	(9)	—	—	1
Stock-based compensation	—	—	—	—	24		—	—	24
Dividends declared	—	—	—	—	—	(132)	—	—	(132)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(50)	(50)
Issuance of Westlake Chemical Partners LP common units	—	—	—	—	(2)	—	—	65	63
Balances at December 31, 2019	134,651,380	$ 1	6,266,609	$ (377)	$ 553	$ 5,757	$ (74)	$ 543	$ 6,403

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

WESTLAKE CHEMICAL CORPORATION

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2019	2018	2017
		(in millions of dollars)	
Cash flows from operating activities			
Net income	$ 462	$ 1,034	$ 1,339
Adjustments to reconcile net income to net cash provided by operating activities			
Depreciation and amortization	713	641	601
Stock-based compensation expense	25	22	23
Loss from disposition and write-off of property, plant and equipment	49	44	22
Deferred income taxes	54	62	(534)
Other losses (gains), net	1	(20)	(3)
Changes in operating assets and liabilities, net of effect of business acquisitions			
Accounts receivable	59	(58)	(40)
Inventories	112	(123)	(32)
Prepaid expenses and other current assets	(1)	(1)	26
Accounts payable	(89)	(100)	86
Accrued and other liabilities	(13)	(8)	115
Other, net	(71)	(84)	(75)
Net cash provided by operating activities	1,301	1,409	1,528
Cash flows from investing activities			
Acquisition of businesses, net of cash acquired	(314)	—	(13)
Additions to property, plant and equipment	(787)	(702)	(577)
Additions to investments in unconsolidated subsidiaries	(862)	(68)	(66)
Other, net	9	16	4
Net cash used for investing activities	(1,954)	(754)	(652)
Cash flows from financing activities			
Dividends paid	(132)	(120)	(103)
Distributions to noncontrolling interests	(50)	(45)	(28)
Proceeds from debt issuance, net	784	—	—
Proceeds from notes payable	20	14	978
Net proceeds from issuance of Westlake Chemical Partners LP common units	63	—	111
Repayment of term loan	—	—	(150)
Repayment of revolver	—	—	(550)
Redemption and repayment of notes payable	(18)	(1,179)	(257)
Repurchase of common stock for treasury	(30)	(106)	—
Other	(7)	9	5
Net cash provided by (used for) financing activities	630	(1,427)	6
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(2)	(7)	26
Net increase (decrease) in cash, cash equivalents and restricted cash	(25)	(779)	908
Cash, cash equivalents and restricted cash at beginning of the year	775	1,554	646
Cash, cash equivalents and restricted cash at end of the year	$ 750	$ 775	$ 1,554

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

WESTLAKE CHEMICAL CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(in millions of dollars, except share amounts and per share data)

1. Description of Business and Significant Accounting Policies

Description of Business

Westlake Chemical Corporation (the "Company") operates as an integrated global manufacturer and marketer of basic chemicals, vinyls, polymers and building products. These products include some of the most widely used chemicals in the world, which are fundamental to many diverse consumer and industrial markets, including flexible and rigid packaging, automotive products, coatings, residential and commercial construction as well as other durable and non-durable goods. The Company's customers range from large chemical processors and plastics fabricators to small construction contractors, municipalities and supply warehouses primarily throughout North America and Europe. The petrochemical industry is subject to price fluctuations and volatile feedstock pricing typical of a commodity-based industry, the effects of which may not be immediately passed along to customers.

Westlake Chemical Partners LP

In 2014, the Company formed Westlake Chemical Partners LP ("Westlake Partners") to operate, acquire and develop ethylene production facilities and related assets. Westlake Partners' assets consist of a limited partner interest in Westlake Chemical OpCo LP ("OpCo"), as well as the general partner interest in OpCo. OpCo's assets include two ethylene production facilities at the Company's Lake Charles, Louisiana site,one ethylene production facility at the Company's Calvert City, Kentucky site and a 200-mile common carrier ethylene pipeline that runs from Mont Belvieu, Texas to the Company's Longview, Texas site. As of December 31, 2019, the Company held a 77.2% limited partner interest in OpCo and a controlling interest in Westlake Partners. The operations of Westlake Partners are consolidated in the Company's financial statements.

Principles of Consolidation

The consolidated financial statements include the accounts of the Company and subsidiaries in which the Company directly or indirectly owns more than a 50% voting interest and exercises control and, when applicable, entities for which the Company has a controlling financial interest or is the primary beneficiary. Investments in majority-owned companies where the Company does not exercise control and investments in nonconsolidated affiliates (20%-50% owned companies, joint ventures and partnerships) are accounted for using the equity method of accounting. Undistributed earnings from joint ventures included in retained earnings were immaterial as of December 31, 2019. All intercompany transactions and balances are eliminated in consolidation.

Certain reclassifications have been made to the prior-year financial statements to conform to the current-year presentation.

Noncontrolling interests represent the direct equity interests held by investors in the Company's consolidated subsidiaries, Westlake Partners, Taiwan Chlorine Industries, Ltd. and Suzhou Huasu Plastics Co., Ltd.

Cash and Cash Equivalents

Cash equivalents consist of highly liquid investments that are readily convertible into cash and have a maturity of three months or less at the date of acquisition.

Concentration of Credit Risk

Financial instruments which potentially subject the Company to concentration of risk consist principally of trade receivables from customers engaged in manufacturing polyethylene products, polyvinyl chloride ("PVC") products and PVC pipe products. The Company performs periodic credit evaluations of the customers' financial condition and generally does not require collateral. The Company maintains allowances for potential losses.

Allowance for Doubtful Accounts

The determination of the allowance for doubtful accounts is based on estimation of the amount of accounts receivable that the Company believes are unlikely to be collected. Estimating this amount requires analysis of the financial strength of the Company's customers, the use of historical experience, the Company's accounts receivable aged trial balance, and specific collectibility analysis. The allowance for doubtful accounts is reviewed quarterly. Past due balances over 90 days and high risk accounts as determined by the analysis of financial strength of customers are reviewed individually for collectibility.

(in millions of dollars, except share amounts and per share data)

Inventories

Inventories primarily include product, material and supplies. Inventories are stated at lower of cost or net realizable value. Cost is determined using the first-in, first-out ("FIFO") or average method.

Property, Plant and Equipment

Property, plant and equipment are carried at cost, net of accumulated depreciation. Cost includes expenditures for improvements and betterments that extend the useful lives of the assets and interest capitalized on significant capital projects. Capitalized interest was $9, $7 and $4 for the years ended December 31, 2019, 2018 and 2017, respectively. Repair and maintenance costs are charged to operations as incurred. Gains and losses on the disposition or retirement of fixed assets are reflected in the consolidated statement of operations when the assets are sold or retired.

Depreciation is provided by utilizing the straight-line method over the estimated useful lives of the assets as follows:

Classification	Years
Buildings and improvements	40
Plant and equipment	10-25
Other	3-15

Impairment of Long-Lived Assets

The Company reviews long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Long-lived assets assessed for impairment are grouped at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to future net undiscounted cash flows expected to be generated by the asset. Assets are considered to be impaired if the carrying amount of an asset exceeds the future undiscounted cash flows. The impairment recognized is measured by the amount by which the carrying amount of the assets exceeds the fair value of the assets. Assets to be disposed of are reported at the lower of the carrying amount or estimated fair value less costs to sell.

Impairment of Goodwill and Intangible Assets

Goodwill is tested for impairment at least annually, or when events or changes in circumstances indicate the fair value of a reporting unit with goodwill has been reduced below its carrying value. The Company performed its annual impairment tests for the Olefins and Vinyls segments' goodwill in October 2019 and April 2019, respectively, and the impairment tests indicated that the recorded goodwill was not impaired. There has been no impairment of the Olefins or Vinyls segments' goodwill since the goodwill was initially recorded. Other intangible assets with finite lives are amortized over their estimated useful lives and reviewed for impairment in accordance with the provisions of the accounting guidance. See Note 8 for more information on the Company's annual goodwill impairment tests.

Equity Method Investments

The Company accounts for investments using the equity method of accounting if the Company has the ability to exercise significant influence over, but not control of, an investee. Significant influence generally exists if the Company has an ownership interest representing between 20% and 50% of the voting rights. Under the equity method of accounting, investments are stated initially at cost and are adjusted for subsequent additional investments and the proportionate share of profit or losses and distributions. The Company records its share of the profits or losses of the equity investments, net of income taxes, in the consolidated statements of income. The equity method investments are evaluated for impairment when events or changes in circumstances indicate, in management's judgment, that the carrying value of such investments may have experienced an other-than-temporary decline in value. When evidence of loss in value has occurred, management compares the estimated fair value of investment to the carrying value of investment to determine whether an impairment has occurred. If the estimated fair value is less than the carrying value and management considers the decline in value to be other-than-temporary, the excess of the carrying value over the estimated fair value is recognized in the consolidated financial statements as an impairment.

Other Assets, net

Other assets, net include turnaround costs, investments in unconsolidated subsidiaries, restricted cash, deferred charges and other long-term assets.

The Company accounts for turnaround costs under the deferral method. Turnarounds are the scheduled and required shutdowns of specific operating units in order to perform planned major maintenance activities. The costs related to the significant overhaul and refurbishment activities include maintenance materials, parts and direct labor costs. The costs of the turnaround are deferred when incurred at the time of the turnaround and amortized (within depreciation and amortization) on a straight-line basis until the next planned turnaround, which ranges from three to six years. Deferred turnaround costs are presented as a component of other assets, net. The cash outflows related to these costs are included in operating activities in the consolidated statement of cash flows.

Business Combinations

The Company records business combinations using the acquisition method of accounting. Under the acquisition method of accounting, identifiable assets acquired and liabilities assumed are recorded at their acquisition date fair values. The excess of the purchase price over the estimated fair value is recorded as goodwill. Changes in the estimated fair values of net assets recorded for acquisitions prior to the finalization of more detailed analysis, but not to exceed one year from the date of acquisition, will adjust the amount of the purchase price allocable to goodwill. Measurement period adjustments are reflected in the period in which they occur.

Income Taxes

The Company utilizes the liability method of accounting for deferred income taxes. Under the liability method, deferred tax assets or liabilities are recorded based upon temporary differences between the tax basis of assets and liabilities and their carrying values for financial reporting purposes. Deferred tax expense or benefit is the result of changes in the deferred tax assets and liabilities during the period. Valuation allowances are recorded against deferred tax assets when it is considered more likely than not that the deferred tax assets will not be realized.

On December 22, 2017, the United States ("U.S.") Tax Cuts and Jobs Act (the "Tax Act") was signed into law. The Tax Act, among other changes, reduced the U.S. corporate income tax rate from 35% to 21%, effective January 1, 2018, and also required a one-time deemed repatriation of foreign earnings at specified rates. The Company provisionally recognized a $591 income tax benefit in the 2017 consolidated financial statements that was primarily comprised of the revaluation of deferred tax assets and liabilities partially offset by a one-time U.S. tax on the mandatory deemed repatriation of the Company's post-1986 foreign earnings. The Company did not record any material measurement period adjustment in 2018. The Company's accounting for the income tax effects of the Tax Act was completed in 2018.

In February 2018, the FASB issued an accounting standards update, Income Statement—Reporting Comprehensive Income, to (1) allow reclassification from accumulated other comprehensive income (loss) to retained earnings for stranded tax effects resulting from the Tax Act; and (2) require certain disclosures about stranded tax effects. Certain tax effects become stranded in accumulated other comprehensive income (loss) when deferred tax balances originally recorded at the historical income tax rate are adjusted in income from operations based on the lower, newly-enacted income tax rate. The Company adopted the accounting standard effective October 1, 2018 and reclassified $13 of stranded tax effects relating to its pension benefits liability and cumulative effect of foreign exchange from accumulated other comprehensive income (loss) to retained earnings.

As a result of the Tax Act, the Financial Accounting Standards Board ("FASB") concluded that Global Intangible Low-Taxed Income Tax ("GILTI tax") can be recognized in the financial statements, no later than December 22, 2018, per an accounting policy choice, by: (1) recording a period cost (permanent item) or (2) providing deferred income taxes stemming from certain basis differences that are expected to result in GILTI tax. The Company elected to record GILTI tax as a period cost. The GILTI tax recognized in 2019 and 2018 were not material to the consolidated financial statements.

Foreign Currency Translation

Assets and liabilities of foreign subsidiaries are translated to U.S. dollars at the exchange rate as of the end of the year. Statement of operations items are translated at the average exchange rate for the year. The resulting translation adjustment is recorded as a separate component of stockholders' equity.

Revenue Recognition

Revenue is recognized when the Company transfers control of inventories to its customers. Amounts recognized as revenues reflect the consideration to which the Company expects to be entitled in exchange for those inventories. Provisions for discounts, rebates and returns are incorporated in the estimate of variable consideration and reflected as reduction to revenue in the same period as the related sales.

Control of inventories generally transfers upon shipment for domestic sales. The Company excludes taxes collected on behalf of customers from the estimated contract price. For export contracts, the point at which control passes to the customer varies depending on the terms specified in the customer contract.

The Company generally invoices customers and recognizes revenue and accounts receivable upon transferring control of inventories. In limited circumstances, the Company transfers control of inventories shortly before it has an unconditional right to receive consideration, resulting in recognition of contract assets. The Company also receives advance payments from certain customers, resulting in recognition of contract liabilities. Contract assets and liabilities are generally settled within the period and are not material to the consolidated balance sheets. The Company expenses sales commissions when incurred. These costs are recorded within selling, general and administrative expenses. Aside from the amounts disclosed within Note 9, the Company does not disclose the value of unsatisfied performance obligations because its contracts with customers (1) have an original expected duration of one year or less or (2) have only variable consideration that is calculated based on market prices at specified dates and is allocated to wholly unsatisfied performance obligations.

The Company adopted ASU No. 2014-09, Revenue from Contracts with Customers ("ASC 606"), effective January 1, 2018. The Company applied the modified retrospective transition method to all contracts that were not completed as of the adoption date. Periods prior to January 1, 2018 were not adjusted and are reported under the accounting standards that were in place during those periods. The cumulative effects of changes to the Company's consolidated January 1, 2018 balance sheet for the adoption of this accounting standard were immaterial.

The impact of ASC 606 adoption on the financial statements for the year ended December 31, 2018 as compared with the guidance that was in effect prior to January 1, 2018 was immaterial.

ASC 606 requires disclosure of disaggregated revenue into categories that depict the nature of how the Company's revenue and cash flows are affected by economic factors. The Company discloses revenues by product and segment in Note 23.

Prior to the adoption of ASC 606, the revenue was recognized when persuasive evidence of an arrangement existed, products were delivered to the customer, the sales price was fixed or determinable and collectability was reasonably assured. For domestic contracts, title and risk of loss had passed to the customer upon delivery under executed customer purchase orders or contracts. For export contracts, the title and risk of loss had passed to customers at the time specified by each contract.

Transportation and Freight

Amounts billed to customers for freight and handling costs on outbound shipments are included in net sales in the consolidated statements of operations. Transportation and freight costs incurred by the Company on outbound shipments are included in cost of sales in the consolidated statements of operations.

Price Risk Management

The Company recognizes derivative instruments on the balance sheet at fair value, and changes in a derivative's fair value are currently recognized in earnings or comprehensive income, depending on the designation of the derivative. If the derivative is designated as a fair value hedge, the changes in the fair value of the derivative and of the hedged item attributable to the hedged risk are recognized in earnings. If the derivative is designated as a cash flow hedge, the effective portion of the change in the fair value of the derivative is recorded in comprehensive income and is recognized in the statement of operations when the hedged item affects earnings. Ineffective portions of changes in the fair value of cash flow hedges are recognized in earnings currently. The derivative instruments did not have a material impact on the Company's consolidated financial statements.

Asset Retirement Obligations

The Company has conditional asset retirement obligations for the removal and disposal of hazardous materials from certain of the Company's manufacturing facilities.

The Company recognizes asset retirement obligations in the period in which the liability becomes probable and reasonably estimable. Recognized asset retirement obligations are initially recorded at fair value and capitalized as a component of the carrying value of the long-lived asset to which the obligation relates. The liability is accreted to its future value each period, and the capitalized cost is depreciated over the estimated useful life of the related asset. Upon settlement of the liability, a gain or loss is recorded. As of December 31, 2019, the Company had $7 and $20 of asset retirement obligations recorded as accrued liabilities and other liabilities, respectively. As of December 31, 2018, the Company had $8 and $20 of asset retirement obligations recorded as accrued liabilities and other liabilities, respectively.

The Company also has conditional asset retirement obligations that have not been recognized because the fair values of the conditional legal obligations cannot be measured due to the indeterminate settlement date of the obligations. Settlements of the unrecognized conditional asset retirement obligations are not expected to have a material adverse effect on the Company's financial condition, results of operations or cash flows in any individual reporting period.

Environmental Costs

Environmental costs relating to current operations are expensed or capitalized, as appropriate, depending on whether such costs provide future economic benefits. Remediation liabilities are recognized when the costs are considered probable and can be reasonably estimated. Measurement of liabilities is based on currently enacted laws and regulations, existing technology and undiscounted site-specific costs. Environmental liabilities in connection with properties that are sold or closed are realized upon such sale or closure, to the extent they are probable and estimable and not previously reserved. Recognition of any joint and several liabilities is based upon the Company's best estimate of its final pro rata share of the liability.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and the disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Recent Accounting Pronouncements

Credit Losses (ASU No. 2016-13)

In June 2016, the Financial Accounting Standards Board ("FASB") issued an accounting standards update providing new guidance for the accounting for credit losses on loans and other financial instruments. The new guidance introduces an approach based on expected losses to estimate credit losses on trade receivables, debt securities and certain types of financial instruments. The standard also modifies the impairment model for available-for-sale debt securities and provides for a simplified accounting model for purchased financial assets with credit deterioration since their origination. In November 2019, the FASB issued additional authoritative guidance related to credit losses. The accounting standard is effective for reporting periods beginning after December 15, 2019 and is not expected to have a material impact on the Company's consolidated financial position, results of operations and cash flows.

Intangibles - Goodwill and Other (ASU No. 2017-04)

In January 2017, the FASB issued an accounting standards update to simplify the subsequent measurement of goodwill. The guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. The accounting standard will be effective for reporting periods beginning after December 15, 2019 and is not expected to have a material impact on the Company's consolidated financial position, results of operations and cash flows.

Fair Value Measurement (ASU No. 2018-13)

In August 2018, the FASB issued an accounting standards update to modify the disclosure requirements on fair value measurements. The amendments are effective for periods beginning after December 15, 2019. An entity is permitted to early adopt any removed or modified disclosures and delay adoption of the additional disclosures until the effective date. Most amendments should be applied retrospectively, but certain amendments will be applied prospectively. The Company is in the process of assessing the impact of the standard on the Company's fair value disclosures. However, the standard is not expected to have an impact on the Company's consolidated financial position, results of operations and cash flows.

Income Taxes (ASU No. 2019-12)

In December 2019, the FASB issued an accounting standards update removing certain exceptions for investments, intraperiod allocations and interim calculations and adding guidance to reduce complexity in accounting for income taxes. The accounting standard will be effective for reporting periods beginning after December 15, 2020. Early adoption of this guidance is permitted. The Company is in the process of evaluating the impact that the new accounting guidance will have on its consolidated financial position, results of operations and cash flows.

Recently Adopted Accounting Standards

Leases (ASU No. 2016-02)

In February 2016, the FASB issued an accounting standards update on lease accounting that supersedes the previously issued lease guidance. The new standard requires lessees to recognize assets and liabilities for all long-term operating leases. An asset is recognized for the right to use an underlying leased asset and a liability is recognized for the obligation to make payments over the lease term. The standard also requires expanded lease disclosures. The standard requires a modified retrospective adoption approach and allows for the election of certain transition expedients.

The Company adopted the standard on January 1, 2019 using the optional transition method, which allows entities to recognize a cumulative adjustment to the opening balance sheet in the period of adoption. The Company elected the package of optional transition expedients and was not required to reassess (1) whether any existing contracts are or contain leases, (2) classification of existing leases as operating or capital or (3) whether initial direct costs for existing leases qualify for capitalization under the new accounting standard. The Company did not elect the use of hindsight to determine the lease term when considering lease renewal or termination options. Additionally, the Company elected to continue accounting for existing land easements under its accounting policies that were in effect prior to adoption of the new lease standard. The following amounts were recorded as a result of adopting the new lease standard on January 1, 2019:

WESTLAKE CHEMICAL CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)
(in millions of dollars, except share amounts and per share data)

Operating Lease Assets and Liabilities	Balance Sheet Location	Amounts Recorded in the Consolidated Balance Sheet January 1, 2019
Right-of-use assets	Operating lease right-of-use assets	$ 421
Current lease liabilities	Accrued and other liabilities	(94)
Non-current lease liabilities	Operating lease liabilities	(331)
Deferred rent	Other liabilities	4

2. Acquisition

NAKAN™

On January 2, 2019, the Company acquired all of the outstanding equity interests in the parent entity of the NAKAN™ global compounding solutions business. NAKAN's products are used in a wide-variety of applications, including in the automotive, building and construction, and medical industries.

The closing purchase price of $249 was paid with available cash on hand. The acquisition is being accounted for under the acquisition method of accounting. The assets acquired and liabilities assumed and the results of operations of NAKAN are included in the Vinyls segment.

NAKAN's net sales and earnings since the acquisition date were not material to the Company's consolidated statement of operations for theyear ended December 31, 2019. The acquisition-related costs recognized in the consolidated statement of operations for theyear ended December 31, 2019 were not material. The pro forma impact of this acquisition has not been presented as it is not material to the Company's consolidated statements of operations for the years ended December 31, 2019 and 2018.

The following table summarizes the fair value of identified assets acquired and liabilities assumed at the date of acquisition. The allocation of consideration transferred is based on management's estimates, judgments and assumptions. When determining the fair values of assets acquired and liabilities assumed, management made significant estimates, judgments and assumptions. Management estimated that consideration paid exceeded the fair value of the net assets acquired. Therefore, goodwill of $40 was recorded. The goodwill recognized is primarily attributable to the expected value to be achieved from the acquisition. The information below represents the purchase price allocation:

(in millions of dollars, except share amounts and per share data)

Cash	$ 10
Accounts receivable	53
Inventories	40
Prepaid expenses and other current assets	7
Property, plant and equipment	75
Operating lease right-of-use assets	3
Intangible assets:	
Customer relationships (weighted average lives of 17 years)	65
Technology (weighted average lives of 14 years)	40
Trade name (life of 15 years)	25
Other assets	12
Total assets acquired	330
Accounts payable	57
Accrued and other liabilities	18
Deferred income taxes	31
Pension and other post-retirement benefits	4
Operating lease liabilities	3
Other long-term liabilities	8
Total liabilities assumed	121
Total identifiable net assets acquired	209
Goodwill	40
Total purchase consideration	$ 249

3. Financial Instruments

Cash Equivalents

The Company had $240 and $10 of held-to-maturity securities with original maturities of three months or less, primarily consisting of corporate debt securities, classified as cash equivalents at December 31, 2019 and 2018, respectively. The Company's investments in held-to-maturity securities were held at amortized cost, which approximates fair value.

Restricted Cash and Cash Equivalents

The Company had restricted cash and cash equivalents of$22 and $22 at December 31, 2019 and 2018, respectively. The Company's restricted cash and cash equivalents are primarily related to balances that are restricted for payment of distributions to certain of the Company's current and former employees and are reflected primarily in other assets, net in the consolidated balance sheets.

4. Accounts Receivable

Accounts receivable consist of the following at December 31:

	2019	2018
Trade customers	$ 948	$ 969
Related parties	12	6
Allowance for doubtful accounts	(22)	(23)
	938	952
Federal and state taxes	59	57
Other	39	28
Accounts receivable, net	$ 1,036	$ 1,037

5. Inventories

Inventories consist of the following at December 31:

	2019	2018
Finished products	$ 568	$ 657
Feedstock, additives, chemicals and other raw materials	210	203
Materials and supplies	158	154

Inventories	$ 936	$ 1,014

6. Property, Plant and Equipment

Property, plant and equipment consist of the following at December 31:

	2019	2018
Land	$ 198	$ 193
Buildings and improvements	608	544
Plant and equipment	8,227	7,568
Other	496	437
	9,529	8,742
Less: Accumulated depreciation	(3,168)	(2,720)
	6,361	6,022
Construction in progress	551	573
Property, plant and equipment, net	$ 6,912	$ 6,595

Depreciation expense on property, plant and equipment of $519, $478 and $449 is included primarily in cost of sales in the consolidated statements of operations for the years ended December 31, 2019, 2018 and 2017, respectively.

7. Leases

The Company is obligated under various long-term and short-term operating leases for rail cars, buildings, land and other transportation and storage assets. The Company determines whether an arrangement is, or contains, a lease at contract inception. Some of the Company's arrangements contain both lease and non-lease components. For certain transportation equipment leases, the Company accounts for the lease and non-lease components as a single lease component. The Company records right-of-use assets and corresponding lease liabilities for operating leases with terms greater than one year. Operating lease right-of-use assets and liabilities are recorded at the present value of the fixed lease payments over the life of the lease. The majority of the Company's leases do not provide an implicit rate. Therefore, the Company uses its incremental borrowing rate at lease commencement to measure operating lease right-of-use assets and lease liabilities. Certain of the Company's leases provide for renewal and purchase options. Renewal and purchase options are evaluated at lease commencement and included in the lease term if they are reasonably certain to be exercised. Short-term leases are recognized in rental expense on a straight-line basis over the lease term and are not recorded in the consolidated balance sheets. The Company's finance leases are not material to the consolidated financial statements.

(in millions of dollars, except share amounts and per share data)

Lease-related asset and liability balances were as follows:

	December 31, 2019
Operating Leases	
Right-of-use assets	$ 443
Accrued and other liabilities	$ 93
Operating lease liabilities	355
Total operating lease liabilities	$ 448
Weighted Average Remaining Term (in years)	8
Weighted Average Lease Discount Rate	3.5%

The Company's operating lease cost is comprised of payments related to operating leases recorded in the consolidated balance sheet and short-term rental payments for leases that are not recorded in the consolidated balance sheet. Variable operating lease cost was not material to the consolidated statement of operations for the years ended December 31, 2019 and 2018. The components of operating lease expense were as follows:

	December 31, 2019
Operating lease cost (1)	$ 113
Short-term lease cost	58
Total operating lease cost	$ 171

(1) Includes fixed lease payments for operating leases recorded in the consolidated balance sheet.

Maturities of lease liabilities were as follows atDecember 31, 2019:

	Operating Leases
2020	$ 106
2021	83
2022	69
2023	55
2024	43
Thereafter	189
Total lease payments	545
Less: imputed interest	(97)
Present value of lease liabilities	$ 448

Future lease commitments for operating lease obligations were as follows atDecember 31, 2018:

	Operating Leases
2019	$ 94
2020	89
2021	70
2022	56
2023	42
Thereafter	152
Total lease payments	$ 503

(in millions of dollars, except share amounts and per share data)

Related Party Leases

The Company leases certain assets under operating leases with related parties. As of December 31, 2019, right-of-use assets and the associated operating lease liabilities for related party operating leases were approximately $50. The Company recognized operating lease cost for fixed lease payments to related parties of $18 for the year ended December 31, 2019.

8. Goodwill and Other Intangible Assets

Goodwill

The gross carrying amounts and changes in the carrying amount of goodwill for the years ended December 31, 2019 and 2018 are as follows:

	Olefins Segment	Vinyls Segment	Total
Balance at December 31, 2017	$ 30	$ 982	$ 1,012
Effects of changes in foreign exchange rates	—	(10)	(10)
Balance at December 31, 2018	30	972	1,002
Goodwill acquired during the year	—	67	67
Effects of changes in foreign exchange rates	—	5	5
Balance at December 31, 2019	$ 30	$ 1,044	$ 1,074

Olefins Segment Goodwill

The Company performed its annual impairment analysis for the Olefins segment, the reporting unit assessed, during the fourth quarter of 2019. The fair value of the Olefins segment reporting unit assessed during the October 2019 impairment analysis was determined using both a discounted cash flow methodology and a market value methodology. Based upon this assessment, the Company determined that the fair value of the Olefins segment reporting unit was greater than the carrying value.

The discounted cash flow projections were based on a nine-year forecast, from 2020 to 2028, to reflect the cyclicality of the Company's Olefins business. The forecast was based on prices and spreads projected by IHS Markit ("IHS"), a chemical industry organization offering market and business advisory services for the chemical market, historical results and estimates by management, including its strategic and operational plans. Other significant assumptions used in the discounted cash flow projection included projected sales volumes based on production capacities. The future cash flows were discounted to present value using a discount rate of 9.5%. The significant assumptions used in determining the fair values of the reporting units using the market value methodology included the determination of appropriate market comparables and the estimated multiples of EBITDA a willing buyer was likely to pay.

Vinyls Segment Goodwill

The Company performed its annual impairment analysis for the Vinyls reporting units during the second quarter of 2019. The fair values of the North America and other reporting units assessed during the April 2019 impairment analysis were determined using both a discounted cash flow methodology and a market value methodology. Based upon this assessment, the Company determined that the fair values of the Vinyls reporting units were greater than their carrying value.

The discounted cash flow projections were based on a nine-year forecast, from 2020 to 2028 to reflect the cyclicality of the housing and construction markets as the Company's Vinyls businesses are significantly influenced by those markets. The forecast was based on prices and spreads projected by IHS, historical results and estimates by management, including its strategic and operational plans. Other significant assumptions used in the discounted cash flow projection included projected sales volumes based on production capacities. The future cash flows were discounted to present value using a discount rate ranging from 9% to 12.5%. The significant assumptions used in determining the fair values of the reporting units using the market value methodology include the determination of appropriate market comparables and the estimated multiples of EBITDA a willing buyer is likely to pay.

Intangible Assets

Intangible assets consisted of the following at December 31:

	2019			2018			Weighted Average Life
	Cost	Accumulated Amortization	Net	Cost	Accumulated Amortization	Net	
Customer relationships	$ 832	$ (309)	$ 523	$ 745	$ (220)	$ 525	11
Other intangible assets:							
Licenses and intellectual property	172	(79)	93	122	(65)	57	13
Trademarks	120	(37)	83	90	(26)	64	13
Other	35	(24)	11	35	(22)	13	10
Total other intangible assets	$ 327	$ (140)	$ 187	$ 247	$ (113)	$ 134	

Scheduled amortization of intangible assets for the next five years is as follows:$120, $117, $104, $57 and $51 in 2020, 2021, 2022, 2023 and 2024, respectively.

9. Equity Method Investments

LACC, LLC Joint Venture

In 2015, Eagle US 2 LLC ("Eagle"), a wholly-owned subsidiary of the Company, and Lotte Chemical USA Corporation, a subsidiary of Lotte Chemical Corporation ("Lotte"), formed a joint venture, LACC, LLC ("LACC"), to design, build and operate an ethylene facility with 2.2 billion pounds per year of ethylene production capacity. Pursuant to a contribution and subscription agreement between Eagle and LACC, Eagle contributed $225 to LACC to fund construction costs of the ethylene plant, representing approximately 12% of the membership interests in LACC.

On November 12, 2019, we, through Eagle, completed the acquisition of an additional 34.8% of the membership interests in LACC from Lotte for approximately $817. As of December 31, 2019, the Company's investment exceeded the underlying equity in net assets by approximately $166 which was assigned to goodwill and not amortized.

The ethylene plant was built adjacent to the Company's chlor-alkali facility in Lake Charles. During the third quarter of 2019, the ethylene plant began commercial operations.

The Company accounts for its investment in LACC under the equity method of accounting. The LACC joint venture is a cost-sharing arrangement between the members of LACC. The members of LACC receive their proportionate shares of ethylene offtake each month and fund cash operating costs, excluding depreciation and amortization. As a result, LACC recognizes net losses equal to depreciation and amortization each period. The Company's equity in losses from LACC, which is equal to its share of depreciation and amortization expenses, is recognized in cost of sales in the consolidated statements of operations. The Company's investment in LACC is recorded as a component of equity method investments in the consolidated balance sheets. The Company's capital contributions to fund its share of capital expenditures are classified within investing activities in the consolidated statements of cash flows.

The Company's ethylene offtake from LACC was approximately 215 million pounds during the year ended December 31, 2019.

Changes in the Company's investment in LACC for the year ended December 31, 2019 were as follows:

	Investment in LACC
Balance at December 31, 2018	$ 183
Cash contributions	45
Additional interest purchased	817
Depreciation and amortization	(7)
Balance at December 31, 2019	$ 1,038

(in millions of dollars, except share amounts and per share data)

Services Provided to LACC and Lotte

The Company provides certain utilities and other services to LACC and Lotte. Pursuant to a construction and reimbursement agreement, LACC and Lotte agreed to reimburse the Company for construction costs over a 6.5-year period beginning in 2020. In addition to the reimbursements for construction costs, the Company charges LACC and Lotte certain fixed fees under an operating, maintenance and logistics agreement. The Company accounts for the reimbursement of construction costs and the fixed fees as components of the total transaction price and recognizes it ratably in net sales over approximately 25 years. The remaining performance obligations at December 31, 2019, representing these fixed components of the transaction price, totaled $59 and $81 from LACC and Lotte, respectively. As of December 31, 2019, the associated contract liabilities recorded totaled $5 and $7 from LACC and Lotte, respectively. There were no such contract liabilities recorded as of December 31, 2018. In addition to the reimbursements for construction costs and other fixed fees, the Company charges LACC and Lotte certain variable fees.

Other Equity Method Investments

In addition to LACC, the Company has other equity method investments amounting to $74 and $70 as of December 31, 2019 and 2018, respectively. See Note 20 for more detailed information.

10. Accounts Payable

Accounts payable consist of the following:

	December 31, 2019	December 31, 2018
Accounts payable—third parties	$ 435	$ 504
Accounts payable to related parties	12	2
Notes payable	26	1
Accounts payable	$ 473	$ 507

(in millions of dollars, except share amounts and per share data)

11. Long-Term Debt

Long-term debt consisted of the following at December 31:

	December 31, 2019			December 31, 2018		
	Principal Amount	Unamortized Discount and Debt Issuance Costs	Net Long-Term Debt	Principal Amount	Unamortized Discount and Debt Issuance Costs	Net Long-Term Debt
3.60% senior notes due 2022 (the "3.60% 2022 Senior Notes")	$ 250	$ (1)	$ 249	$ 250	$ (1)	$ 249
3.60% senior notes due 2026 (the "3.60% 2026 Senior Notes")	750	(8)	742	750	(9)	741
Loan related to tax-exempt waste disposal revenue bonds due 2027	11	—	11	11	—	11
6 ½% senior notes due 2029 (the "6 ½% 2029 GO Zone Senior Notes")	100	(1)	99	100	(1)	99
6 ½% senior notes due 2035 (the "6 ½% 2035 GO Zone Senior Notes")	89	(1)	88	89	(1)	88
6 ½% senior notes due 2035 (the "6 ½% 2035 IKE Zone Senior Notes")	65	—	65	65	—	65
5.0% senior notes due 2046 (the "5.0% 2046 Senior Notes")	700	(23)	677	700	(24)	676
4.375% senior notes due 2047 (the "4.375% 2047 Senior Notes")	500	(9)	491	500	(9)	491
3.50% senior notes due 2032 (the "3.50% 2032 GO Zone Refunding Senior Notes")	250	(1)	249	250	(2)	248
1.625% senior notes due 2029 (the "1.625% 2029 Senior Notes")	785	(11)	774	—	—	—
Long-term debt	$ 3,500	$ (55)	$ 3,445	$ 2,715	$ (47)	$ 2,668

Credit Agreement

On July 24, 2018, the Company entered into a new $1,000 revolving credit facility that is scheduled to mature on July 24, 2023 (the "Credit Agreement") and, in connection therewith, terminated the existing $1,000 revolving credit facility that was scheduled to mature on August 23, 2021 (the "Prior Credit Agreement"). The Credit Agreement bears interest at either (a) LIBOR plus a spread ranging from 1.00% to 1.75% or (b) Alternate Base Rate plus a spread ranging from 0.00% to 0.75% in each case depending on the credit rating of the Company. At December 31, 2019, the Company had no borrowings outstanding under the Credit Agreement. As of December 31, 2019, the Company had no outstanding letters of credit and borrowing availability of $1,000 under the Credit Agreement. The Credit Agreement contains certain affirmative and negative covenants, including a quarterly total leverage ratio financial maintenance covenant. As of December 31, 2019, the Company was in compliance with the total leverage ratio financial maintenance covenant. The Credit Agreement also contains certain events of default and if and for so long as certain events of default have occurred and are continuing, any overdue amounts outstanding under the Credit Agreement will accrue interest at an increased rate, the lenders can terminate their commitments thereunder and payments of any outstanding amounts could be accelerated by the lenders. None of the Company's subsidiaries are required to guarantee the obligations of the Company under the Credit Agreement.

The Credit Agreement includes a $150 sub-limit for letters of credit, and any outstanding letters of credit will be deducted from availability under the facility. The Credit Agreement also provides for a discretionary $50 commitment for swingline loans to be provided on a same-day basis. The Company may also increase the size of the facility, in increments of at least $25, up to a maximum of $500, subject to certain conditions and if certain lenders agree to commit to such an increase.

3.60% Senior Notes due 2026 and 5.0% Senior Notes due 2046

In August 2016, the Company issued $750 aggregate principal amount of the 3.60% 2026 Senior Notes and $700 aggregate principal amount of the 5.0% 2046 Senior Notes. In March 2017, the Company commenced registered exchange offers to exchange the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes for new notes that are identical in all material respects to the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes, except that the offer and issuance of the new Securities and Exchange Commission ("SEC")-registered notes have been registered under the Securities Act of 1933, as amended (the "Securities Act"). The exchange offers expired on April 24, 2017, and approximately 99.97% of the 3.60% 2026 Senior Notes and 100% of the 5.0% 2046 Senior Notes were exchanged. The 3.60% 2026 Senior Notes that were not exchanged in the 3.60% 2026 Senior Notes exchange offer have not been registered under the Securities Act or any state securities laws and may not be offered or sold in the U.S. absent registration or an applicable exemption from registration requirements or a transaction not subject to the registration requirements of the Securities Act or any state securities law.

3.60% Senior Notes due 2022

In July 2012, the Company issued $250 aggregate principal amount of the 3.60% 2022 Senior Notes. The 3.60% 2022 Senior Notes are unsecured and were issued with an original issue discount of $1. There is no sinking fund and no scheduled amortization of the 3.60% 2022 Senior Notes prior to maturity. The Company may optionally redeem the 3.60% 2022 Senior Notes in accordance with the terms of the 3.60% 2022 Senior Notes.

4*.375% Senior Notes due 2047*

In November 2017, the Company completed the registered public offering of $500 aggregate principal amount of the 4.375% 2047 Senior Notes. The 4.375% 2047 Senior Notes are unsecured and mature on November 15, 2047. There is no sinking fund and no scheduled amortization of the 4.375% 2047 Senior Notes prior to maturity. The Company may optionally redeem the 4.375% 2047 Senior Notes in accordance with the terms of the 4.375% 2047 Senior Notes.

1.625% Senior Notes due 2029

On July 17, 2019, the Company completed the registered public offering of €700 aggregate principal amount of 1.625% Senior Notes due July 17, 2029 (the "1.625% 2029 Senior Notes"). The Company received approximately $779 of net proceeds from the offering. The 1.625% 2029 Senior Notes will accrue interest from July 17, 2019 at a rate of 1.625% per annum, payable annually in arrears on July 17 of each year, beginning July 17, 2020. The Company designated this euro-denominated debt as a non-derivative net investment hedge of a portion of the Company's net investments in euro functional-currency denominated subsidiaries to offset foreign currency fluctuations.

The indenture and supplemental indentures governing the 3.60% 2026 Senior Notes, 5.0% 2046 Senior Notes, 3.60% 2022 Senior Notes, 4.375% 2047 Senior Notes and 1.625% Senior Notes contain customary events of default and covenants that will restrict the Company and certain of the Company's subsidiaries' ability to (1) incur certain secured indebtedness, (2) engage in certain sale-leaseback transactions and (3) consolidate, merge or transfer all or substantially all of its assets.

IKE Zone Bonds

In December 2010, the Louisiana Local Government Authority Environmental Facilities and Community Development Authority (the "Authority"), a political subdivision of the State of Louisiana, completed the offering of $65 of 6 ½% IKE Zone Bonds under Section 704 of the Emergency Economic Stabilization Act of 2008 (the "IKE Zone Act"). In connection with the issuance of the 6 ½% 2035 IKE Zone Bonds, the Company issued $65 of the 6 ½% 2035 IKE Zone Senior Notes.

GO Zone Bonds

In December 2010, the Authority issued $89 of 6 ½% tax-exempt revenue bonds due November 1, 2035 under the Gulf Opportunity Zone Act of 2005 (the "GO Zone Act") (the "6 ½% 2035 GO Zone Bonds"). In connection with the issuance of the 6 ½% 2035 GO Zone Bonds, the Company issued $89 of the 6 ½% 2035 GO Zone Senior Notes. In July 2010, the Authority completed the reoffering of $100 of 6 ½% tax-exempt revenue bonds due August 1, 2029 under the GO Zone Act (the "6 ½% 2029 GO Zone Bonds"). In connection with the reoffering of the 6 ½% 2029 GO Zone Bonds, the Company issued $100 of the 6 ½% 2029 GO Zone Senior Notes.

Each series of the tax-exempt bonds is subject to redemption and the holders may require the bonds to be repurchased upon a change of control or a change in or loss of the current tax status of the bonds. In addition, the bonds are subject to optional redemption by the Authority upon the direction of the Company if certain events have occurred in connection with the operation of the projects for which the bond proceeds may be used, including if the Company has determined that the continued operation of any material portion of the projects would be impracticable, uneconomical or undesirable for any reason.

In November 2017, the Authority completed the remarketing of $250 aggregate principal amount of 3.50% tax-exempt revenue refunding bonds due November 1, 2032 (the "3.50% 2032 GO Zone Bonds"). In connection with the remarketing of the 3.50% 2032 GO Zone Bonds, the Company issued $250 of the 3.50% 2032 Senior Notes. The 3.50% 2032 GO Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time on or after November 1, 2027, for 100% of the principal amount plus accrued interest. The indenture governing the 3.50% 2032 Senior Notes contains customary events of default and covenants that will restrict the Company and certain of the Company's subsidiaries' ability to (1) incur certain secured indebtedness, (2) engage in certain sale-leaseback transactions and (3) consolidate, merge or transfer all of substantially all of its assets.

In connection with each offering of the tax-exempt bonds, the Company entered into a loan agreement with the Authority pursuant to which the Company agreed to pay all of the principal, premium, if any, and interest on the bonds and certain other amounts to the Authority. The net proceeds from the offerings were loaned by the Authority to the Company. The Company used the proceeds to expand, refurbish and maintain certain of its facilities in the Louisiana Parishes of Calcasieu and Ascension. The bonds are unsecured and rank equally in right of payment with other existing and future unsecured senior indebtedness. As of December 31, 2019, the Company had drawn all proceeds from the tax-exempt bonds. In connection with each such offering of the tax-exempt bonds, the Company issued senior notes under a base indenture and supplemental indenture to collateralize its obligations under the loan agreement relating to such tax-exempt bonds (collectively, the "Tax-Exempt Bond Related Senior Notes").

The indentures governing the Tax-Exempt Bond Related Senior Notes excluding the 3.5% 2032 GO Zone Refunding Senior Notes contain customary covenants and events of default. Accordingly, these agreements generally impose significant operating and financial restrictions on the Company. These restrictions, among other things, provide limitations on incurrence of additional indebtedness, the payment of dividends, certain investments and acquisitions and sales of assets. However, the effectiveness of certain of these restrictions is currently suspended because the Tax-Exempt Bond Related Senior Notes are currently rated investment grade by at least two nationally recognized credit rating agencies. The most significant of these provisions, if it were currently effective, would restrict the Company from incurring additional debt, except specified permitted debt (including borrowings under its credit facility), when the Company's fixed charge coverage ratio is below 2.0:1. These limitations are subject to a number of important qualifications and exceptions, including, without limitation, an exception for the payment of the Company's regular quarterly dividend of up to $0.10 per share. If the restrictions were currently effective, distributions in excess of $100 would not be allowed unless, after giving pro forma effect to the distribution, the Company's fixed charge coverage ratio is at least 2.0:1 and such payment, together with the aggregate amount of all other distributions after January 13, 2006, is less than the sum of 50% of the Company's consolidated net income for the period from October 1, 2003 to the end of the most recent quarter for which financial statements have been filed, plus 100% of net cash proceeds received after October 1, 2003 as a contribution to the Company's common equity capital or from the issuance or sale of certain securities, plus several other adjustments.

Revenue Bonds

In December 1997, the Company entered into a loan agreement with a public trust established for public purposes for the benefit of the Parish of Calcasieu, Louisiana. The public trust issued $11 principal amount of tax-exempt waste disposal revenue bonds in order to finance the Company's construction of waste disposal facilities for an ethylene plant. The waste disposal revenue bonds expire in December 2027 and are subject to redemption and mandatory tender for purchase prior to maturity under certain conditions. The interest rate on the waste disposal revenue bonds at December 31, 2019 and 2018 was 1.78% and 1.85%, respectively.

As of December 31, 2019, the Company was in compliance with all of its long-term debt covenants.

The weighted average interest rate on all long-term debt was 3.6% and 4.4% at December 31, 2019 and 2018, respectively. Unamortized debt issuance costs on long-term debt were $30 and $25 at December 31, 2019 and 2018, respectively.

Aggregate scheduled maturities of long-term debt during the next five years consist of $250 in 2022. There are no other scheduled maturities of debt in 2020 through 2024.

12. Stockholders' Equity

The Company's Board of Directors has declared regular quarterly dividends to holders of its common stock aggregating $132, $120 and $103 for the years ended December 31, 2019, 2018 and 2017, respectively.

Common Stock

Each share of common stock entitles the holder to one vote on all matters on which holders are permitted to vote, including the election of directors. There are no cumulative voting rights. Accordingly, holders of a majority of the total votes entitled to vote in an election of directors will be able to elect all of the directors standing for election. Subject to preferences that may be applicable to any outstanding preferred stock, the holders of the common stock will share equally on a per share basis any dividends when, as and if declared by the Board of Directors out of funds legally available for that purpose. If the Company is liquidated, dissolved or wound up, the holders of the Company's common stock will be entitled to a ratable share of any distribution to stockholders, after satisfaction of all the Company's liabilities and of the prior rights of any outstanding class of the Company's preferred stock. The Company's common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the Company's common stock.

Preferred Stock

The Company's charter authorizes the issuance of shares of preferred stock. The Company's Board of Directors has the authority, without shareholder approval, to issue preferred shares from time to time in one or more series, and to fix the number of shares and terms of each such series. The Board may determine the designations and other terms of each series including dividend rates, whether dividends will be cumulative or non-cumulative, redemption rights, liquidation rights, sinking fund provisions, conversion or exchange rights and voting rights.

Stock Repurchase Program

In November 2014, the Company's Board of Directors approved a $250 share repurchase program (the "2014 Program"). In November 2015, the Company's Board of Directors approved the expansion of the 2014 Program by an additional $150. In August 2018, the Company's Board of Directors approved the expansion of the 2014 Program by an additional $150. The number of shares repurchased by the Company under the 2014 Program was 517,712, 1,368,881 and 0 for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, the Company had repurchased a total of 6,080,191 shares of its common stock for an aggregate purchase price of approximately $365.

Any shares repurchased under the 2014 Program are held by the Company as treasury stock and may be used for general corporate purposes, including for the 2013 Omnibus Incentive Plan. In 2014, the Company began delivering treasury shares to employees and non-employee directors for options exercised and for the settlement of restricted stock units. The cost of treasury shares delivered is determined using the specific identification method.

13. Accumulated Other Comprehensive Income (Loss)

Changes in accumulated other comprehensive income (loss) by component were as follows:

	Pension and Other Post-Retirement Benefits Liability, Net of Tax	Cumulative Foreign Currency Exchange, Net of Tax	Total
Balances at December 31, 2017	$ 43	$ (36)	$ 7
Other comprehensive income (loss) before reclassifications	(14)	(57)	(71)
Amounts reclassified from accumulated other comprehensive income (loss)	(11)	—	(11)
Reclassification of certain tax effects to retained earnings [1]	9	4	13
Net other comprehensive loss attributable to Westlake Chemical Corporation	(16)	(53)	(69)
Balances at December 31, 2018	27	(89)	(62)
Other comprehensive income (loss) before reclassifications	(24)	12	(12)
Amounts reclassified from accumulated other comprehensive income (loss)	—	—	—
Net other comprehensive income (loss) attributable to Westlake Chemical Corporation	(24)	12	(12)
Balances at December 31, 2019	$ 3	$ (77)	$ (74)

(in millions of dollars, except share amounts and per share data)

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(1) In 2018, the Company reclassified certain income tax effects to retained earnings upon adoption of ASU No. 2018-02. See Note 1 (Income taxes) for additional information.

The following table provides the details of the amounts reclassified from accumulated other comprehensive income (loss) into net income in the consolidated statements of operations:

Details about Accumulated Other Comprehensive Income (Loss) Components	Location of Reclassification (Income (Expense)) in Consolidated Statements of Operations	Year Ended December 31, 2019	2018	2017
Amortization of pension and other post-retirement net loss	(1)	$ —	$ —	$ (2)
Pension settlement gain	(1)	—	14	—
Income tax benefit (provision) on pension and other post-retirement benefits	Provision for (benefit from) income taxes	—	(3)	—
Total reclassifications for the period		$ —	$ 11	$ (2)

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(1) These accumulated other comprehensive income (loss) components are included in the computation of net periodic benefit cost and reflected in other income, net in the consolidated statements of operations. See Note 14 for additional information on the pension settlement gain recognized in 2018.

14. Employee Benefits

Defined Contribution Plans

U.S. Plans

The Company has a defined contribution savings plan covering the eligible U.S. regular full-time and part-time employees, whereby eligible employees may elect to contribute up to 100% of their annual eligible compensation, subject to an annual plan limit in line with the annual elective contribution limit as determined by the Internal Revenue Service. The Company matches its employee's contribution up to a certain percentage of such employee's compensation, per the terms of the plan. The Company may, at its discretion and per the terms of the plan, make an additional non-matching contribution in an amount as the Board of Directors may determine. For the years ended December 31, 2019, 2018 and 2017, the Company recorded approximately $20, $21 and $23, respectively, to expense for these contributions.

Further, within the plan, the Company also makes an annual retirement contribution to substantially all employees of certain subsidiaries. The Company's contributions to the plan are determined as a percentage of employees' pay. For the years ended December 31, 2019, 2018 and 2017, the Company charged approximately $32, $31 and $29, respectively, to expense for these contributions.

Non-U.S. Plans

The Company has defined contribution plans in several countries covering eligible employees of the Company. The Company's contributions to the plans are based on applicable laws in each country. Contributions to the Company's non-U.S. defined contribution plans are made by both the employee and the Company. For the years ended December 31, 2019, 2018 and 2017, the Company charged approximately $4, $5 and $5, respectively, to expense for its contributions to these plans.

Defined Benefit Plans

U.S. Plans

The Company has noncontributory defined benefit pension plans that cover certain eligible salaried and wage employees of certain subsidiaries. However, eligibility for the Company's plans has been frozen. Benefits for salaried employees under these plans are based primarily on years of service and employees' pay near retirement. Benefits for wage employees are based upon years of service and a fixed amount as periodically adjusted. The Company recognizes the years of service prior to the Company's acquisition of the subsidiary's facilities for purposes of determining vesting, eligibility and benefit levels for certain employees of the subsidiary and for determining vesting and eligibility for certain other employees of the subsidiary. The measurement date for these plans is December 31.

Non-U.S. Plans

The Company has defined benefit pension plans covering current and former employees associated with the Company's operations. These pension plans are closed to new participants. Benefits for employees for these plans are based primarily on employees' pay near retirement. These pension plans are unfunded and have no plan assets. The measurement date for the non-U.S. plans is December 31.

Details of the changes in benefit obligations, plan assets and funded status of the Company's pension plans are as follows:

	2019 U.S. Plans	2019 Non-U.S. Plans	2018 U.S. Plans	2018 Non-U.S. Plans
Change in benefit obligation				
Benefit obligation, beginning of year	$ 648	$ 136	$ 807	$ 142
Service cost	3	2	3	2
Interest cost	23	3	24	3

Actuarial loss (gain)	80	14	(43)	—
Benefits paid	(51)	(4)	(40)	(4)
Plan amendments	—	(4)	—	—
Settlements	—	(1)	(103)	—
Foreign exchange effects	—	(2)	—	(7)
Benefit obligation, end of year	$ 703	$ 144	$ 648	$ 136
Change in plan assets				
Fair value of plan assets, beginning of year	$ 486	$ 17	$ 650	$ 18
Actual return	92	1	(22)	—
Employer contribution	2	—	3	1
Benefits paid	(51)	—	(40)	(1)
Administrative expenses paid	(3)	—	(2)	—
Settlements	—	—	(103)	—
Foreign exchange effects	—	1	—	(1)
Fair value of plan assets, end of year	$ 526	$ 19	$ 486	$ 17
Funded status, end of year	$ (177)	$ (125)	$ (162)	$ (119)

	2019		2018	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Amounts recognized in the consolidated balance sheet at December 31				
Current liabilities	$ (2)	$ (2)	$ (2)	$ (3)
Noncurrent liabilities	(175)	(123)	(160)	(116)
Net amount recognized	$ (177)	$ (125)	$ (162)	$ (119)

(in millions of dollars, except share amounts and per share data)

	2019		2018	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Amounts recognized in accumulated other comprehensive income (loss)				
Net loss (gain)	$ (16)	$ 22	$ (36)	$ 9
Prior service cost	—	(4)	—	—
Total before tax [(1)]	$ (16)	$ 18	$ (36)	$ 9

(1) After-tax totals for pension benefits were $0 and $22 for 2019 and 2018, respectively, and are reflected in stockholders' equity as accumulated other comprehensive income (loss).

In the U.S., the Pension Protection Act of 2006 (the "Pension Protection Act") established a relationship between a qualified pension plan's funded status and the actual benefits that can be provided. Restrictions on plan benefits and additional funding and notice requirements are imposed when a plan's funded status is less than certain threshold levels. For the 2019 plan year, the funded status for the Company's U.S. pension plans are above 80% and, as such, are exempt from the Pension Protection Act's benefit restrictions.

Pension plans with an accumulated benefit obligation in excess of plan assets at December 31 are as follows:

	2019		2018	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Information for pension plans with an accumulated benefit obligation in excess of plan assets				
Projected benefit obligation	$ (703)	$ (143)	$ (648)	$ (128)
Accumulated benefit obligation	(703)	(138)	(648)	(125)
Fair value of plan assets	526	18	486	10

(in millions of dollars, except share amounts and per share data)

The following table provides the components of net periodic benefit costs, other changes in plan assets and benefit obligation recognized in other comprehensive income.

	Year Ended December 31,					
	2019		2018		2017	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Components of net periodic benefit cost						
Service cost	$ 3	$ 2	$ 3	$ 2	$ 3	$ 2
Administrative expenses	4	—	3	—	2	—
Interest cost	23	3	24	3	25	2
Expected return on plan assets	(33)	(1)	(42)	(1)	(40)	(1)
Net amortization	—	—	(1)	1	1	1
Settlement gain	—	—	(14)	—	—	—
Net periodic benefit cost (gain)	$ (3)	$ 4	$ (27)	$ 5	$ (9)	$ 4
Other changes in plan assets and benefit obligation recognized in other comprehensive income (OCI)						
Net loss (gain) emerging	$ 20	$ 13	$ 20	$ 1	$ (18)	$ —
Settlement gain	—	—	14	—	—	—
Effect of plan change	—	(4)	—	—	—	—
Amortization of net gain (loss)	—	—	1	(1)	(1)	(1)
Total recognized in OCI	$ 20	$ 9	$ 35	$ —	$ (19)	$ (1)
Total net periodic benefit cost and OCI	$ 17	$ 13	$ 8	$ 5	$ (28)	$ 3

The estimated prior service cost and net loss for the defined benefit plans to be amortized from accumulated other comprehensive income (loss) into net periodic benefit cost during 2020 are expected to be zero and $1, respectively.

During 2018, the Company's U.S. pension plans settled portions of their projected benefit obligations through the purchase of annuities and lump sum payments to certain participants. In conjunction with the settlement, the Company also remeasured the pension obligations and plan assets of the affected plans, resulting in a $26 increase in accumulated other comprehensive income (loss) before tax and a corresponding decrease in net pension liabilities recorded in the consolidated balance sheets. During 2018, the Company recognized a $14 one-time settlement gain in other income, net, which was reclassified from accumulated other comprehensive income (loss).

(in millions of dollars, except share amounts and per share data)

The weighted-average assumptions used to determine pension plan obligations and net periodic benefit costs for the plans are as follows:

	2019		2018		2017	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Weighted average assumptions used to determine benefit obligations at December 31						
Discount rate	3.0%	1.3%	4.1%	2.0%	3.4%	1.8%
Rate of compensation increase	—%	2.6%	—%	2.6%	—%	2.6%
Weighted average assumptions used to determine net periodic benefit costs for years ended December 31						
Discount rate for benefit obligations	4.1%	2.0%	3.4%	1.8%	3.8%	1.8%
Discount rate for service cost	4.2%	2.2%	3.8%	2.0%	4.1%	1.9%
Discount rate for interest cost	3.7%	2.2%	3.3%	2.0%	3.2%	2.0%
Expected return on plan assets	7.0%	4.0%	7.0%	3.8%	6.8%	3.8%
Rate of compensation increase	—%	2.6%	—%	2.6%	—%	2.6%

The discount rates for the Company's U.S. and non-U.S. plans are determined using a benchmark pension discount curve and applying spot rates from the curve to each year of expected benefit payments to determine the appropriate discount rate for the Company. The assumed long-term return on plan assets is estimated by considering factors such as the plan's overall investment strategy, current economic conditions and historical averages.

The Company's U.S. pension plan investments are held in the Westlake Defined Benefit Plan. The Company's overall investment strategy for these pension plan assets is to achieve a balance between moderate income generation and capital appreciation. The investment strategy includes a mix of approximately 60% of investments for long-term growth, and 40% for near-term benefit payments with a diversification of asset types. These pension funds' investment policies target asset allocations from approximately 60% equity securities and 40% fixed income securities in order to pursue a balance between moderate income generation and capital appreciation.

Equity securities primarily include investments in large-cap and small-cap companies located in the U.S. and international developed and emerging markets stocks. Fixed income securities are comprised of investment and non-investment grade bonds, including U.S. Treasuries and U.S. and non-U.S. corporate bonds of companies from diversified industries. Each pension fund investment policy allows a discretionary range in various asset classes within the asset allocation model of up to 10%. The Company does not believe that there are significant concentrations of risk in the pension plan assets due to its strategy of asset diversification. At December 31, 2019, plan assets did not include direct ownership of the Company's common stock.

Under the accounting guidance for fair value measurements, inputs used to measure fair value are classified in one of three levels:

Level 1: Quoted market prices in active markets for identical assets or liabilities.

Level 2: Observable market-based inputs or unobservable inputs that are corroborated by market data.

Level 3: Unobservable inputs that are not corroborated by market data.

(in millions of dollars, except share amounts and per share data)

The investments in the collective trust and mutual funds are valued using a market approach based on the net asset value of units held. The fair values of the Company's U.S. plan assets at December 31, by asset category, are as follows:

	2019					
	U.S. Plans			Non U.S. Plans		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Cash and common stock:						
Cash and cash equivalents	$ —	$ —	$ —	$ 6	$ —	$ 6
Common stock	15	—	15	—	—	—
Collective investment trust and mutual funds—Equity securities:						
Large-cap funds (1)	49	112	161	—	1	1
Small-cap funds (2)	8	14	22	—	—	—
International funds (3)	75	45	120	—	5	5
Collective investment trust and mutual funds—Fixed income:						
Bond funds (4)	100	98	198	—	7	7
Short-term investment funds	—	10	10	—	—	—
	$ 247	$ 279	$ 526	$ 6	$ 13	$ 19

	2018					
	U.S. Plans			Non U.S. Plans		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Cash and common stock:						
Cash and cash equivalents	$ —	$ —	$ —	$ 5	$ —	$ 5
Common stock	13	—	13	—	—	—
Collective investment trust and mutual funds—Equity securities:						
Large-cap funds (1)	44	98	142	—	1	1
Small-cap funds (2)	6	13	19	—	—	—
International funds (3)	64	38	102	—	5	5
Collective investment trust and mutual funds—Fixed income:						
Bond funds (4)	96	102	198	—	6	6
Short-term investment funds	—	12	12	—	—	—
	$ 223	$ 263	$ 486	$ 5	$ 12	$ 17

(1) Substantially all of the assets of these funds are invested in large-cap U.S. companies. The remainder of the assets of these funds is invested in cash reserves.

(2) Substantially all of the assets of these funds are invested in small-cap U.S. companies. The remainder of the assets of these funds is invested in cash reserves.

(3) Substantially all of the assets of these funds are invested in international companies in developed markets (excluding the U.S.). The remainder of the assets of these funds is invested in cash reserves.

(4) This category represents investment grade bonds of U.S. issuers, including U.S. Treasury notes.

The Company's funding policy for its U.S. plans is consistent with the minimum funding requirements of federal law and regulations, and based on preliminary estimates, the Company expects to make contributions of approximately $2 for the pension plans in2020.

(in millions of dollars, except share amounts and per share data)

Multi-employer Plans

Non-U.S. Plans

The Company participates in two multi-employer plans, Pensionskasse der Mitarbeiter der Hoechst-Gruppe VVaG and Pensionskasse der Wacker-Chemie GmbH VVaG, which provide benefits to certain of the Company's employees in Germany. These multi-employer plans are closed to new participants. The benefit obligations are covered up to a certain salary threshold by contributions made by the Company and employees to the plans.

Contributions to the Company's multi-employer plans are expensed as incurred and were as follows:

	Year Ended December 31,		
	2019	2018	2017
	Non-U.S. Plans	Non-U.S. Plans	Non-U.S. Plans
Contributions to multi-employer plans[1]	$ 9	$ 7	$ 8

(1) The plan information for both the Pensionskasse der Mitarbeiter der Hoechst-Gruppe VVaG and Pensionskasse der Wacker-Chemie GmbH VVaG plans is publicly available. The plans provide fixed, monthly retirement payments on the basis of the credits earned by the participating employees. To the extent that the plans are underfunded, future contributions to the plans may increase and may be used to fund retirement benefits for employees related to other employers. The Company does not consider either of its multi-employer plans individually significant.

Other Post-retirement Benefits

In the U.S., the Company provides post-retirement healthcare and life insurance benefits for certain employees and their dependents who meet minimum age and service requirements. The Company has the right to modify or terminate some of these benefits.

The Company also has a post-retirement plan in Canada which is unfunded and provides medical and life insurance benefits for certain employees and their dependents.

The following table provides a reconciliation of the benefit obligations of the Company's unfunded post-retirement healthcare plans.

	2019		2018	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Change in benefit obligation				
Benefit obligation, beginning of year	$ 67	$ 3	$ 73	$ 3
Service cost	1	—	1	—
Interest cost	2	—	2	—
Actuarial loss (gain)	3	1	(1)	—
Benefits paid	(8)	—	(8)	—
Benefit obligation, end of year	$ 65	$ 4	$ 67	$ 3
Change in plan assets				
Fair value of plan assets, beginning of year	$ —	$ —	$ —	$ —
Employer contribution	8	—	8	—
Benefits paid	(8)	—	(8)	—
Fair value of plan assets, end of year	$ —	$ —	$ —	$ —
Funded status, end of year	$ (65)	$ (4)	$ (67)	$ (3)

WESTLAKE CHEMICAL CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)
(in millions of dollars, except share amounts and per share data)

	2019		2018	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Amounts recognized in the consolidated balance sheet at December 31				
Current liabilities	$ (8)	$ —	$ (8)	$ —
Noncurrent liabilities	(57)	(5)	(59)	(3)
Net amount recognized	$ (65)	$ (5)	$ (67)	$ (3)

	2019		2018	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Amounts recognized in accumulated other comprehensive income (loss)				
Net gain	$ (3)	$ —	$ (6)	$ —
Total before tax (1)	$ (3)	$ —	$ (6)	$ —

(1) After-tax totals for post-retirement healthcare benefits were$3 and $5 for 2019 and 2018, respectively, and are reflected in stockholders' equity as accumulated other comprehensive income (loss).

The following table provides the components of net periodic benefit costs, other changes in plan assets and benefit obligation recognized in other comprehensive income.

	Year Ended December 31,					
	2019		2018		2017	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Components of net periodic benefit cost						
Service cost	$ 1	$ —	$ 1	$ —	$ 1	$ —
Interest cost	2	—	2	—	2	—
Net amortization	—	—	—	—	—	—
Net periodic benefit cost	$ 3	$ —	$ 3	$ —	$ 3	$ —
Other changes in plan assets and benefit obligation recognized in OCI						
Net loss (gain) emerging	$ 3	$ —	$ (1)	$ (1)	$ (1)	$ —
Total recognized in OCI	$ 3	$ —	$ (1)	$ (1)	$ (1)	$ —
Total net periodic benefit cost and OCI	$ 6	$ —	$ 2	$ (1)	$ 2	$ —

The estimated prior service cost and net loss for the post-retirement healthcare benefit plans that will be amortized from accumulated other comprehensive income (loss) into net periodic benefit cost during 2020 are both expected to bezero.

WESTLAKE CHEMICAL CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)
(in millions of dollars, except share amounts and per share data)

The weighted-average assumptions used to determine post-retirement healthcare plan obligations and net periodic benefit costs for the plans are as follows:

	2019		2018		2017	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Weighted average assumptions used to determine benefit obligations at December 31						
Discount rate	2.5%	3.2%	3.7%	3.9%	3.0%	4.0%
Health care cost trend rate						
- Initial rate	6.8%	5.7%	7.0%	5.8%	7.3%	6.2%
- Ultimate rate	4.5%	4.0%	4.5%	4.0%	4.5%	4.5%
- Years to ultimate	10	21	11	22	11	12
Weighted average assumptions used to determine net periodic benefit costs for years ended December 31						
Discount rate for benefit obligations	3.7%	3.9%	3.0%	3.6%	3.3%	3.3%
Discount rate for service cost	4.0%	3.9%	3.4%	3.6%	3.8%	3.3%
Discount rate for interest cost	3.4%	3.9%	2.7%	3.6%	2.6%	3.3%
Health care cost trend rate						
- Initial rate	7.0%	5.8%	7.0%	6.1%	6.8%	6.8%
- Ultimate rate	4.5%	4.0%	4.5%	4.5%	4.6%	4.5%
- Years to ultimate	10	21	10	11	11	12

The discount rate is determined using a benchmark pension discount curve and applying spot rates from the curve to each year of expected benefit payments to determine the appropriate discount rate for the Company. A one percentage-point increase or decrease in assumed healthcare trend rates would not have a significant effect on the amounts reported for the healthcare plans.

Estimated Future Benefit Payments

The following benefit payments are expected to be paid:

	Pension Benefits	Other Post-retirement Benefits
Estimated future benefit payments:		
Year 1	$ 45	$ 8
Year 2	45	8
Year 3	45	8
Year 4	47	8
Year 5	46	7
Years 6 to 10	233	22

(in millions of dollars, except share amounts and per share data)

15. Stock-Based Compensation

Under the Westlake Chemical Corporation 2013 Omnibus Incentive Plan (as amended and restated in 2017, the "2013 Plan"), all employees and non-employee directors of the Company, as well as certain individuals who have agreed to become the Company's employees, are eligible for awards. Shares of common stock may be issued as authorized in the 2013 Plan. At the discretion of the administrator of the 2013 Plan, employees and non-employee directors may be granted awards in the form of stock options, stock appreciation rights, stock awards, restricted stock units or cash awards (any of which may be a performance award). Outstanding stock option awards have a 10-year term and vest (1) ratably on an annual basis over a three-year period or (2) at the end of a five-year period. Outstanding restricted stock units and performance stock units vest either (1) ratably on an annual basis over a two to five-year period or (2) at the end of a three or six-year period. In accordance with accounting guidance related to share-based payments, stock-based compensation expense for all stock-based compensation awards is based on estimated grant-date fair value. The Company recognizes these stock-based compensation costs net of a forfeiture rate and on a straight-line basis over the requisite service period of the award for only those shares expected to vest. For the years ended December 31, 2019, 2018 and 2017, the total recognized stock-based compensation expense related to equity awards issued under the 2013 Plan was $24, $18 and $14, respectively.

Option activity and changes during the year ended December 31, 2019 were as follows:

	Options	Weighted Average Exercise Price	Weighted Average Remaining Term (Years)	Aggregate Intrinsic Value
Outstanding at December 31, 2018	1,115,954	$ 54.82		
Granted	296,598	79.83		
Exercised	(18,635)	35.04		
Cancelled	(7,969)	79.94		
Outstanding at December 31, 2019	1,385,948	$ 60.29	5.9	$ 23
Exercisable at December 31, 2019	888,093	$ 47.64	4.5	$ 22

For options outstanding at December 31, 2019, the options had the following range of exercise prices:

Range of Prices	Options Outstanding	Weighted Average Remaining Contractual Life (Years)
$10.26 - $30.05	264,334	1.0
$40.38 - $44.42	218,047	6.1
$45.70 - $61.87	295,620	6.5
$63.98 - $68.18	145,171	4.7
$79.83 - $107.75	462,776	8.8

The aggregate intrinsic value in the table above represents the total pretax intrinsic value (the difference between the Company's closing stock price on the last trading day of the year and the exercise price, multiplied by the number of in-the-money options) that would have been received by the option holders had all option holders exercised their options on December 31, 2019. This amount changes based on the fair market value of the Company's common stock. For the years ended December 31, 2019, 2018 and 2017, the total intrinsic value of options exercised was $1, $21 and $24, respectively.

As of December 31, 2019, $6 of total unrecognized compensation cost related to stock options is expected to be recognized over a weighted-average period of 1.8 years. Income tax benefits of $0, $4 and $8 were realized from the exercise of stock options during the years ended December 31, 2019, 2018 and 2017, respectively.

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The Company used the Black-Scholes option pricing model to value its options. The table below presents the weighted average value and assumptions used in determining each option's fair value. Volatility was calculated using historical trends of the Company's common stock price.

	Stock Option Grants		
	Year Ended December 31,		
	2019	2018	2017
Weighted average fair value	$ 21.02	$ 28.94	$ 15.84
Risk-free interest rate	2.5%	2.7%	2.1%
Expected life in years	5	5	5
Expected volatility	28.9%	27.6%	29.2%
Expected dividend yield	1.2%	0.7%	1.2%

Non-vested restricted stock units as of December 31, 2019 and changes during the year ended December 31, 2019 were as follows:

	Number of Units	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2018	702,789	$ 65.79
Granted	205,517	77.59
Vested	(415,593)	56.70
Forfeited	(29,430)	73.28
Non-vested at December 31, 2019	463,283	$ 78.69

As of December 31, 2019, there was $15 of unrecognized stock-based compensation expense related to non-vested restricted stock units. This cost is expected to be recognized over a weighted-average period of 1.7 years. The total fair value of restricted stock units that vested during the years ended December 31, 2019, 2018 and 2017 was $28, $10 and $6, respectively.

Performance stock unit payout is based on the greater of the average annual economic-value added results for the Company (equal to net operating profit after tax less a capital charge based upon the weighted average cost of capital) and relative total shareholder return as compared to a peer group of companies. The units have payouts that range from zero to 200 percent of the target award.

Non-vested performance stock units as of December 31, 2019 and changes during the year ended December 31, 2019 were as follows:

	Number of Units	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2018	—	$ —
Granted	78,328	114.38
Vested	—	—
Forfeited	(1,111)	114.38
Non-vested at December 31, 2019	77,217	$ 114.38

As of December 31, 2019, there was $6 of unrecognized stock-based compensation expense related to non-vested performance stock units. This cost is expected to be recognized over a weighted-average period of 2.1 years. There were no such awards issued during the years ended December 31, 2018 and 2017.

The Company used a Monte Carlo simulation model to value the performance stock units on the grant date. The table below presents the assumptions used in determining grant date fair value. Volatility was calculated using historical trends of the Company's common stock price.

(in millions of dollars, except share amounts and per share data)

	Year Ended December 31, 2019 Performance Stock Units
Risk-free interest rate	2.5%
Expected life in years	2.88
Expected volatility of Westlake Chemical Corporation common stock	30.3%
Expected volatility of peer companies	14.5% - 47.8%
Average correlation coefficient of peer companies	0.49
Grant date fair value	$ 114.38

Liability Classified Awards

Certain of the Company's restricted stock unit awards are classified as liability awards for accounting purposes and are re-measured at each reporting date until they vest. Total stock-based compensation expense recognized related to these restricted stock units during the years ended December 31, 2019, 2018, and 2017 was $1, $4 and $9, respectively.

Non-vested liability classified restricted stock awards as ofDecember 31, 2019 and changes during the year ended December 31, 2019 were as follows:

	Number of Units	Weighted Average Fair Value
Non-vested at December 31, 2018	49,528	$ 66.46
Vested	(49,292)	68.22
Cancelled	(236)	76.77
Non-vested at December 31, 2019	—	—

As of December 31, 2019, there was no unrecognized stock-based compensation expense related to non-vested liability classified restricted stock awards. The total fair value of liability classified restricted stock awards that vested during the years ended December 31, 2019, 2018 and 2017 was $3, $6 and $11, respectively. The total fair value of liability classified restricted stock awards cancelled during the year ended December 31, 2019 was $0.

Westlake Chemical Partners LP Awards

The Company's wholly-owned subsidiary and the general partner of Westlake Partners, Westlake Chemical Partners GP LLC ("Westlake Partners GP"), maintains a unit-based compensation plan for directors and employees of WLKP GP and Westlake Partners.

The Westlake Partners 2014 Long-term Incentive Plan ("Westlake Partners 2014 Plan") permits various types of equity awards including but not limited to grants of phantom units and restricted units. Awards granted under the Westlake Partners 2014 Plan may be settled with Westlake Partners units or in cash or a combination thereof. Compensation expense for these awards was not material to the Company's consolidated financial statements for the years ended December 31, 2019, 2018 and 2017.

16. Fair Value Measurements

The Company has financial assets and liabilities subject to fair value measures. These financial assets and liabilities include cash and cash equivalents, accounts receivable, net, accounts payable and long-term debt, all of which are recorded at carrying value. The amounts reported in the consolidated balance sheets for cash and cash equivalents, accounts receivable, net and accounts payable approximate their fair value due to the short maturities of these instruments. The carrying and fair values of the Company's long-term debt at December 31, 2019 and 2018 are summarized in the table below. The Company's long-term debt instruments are publicly-traded. A market approach, based upon quotes from financial reporting services, is used to measure the fair value of the Company's long-term debt. Because the Company's long-term debt instruments may not be

actively traded, the inputs used to measure the fair value of the Company's long-term debt are classified as Level 2 inputs within the fair value hierarchy.

	2019		2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
3.60% 2022 Senior Notes	$ 249	$ 255	$ 249	$ 248
3.60% 2026 Senior Notes	742	777	741	692
Loan related to tax-exempt waste disposal revenue bonds due 2027	11	11	11	11
6 ½% 2029 GO Zone Senior Notes	99	103	99	106
6 ½% 2035 GO Zone Senior Notes	88	92	88	95
6 ½% 2035 IKE Zone Senior Notes	65	68	65	69
5.0% 2046 Senior Notes	677	761	676	641
4.375% 2047 Senior Notes	491	505	491	417
3.50% 2032 GO Zone Refunding Senior Notes	249	267	248	233

1.625% 2029 Senior Notes	774	785	—	—

17. Income Taxes

The components of income before income taxes are as follows:

	Year Ended December 31,		
	2019	2018	2017
Domestic	$ 460	$ 1,087	$ 917
Foreign	110	247	164
	$ 570	$ 1,334	$ 1,081

The Company's provision for (benefit from) income taxes consists of the following:

	Year Ended December 31,		
	2019	2018	2017
Current			
Federal	$ 20	$ 158	$ 231
State	9	28	18
Foreign	25	52	27
Total current	54	238	276
Deferred			
Federal	69	59	(557)
State	11	(2)	25
Foreign	(26)	5	(2)
Total deferred	54	62	(534)
Total provision for (benefit from) income taxes	$ 108	$ 300	$ (258)

(in millions of dollars, except share amounts and per share data)

A reconciliation of taxes computed at the statutory rate to the Company's income tax expense is as follows:

	Year Ended December 31,		
	2019	2018	2017
Provision for federal income tax, at statutory rate	$ 120	$ 280	$ 378
State income tax provision, net of federal income tax effect	10	28	26
Foreign income tax rate differential	(6)	14	(36)
Manufacturing deduction	—	—	(23)
Depletion	(5)	(4)	(7)
Noncontrolling interests	(8)	(6)	(9)
Tax Act related adjustment	—	—	(591)
Change in valuation allowance	(17)	(9)	3
Changes in state apportionment and other state adjustments	11	(6)	2
Other, net	3	3	(1)
Total income tax expense (benefit)	$ 108	$ 300	$ (258)

The tax effects of the principal temporary differences between financial reporting and income tax reporting at December 31 are as follows:

	2019	2018
Net operating loss carryforward	$ 209	$ 50
Credit carryforward	25	24
Operating lease liabilities	96	—
Accruals	65	64
Pension	83	76
Inventories	20	13
Other	26	17
Deferred taxes assets—total	524	244
Property, plant and equipment	(1,017)	(948)
Intangibles	(156)	(148)
Operating lease right-of-use asset	(95)	—
Turnaround costs	(21)	(20)
Consolidated partnerships	(194)	(202)
Equity method investments	(220)	(13)
Other	(18)	(14)
Deferred tax liabilities—total	(1,721)	(1,345)
Valuation allowance	(30)	(47)
Total net deferred tax liabilities	$ (1,227)	$ (1,148)
Balance sheet classifications		
Noncurrent deferred tax asset	$ 28	$ 11
Noncurrent deferred tax liability	(1,255)	(1,159)
Total net deferred tax liabilities	$ (1,227)	$ (1,148)

(in millions of dollars, except share amounts and per share data)

At December 31, 2019, the Company had federal, foreign and state net operating loss carryforwards ("NOLs") of approximately $539, $217 and $613, respectively. The increase in the federal and state NOLs is primarily due to bonus tax depreciation from the Company's investment in LACC accounted for as an equity method investment. The federal NOL and certain foreign and state NOLs do not expire, while certain other foreign and state NOLs expire in varying amounts between 2020 and 2039. Certain NOLs are subject to limitations on an annual basis. At December 31, 2019, the Company had various federal, foreign and state credits carryforwards of $2, $4 and $19, respectively, which either do not expire or expire in varying amounts between 2020 and 2033. Management believes the Company will realize the benefit of a portion of the net operating loss carryforwards before they expire, but to the extent that the full benefit may not be realized, a valuation allowance has been recorded. The valuation allowance decreased by $17 in 2019, primarily due to a $19 release in valuation allowance resulting from a change in management judgment regarding the realizability of certain foreign deferred tax assets, including net operating loss and credit carryforwards, as a result of the change in expectations of income in future years.

As result of the Tax Act, the Company recognized an income tax benefit of $591 in the 2017 consolidated financial statements for items such as a revaluation of deferred tax assets and liabilities, partially offset by a one-time U.S. tax on the mandatory deemed repatriation of the Company's post-1986 foreign earnings. The Company did not record any material measurement period adjustment in 2018. The accounting for the income tax effects of the Tax Act was completed in 2018.

The Company files income tax returns in the U.S. federal jurisdiction, various states and foreign jurisdictions. The Company is no longer subject to examinations by tax authorities before the year 2012.

18. Earnings and Dividends per Share

The Company has unvested restricted stock units outstanding that are considered participating securities and, therefore, computes basic and diluted earnings per share under the two-class method. Basic earnings per share for the periods are based upon the weighted average number of shares of common stock outstanding during the periods. Diluted earnings per share include the effect of certain stock options and performance stock units.

	Year Ended December 31,		
	2019	2018	2017
Net income attributable to Westlake Chemical Corporation	$ 421	$ 996	$ 1,304
Less:			
Net income attributable to participating securities	(2)	(5)	(7)
Net income attributable to common shareholders	$ 419	$ 991	$ 1,297

The following table reconciles the denominator for the basic and diluted earnings per share computations shown in the consolidated statements of operations:

	Year Ended December 31,		
	2019	2018	2017
Weighted average common shares—basic	128,395,184	129,401,823	129,087,043
Plus incremental shares from:			
Assumed exercise of options and vesting of performance stock units	362,109	583,930	452,970
Weighted average common shares—diluted	128,757,293	129,985,753	129,540,013
Earnings per common share attributable to Westlake Chemical Corporation:			
Basic	$ 3.26	$ 7.66	$ 10.05
Diluted	$ 3.25	$ 7.62	$ 10.00

(in millions of dollars, except share amounts and per share data)

Excluded from the computation of diluted earnings per share for the years ended December 31, 2019 and 2018 are options to purchase 562,773 and 150,479 shares of common stock, respectively. There are no antidilutive options to purchase shares of common stock for the year ended December 31, 2017. These options were outstanding during the periods reported but were excluded because the effect of including them would have been antidilutive.

Dividends per Share

Dividends per common share for the years ended December 31, 2019, 2018 and 2017 were as follows:

	Year Ended December 31,		
	2019	2018	2017
Dividends per common share	$ 1.0250	$ 0.9200	$ 0.8012

19. Supplemental Information

Accrued Liabilities

Accrued liabilities were $768 and $676 at December 31, 2019 and 2018, respectively. Accrued rebates, which is a component of accrued liabilities, was $115 and $125 at December 31, 2019 and 2018, respectively. Other than the lease liability disclosed in Note 7, no other component of accrued and other liabilities was more than five percent of total current liabilities. Accrued liabilities with related parties were $41 and $54 at December 31, 2019 and 2018, respectively.

Non-cash Investing Activity

The change in capital expenditure accruals increasing additions to property, plant and equipment was $14 for the year ended December 31, 2019. The change in capital expenditure accruals reducing additions to property, plant and equipment was $48 and $9 for the years ended December 31, 2018 and 2017, respectively.

Restructuring, Transaction and Integration-related Costs

For the year ended December 31, 2019, the restructuring, transaction and integration-related costs of $37 primarily consisted of restructuring expenses of $26 and acquisition costs. The restructuring expenses represent charges associated with the write-off of certain assets in the Vinyls segment. For the year ended December 31, 2018, the restructuring, transaction and integration-related costs of $33 primarily consisted of integration-related consulting fees and acquisition costs.

Other Income, Net

For the year ended December 31, 2019, other income, net included income from unconsolidated subsidiaries and interest income of $17 and $20, respectively. For the year ended December 31, 2018, other income, net included income from pension and post-retirement plans, including a one-time settlement gain, income from unconsolidated subsidiaries and interest income of $25, $16 and $17, respectively. For the year ended December 31, 2017, other income, net included income from unconsolidated subsidiaries of $10. No other components of other income, net were material to the statements of operations for the years ended December 31, 2019, 2018 and 2017.

Operating Lease Supplemental Cash Flow

Supplemental cash flow information related to leases was as follows:

	Year Ended December 31, 2019
Operating cash flows from operating leases [(1)]	$ 112
Right-of-use assets obtained in exchange for operating lease obligations	119

(1) Includes cash paid for amounts included in the measurement of operating lease liabilities recorded in the consolidated balance sheets.

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Cash Flow Information

	Year Ended December 31,		
	2019	2018	2017
Cash paid for:			
Interest paid, net of interest capitalized	$ 116	$ 140	$ 154
Income taxes paid	77	376	84

20. Related Party and Affiliate Transactions

The Company and Lotte have a joint venture, LACC, to design, build and operate an ethylene facility with2.2 billion pounds per year of ethylene production capacity. See Note 9 for details of the Company's transactions with LACC.

The Company leases office space for management and administrative services from an affiliate of the Company's principal stockholder. For each of the years ended December 31, 2019, 2018 and 2017, the Company incurred lease payments of approximately $3.

Cypress Interstate Pipeline L.L.C., a natural gas liquids pipeline joint venture company in which the Company owns a50% equity stake, transports natural gas liquid feedstocks to the Company's Lake Charles complex through its pipeline. The Company accounts for its investments in Cypress Interstate Pipeline L.L.C. under the equity method of accounting. The investment in Cypress Interstate Pipeline L.L.C. at December 31, 2019 and 2018 was $8 and $8, respectively. For the years ended December 31, 2019, 2018 and 2017, the Company incurred pipeline lease service fees of approximately $14, $14 and $15, respectively, payable to this joint venture for usage of the pipeline. The amounts due to this joint venture were $1 and $2 at December 31, 2019 and 2018, respectively.

The Company owns an approximately 20% interest in both YNCORIS GmbH & Co. KG (formerly known as InfraServ Knapsack GmbH & Co. KG) and InfraServ Gendorf GmbH & Co. KG (collectively "Infraserv"). The Company accounts for its investments in Infraserv under the equity method of accounting. The Company has service agreements with these entities, including contracts to provide electricity, technical and leasing services to certain of the Company's production facilities in Germany. The investment in Infraserv was $57 and $57 at December 31, 2019 and 2018, respectively. For the years ended December 31, 2019, 2018 and 2017, the Company incurred charges aggregating approximately $155, $145 and $133, respectively, for these services. The amounts accrued for these related parties were approximately $36 and $48 at December 31, 2019 and 2018, respectively.

The Company owns a 50% interest in RS Cogen LLC ("RS Cogen"). RS Cogen operates a process steam, natural gas-fired cogeneration facility adjacent to the Lake Charles South Facility. The Company accounts for its investment in RS Cogen under the equity method of accounting. The investment in RS Cogen at December 31, 2019 and 2018 was $9 and $5, respectively. For the years ended December 31, 2019, 2018 and 2017, the Company recorded purchases of approximately $26, $25 and $26 from RS Cogen, respectively.

The Company owns a 50% interest in Vinyl Solutions, LLC ("Vinyl Solutions"). The Company accounts for its investments in Vinyl Solutions under the equity method of accounting. Vinyl Solutions is a compounding manufacturer of specialty compounds. For the years ended December 31, 2019, 2018 and 2017, the Company recorded sales of $5, $13 and $17, respectively, to Vinyl Solutions. The amounts receivable from this related party were$2 and $3 at December 31, 2019 and 2018, respectively.

Dividends received from equity method investments were$11, $5 and $6 for the years ended December 31, 2019, 2018 and 2017, respectively.

One of the Company's directors serves as Chairman, Chief Executive Officer and President of American Air Liquide Holdings, Inc. and Executive Vice President of the Air Liquide Group ("Air Liquide"). The Company purchased oxygen, nitrogen and utilities and leased cylinders from various affiliates of American Air Liquide Holdings, Inc. including Airgas and subsidiaries that were acquired in 2016 by Air Liquide aggregating approximately $32, $31 and $30 for the years ended December 31, 2019, 2018 and 2017, respectively. The Company also sold certain utilities to Air Liquide aggregating approximately$7, $7 and $7 during the years ended December 31, 2019, 2018 and 2017, respectively. The amounts payable to Air Liquide were$2 and $4 at December 31, 2019 and 2018, respectively, and the amounts receivable from Air Liquide were $0 and $1 at December 31, 2019 and 2018, respectively.

21. Westlake Chemical Partners LP

In 2014, the Company formed Westlake Partners to operate, acquire and develop ethylene production facilities and related assets. Also in 2014, Westlake Partners completed its initial public offering of 12,937,500 common units.

On March 29, 2019, Westlake Partners purchased an additional 4.5% newly issued limited partner interests in OpCo for approximately $201 and completed a private placement of 2,940,818 common units at a price of $21.40 per common unit for total proceeds of approximately $63. TTWF LP, the Company's principal stockholder and a related party, acquired 1,401,869 units out of the 2,940,818 common units issued in the private placement. At December 31, 2019, Westlake Partners had a 22.8% limited partner interest in OpCo, and the Company retained a 77.2% limited partner interest in OpCo and a significant interest in Westlake Partners through the Company's ownership of Westlake Partners' general partner, 40.1% of the limited partner interests (consisting of 14,122,230 common units) and incentive distribution rights.

On October 4, 2018, Westlake Partners and Westlake Partners GP, the general partner of Westlake Partners, entered into an Equity Distribution Agreement with UBS Securities LLC, Barclays Capital Inc., Citigroup Global Markets Inc., Deutsche Bank Securities Inc., RBC Capital Markets, LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated and Wells Fargo Securities, LLC to offer and sell Westlake Partners' common units, from time to time, up to an aggregate offering amount of $50. No common units were issued under this program in 2019 and 2018.

22. Commitments and Contingencies

The Company is involved in a number of legal and regulatory matters, principally environmental in nature, that are incidental to the normal conduct of its business, including lawsuits, investigations and claims. The outcome of these matters are inherently unpredictable. The Company believes that, in the aggregate, the outcome of all known legal and regulatory matters will not have a material adverse effect on its consolidated financial statements; however, under certain circumstances, if required to recognize costs in a specific period, when combined with other factors, outcomes with respect to such matters may be material to the Company's consolidated statements of operations in such period. The Company's assessment of the potential impact of environmental matters, in particular, is subject to uncertainty due to the complex, ongoing and evolving process of investigation and remediation of such environmental matters, and the potential for technological and regulatory developments. In addition, the impact of evolving claims and programs, such as natural resource damage claims, industrial site reuse initiatives and state remediation programs creates further uncertainty of the ultimate resolution of these matters. The Company anticipates that the resolution of many legal and regulatory matters, and in particular environmental matters, will occur over an extended period of time.

The Company and other caustic soda producers were named as defendants in multiple purported class action civil lawsuits filed since March 2019 in the U.S. District Court for the Western District of New York. The 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. The other defendants named in the lawsuits are Olin Corporation, K.A. Steel Chemicals (a wholly-owned subsidiary of Olin), Occidental Petroleum Corporation, Occidental Chemical Corporation d/b/a OxyChem, Shin-Etsu Chemical Co., Ltd., Shintech Incorporated, Formosa Plastics Corporation, and Formosa Plastics Corporation, U.S.A. Each of the lawsuits is filed on behalf of the respective named plaintiff or plaintiffs and a putative class comprised of either direct purchasers or indirect purchasers of caustic soda in the U.S. Plaintiffs seek an unspecified amount of damages and injunctive relief. The Company has already moved to dismiss the majority of the lawsuits filed and plans to file similar motions with respect to the remaining lawsuits. At this time, the Company is not able to estimate the impact, if any, that these lawsuits could have on the Company's consolidated financial statements either in the current period or in future periods.

Environmental. As of December 31, 2019 and 2018, the Company had reserves for environmental contingencies totaling approximately $47 and $54, respectively, most of which was classified as noncurrent liabilities. The Company's assessment of the potential impact of these environmental contingencies is subject to considerable uncertainty due to the complex, ongoing and evolving process of investigation and remediation, if necessary, of such environmental contingencies, and the potential for technological and regulatory developments.

Calvert City Proceedings. For several years, the Environmental Protection Agency (the "EPA") has been conducting remedial investigation and feasibility studies at the Company's Calvert City, Kentucky facility pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"). As the current owner of the Calvert City facility, the Company was named by the EPA as a potentially responsible party ("PRP") along with Goodrich Corporation ("Goodrich") and its successor-in-interest, PolyOne Corporation ("PolyOne"). On November 30, 2017, the EPA published a draft Proposed Plan, incorporating by reference an August 2015 draft Remedial Investigation ("RI") report, an October 2017 draft Feasibility Study ("FS") report and a new Technical Impracticability Waiver document dated December 19, 2017. On June 18, 2018, the EPA published an amendment to its Proposed Plan. The amended Proposed Plan describes a final remedy for the onshore portion of the site comprised of a containment wall, targeted treatment and supplemental hydraulic containment. The amended Proposed Plan also describes an interim approach to address the contamination under the river that would include recovery of any mobile contaminants by an extraction well along with further study of the extent of the contamination and potential treatment options. The EPA's estimated cost of implementation is $107, with an estimated $1 to $3 in annual operation and maintenance ("O&M") costs. In September 2018, the EPA published the Record of Decision ("ROD") for the site, formally selecting the preferred final and interim remedies outlined in the amended Proposed Plan. In October 2018, EPA issued Special Notice letters to the PRPs for the remedial design phase of work under the ROD. In April 2019, the PRPs and the EPA entered into an administrative settlement agreement and order on consent for remedial design. In October 2019, the PRPs received special notice letters for the remedial action phase of work at the site. The Company, jointly with the other PRPs, submitted a good faith offer response in December 2019. The Company's allocation of liability for remedial and O&M costs at the Calvert City site, if any, is governed by a series of agreements between the Company, Goodrich and PolyOne. These agreements are the subject of further litigation as described below.

In connection with the 1990 and 1997 acquisitions of the Goodrich chemical manufacturing complex in Calvert City, Goodrich agreed to indemnify the Company for any liabilities related to preexisting contamination at the complex. For its part, the Company agreed to indemnify Goodrich for post-closing contamination caused by the Company's operations. The soil and groundwater at the complex, which does not include the Company's nearby PVC facility, had been extensively contaminated by Goodrich's operations. In 1993, Goodrich spun off the predecessor of PolyOne, and that predecessor assumed Goodrich's indemnification obligations relating to preexisting contamination. In 2003, litigation arose among the Company, Goodrich and PolyOne with respect to the allocation of the cost of remediating contamination at the site. The parties settled this litigation in December 2007 and the case was dismissed. In the settlement, the parties agreed that, among other things: (1) PolyOne would pay 100% of the costs (with specified exceptions), net of recoveries or credits from third parties, incurred with respect to environmental issues at the Calvert City site from August 1, 2007 forward; and (2) either the Company or PolyOne might, from time to time in the future (but not more than once every five years), institute an arbitration proceeding to adjust that percentage. In May 2017, PolyOne filed a demand for arbitration. In this proceeding, PolyOne sought to readjust the percentage allocation of future costs and to recover approximately $11 from the Company in reimbursement of previously paid remediation costs. The Company's cross demand for arbitration seeking unreimbursed remediation costs incurred during the relevant period was dismissed from the proceedings when PolyOne paid such costs in full at the beginning of the arbitration hearing.

On July 10, 2018, PolyOne sued the Company in the U.S. District Court for the Western District of Kentucky and sought to invalidate the arbitration provisions in the parties' 2007 settlement agreement and enjoin the arbitration it had initiated in 2017. On July 30, 2018, the district court refused to enjoin the arbitration and, on January 15, 2019, the court granted the Company's motion to dismiss PolyOne's suit. On February 13, 2019, PolyOne appealed those decisions to the U.S. Court of Appeals for the Sixth Circuit. The court of appeals issued an opinion and final order on September 6, 2019, affirming the district court.

The arbitration hearing began in August 2018 and concluded in December 2018. On May 22, 2019, the arbitration panel issued its final award. It determined that PolyOne was responsible for 100% of the allocable costs at issue in the proceeding and that PolyOne would remain responsible for 100% of the costs to operate the existing groundwater remedy at the Calvert City site. In August 2019, PolyOne filed a motion to vacate before the U.S. District Court for the Western District of Kentucky, seeking to invalidate the final award under the Federal Arbitration Act. On February 11, 2020, the U.S. District Court for the Western District of Kentucky denied PolyOne's motion to vacate and affirmed the arbitration final award. PolyOne has until March 10, 2020 to appeal that order.

(in millions of dollars, except share amounts and per share data)

At this time, the Company is not able to estimate the impact, if any, that the issuance of the final award in the arbitration proceeding, or any subsequent judicial proceeding, could have on the Company's consolidated financial statements either in the current period or in later periods. Any cash expenditures that the Company might incur in the future with respect to the remediation of contamination at the Calvert City complex would likely be spread out over an extended period. As a result, the Company believes it is unlikely that any remediation costs allocable to it will be material in terms of expenditures made in any individual reporting period.

Environmental Remediation: Reasonably Possible Matters. The Company's assessment of the potential impact of environmental contingencies is subject to considerable uncertainty due to the complex, ongoing and evolving process of investigation and remediation, if necessary, of such environmental contingencies, and the potential for technological and regulatory developments. As such, in addition to the amounts currently reserved, the Company may be subject to reasonably possible loss contingencies related to environmental matters in the range of $70 to $130.

Other Commitments

The Company has various unconditional purchase obligations, primarily to purchase goods and services, including commitments to purchase various utilities, feedstock, nitrogen, oxygen, product storage and pipeline usage. Unrecorded unconditional purchase obligations for the next five years are as follows: $584, $621, $497, $461 and $360 in 2020, 2021, 2022, 2023 and 2024, respectively.

23. Segment and Geographic Information

Segment Information

The Company operates in two principal operating segments: Olefins and Vinyls. These segments are strategic business units that offer a variety of different products. The Company manages each segment separately as each business requires different technology and marketing strategies.

The Company's Olefins segment manufactures and markets polyethylene, styrene monomer and various ethylene co-products. The Company's ethylene production is used in the Company's polyethylene, styrene and VCM operations. In addition, the Company sells ethylene and ethylene co-products, primarily propylene, crude butadiene, pyrolysis gasoline and hydrogen, to external customers.

No single customer accounted for more than 10% of sales in the Olefins segment for the years ended December 31, 2019, 2018 or 2017.

The Company's Vinyl segment manufactures and markets PVC, VCM, ethylene dichloride ("EDC"), chlor-alkali (chlorine and caustic soda), chlorinated derivative products and ethylene. The Company also manufactures and sells building products fabricated primarily from PVC, including residential siding, trim and mouldings, pipe and fittings for various water, sewer and industrial applications, profiles for windows and doors, decking products, film for various inflatables, wall covering tapes, roofing applications and composite roof tiles. The Company's primary North American chemical manufacturing facilities are located in its Calvert City, Kentucky and Lake Charles, Plaquemine and Geismar, Louisiana sites. The Company also produces chlorine, caustic soda, hydrogen and chlorinated derivative products at its facilities in Natrium, Longview, Washington and Beauharnois, Quebec and PVC resin and PVC compounds at several facilities in Mississippi. In addition to North America, the Company also has manufacturing facilities in Europe and Asia.

As of December 31, 2019, the Company owned 36 building products and PVC compound facilities. The Company primarily uses its chlorine, VCM and PVC production to manufacture its building products. No single customer accounted for more than 10% of sales in the Vinyls segment for the years ended December 31, 2019, 2018 or 2017.

The accounting policies of the individual segments are the same as those described in Note 1.

	Year Ended December 31,		
	2019	2018	2017
Net external sales			
Olefins			
Polyethylene	$ 1,301	$ 1,519	$ 1,518
Styrene, feedstock and other	481	500	533
Total olefins	1,782	2,019	2,051
Vinyls			
PVC, caustic soda and other	5,068	5,359	4,769
Building products	1,268	1,257	1,221
Total vinyls	6,336	6,616	5,990
	$ 8,118	$ 8,635	$ 8,041
Intersegment sales			
Olefins	$ 324	$ 500	$ 393
Vinyls	1	2	1
	$ 325	$ 502	$ 394
Income (loss) from operations			
Olefins	$ 260	$ 573	$ 655

Vinyls	451	913	639
Corporate and other	(55)	(78)	(69)
	$ 656	$ 1,408	$ 1,225
Depreciation and amortization			
Olefins	$ 142	$ 138	$ 145
Vinyls	563	491	449
Corporate and other	8	12	7
	$ 713	$ 641	$ 601
Other income, net			
Olefins	$ 5	$ 4	$ 3
Vinyls	18	35	7
Corporate and other	15	13	5
	$ 38	$ 52	$ 15
Provision for (benefit from) income taxes			
Olefins	$ 60	$ 128	$ 63
Vinyls	40	212	(302)
Corporate and other	8	(40)	(19)
	$ 108	$ 300	$ (258)
Capital expenditures			
Olefins	$ 117	$ 110	$ 97
Vinyls	664	585	459
Corporate and other	6	7	21
	$ 787	$ 702	$ 577

(in millions of dollars, except share amounts and per share data)

A reconciliation of total segment income from operations to consolidated income before income taxes is as follows:

	Year Ended December 31,		
	2019	2018	2017
Income from operations for reportable segments	$ 656	$ 1,408	$ 1,225
Interest expense	(124)	(126)	(159)
Other income, net	38	52	15
Income before income taxes	$ 570	$ 1,334	$ 1,081

	December 31, 2019	December 31, 2018
Total assets		
Olefins	$ 1,991	$ 2,024
Vinyls	10,597	8,879
Corporate and other	673	699
	$ 13,261	$ 11,602

Geographic Information

	Year Ended December 31,		
	2019	2018	2017
Net sales to external customers(1)			
United States	$ 5,530	$ 6,114	$ 5,739
Foreign			
Canada	573	649	653
Germany	478	500	432
China	175	155	104
Italy	119	105	96
Taiwan	84	102	96
Other	1,159	1,010	921
	$ 8,118	$ 8,635	$ 8,041

	December 31, 2019	December 31, 2018
Long-lived assets		
United States	$ 6,012	$ 5,829
Foreign		
Germany	588	528
Other	312	238
	$ 6,912	$ 6,595

(1) Net sales are attributed to countries based on location of customer.

(in millions of dollars, except share amounts and per share data)

24. Quarterly Financial Information (Unaudited)

	Three Months Ended			
	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
Net sales	$ 2,025	$ 2,144	$ 2,066	$ 1,883
Gross profit	299	340	371	250
Income from operations	134	194	226	102
Net income	82	129	166	85
Net income attributable to Westlake Chemical Corporation	72	119	158	72
Earnings per common share attributable to Westlake Chemical Corporation:				
Basic	$ 0.56	$ 0.92	$ 1.22	$ 0.56
Diluted	$ 0.55	$ 0.92	$ 1.22	$ 0.56

	Three Months Ended			
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018
Net sales	$ 2,150	$ 2,235	$ 2,255	$ 1,995
Gross profit	542	552	539	354
Income from operations	401	404	396	207
Net income	297	288	318	131
Net income attributable to Westlake Chemical Corporation	287	278	308	123
Earnings per common share attributable to Westlake Chemical Corporation: (1)				
Basic	$ 2.21	$ 2.13	$ 2.36	$ 0.95
Diluted	$ 2.20	$ 2.12	$ 2.35	$ 0.95

(1) Basic and diluted earnings per common share ("EPS") for each quarter is computed using the weighted average shares outstanding during that quarter, while EPS for the year is computed using the weighted average shares outstanding for the year. As a result, the sum of the EPS for each of the four quarters may not equal the EPS for the year.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Disclosure, Controls and Procedures

We carried out an evaluation, under the supervision and with the participation of our management, including our President and Chief Executive Officer (our principal executive officer) and our Executive Vice President and Chief Financial Officer (our principal financial officer), of the effectiveness of our disclosure controls and procedures pursuant to Rules 13a-15 and 15d-15 under the Securities Exchange Act of 1934 as of the end of the period covered by this Form 10-K. Based upon that evaluation, our President and Chief Executive Officer and our Executive Vice President and Chief Financial Officer concluded that our disclosure controls and procedures are effective as of December 31, 2019 to provide reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to management as appropriate to allow timely decisions regarding required disclosure.

Internal Control Over Financial Reporting

Westlake's management's report on internal control over financial reporting appears on page 47 of this Annual Report on Form 10-K. In addition, PricewaterhouseCoopers LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report on Form 10-K, has also audited the effectiveness of internal control over financial reporting as of December 31, 2019, as stated in their report that appears on page 48 of this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

On February 14, 2020, the Compensation Committee (the "Committee") of the Board of Directors of the Company approved the one-time grant of certain restricted stock units ("RSUs") to the Company's chief executive officer, chief financial officer and each of the other executive officers listed in the Summary Compensation Table in the Company's proxy statement for its 2019 Annual Meeting of Stockholders (collectively, the "Named Executive Officers"). These awards were granted in lieu of an increase in the Named Executive Officers' base salary for 2020 and were in addition to the Company's annual awards of stock options, restricted stock units and performance stock units to the Named Executive Officers, which were also approved by the Committee on February 14, 2020.

The RSUs will vest on February 14, 2021. The Committee also granted additional RSUs that will vest on February 14, 2025 to Mr. Kearns as a one-time retention award. The number of these special RSUs and the grant date fair values are set forth below with respect to each of the Named Executive Officers:

Named Executive Officer	Number of RSUs	Grant Date Fair Value
Mr. Albert Chao	3,966 (1)	$ 261,012
Mr. James Chao	3,072 (1)	202,176
Mr. Steven Bender	1,478(1)	97,271
Mr. Robert Buesinger	1,128(1)	74,237
Mr. Roger Kearns	9,877(2) 2,150(1)	650,030 141,479

(1) These RSUs vest on February 14, 2021.

(2) These RSUs vest on February 14, 2025.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

Pursuant to Item 401(b) of Regulation S-K, the information required by this item with respect to our executive officers is set forth in Part I of this Form 10-K.

Item 11. Executive Compensation.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

Item 14. Principal Accountant Fees and Services.

The information required by Items 10, 11, 12, 13 and 14 is incorporated by reference to the Proxy Statement, which will be filed with the SEC pursuant to Regulation 14A under the Exchange Act within 120 days of December 31, 2019.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1) The financial statements listed in the Index to Consolidated Financial Statements in Item 8 of this Form 10-K are filed as part of this Form 10-K.

(a)(2) All schedules are omitted because the information is not applicable, not required, or has been furnished in the Consolidated Financial Statements or Notes thereto in Item 8 of this Form 10-K.

(a)(3) Exhibits

Exhibit No.	Exhibit Index
2.1	Agreement and Plan of Merger, dated June 10, 2016, by and among Westlake Chemical Corporation, Lagoon Merger Sub, Inc. and Axiall Corporation (incorporated by reference to Exhibit 2.1 to Westlake's Current Report on Form 8-K, filed on June 14, 2016, File No. 001-32260).
3.1	Amended and Restated Certificate of Incorporation of Westlake as filed with the Delaware Secretary of State on August 6, 2004 (incorporated by reference to Westlake's Registration Statement on Form S-1/A, filed on August 9, 2004).
3.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Westlake as filed with the Delaware Secretary of State on May 16, 2014 (incorporated by reference to Westlake's Current Report on Form 8-K, filed on May 16, 2014, File No. 001-32260).
3.3	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Westlake as filed with the Delaware Secretary of State on May 19, 2017 (incorporated by reference to Westlake's Current Report on Form 8-K, filed on May 19, 2017, File No. 001-32260).
3.4	Bylaws of Westlake (incorporated by reference to Westlake's Registration Statement on Form S-1/A, filed on August 9, 2004).
4.1†	Description of Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934
4.2	Indenture dated as of January 1, 2006 by and among Westlake, the potential subsidiary guarantors listed therein and JPMorgan Chase Bank, National Association, as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on January 13, 2006, File No. 1-32260).
4.3	Third Supplemental Indenture, dated as of July 2, 2010, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on July 8, 2010, File No. 1-32260).
4.4	Fourth Supplemental Indenture, dated as of December 2, 2010, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).
4.5	Fifth Supplemental Indenture, dated as of December 2, 2010, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).
4.6	Supplemental Indenture, dated as of December 31, 2007, among the Company, WPT LLC, Westlake Polymers LLC, Westlake Petrochemicals LLC, Westlake Styrene LLC, the other subsidiary guarantors party thereto and The Bank of New York Trust Company, N.A. related to the 6 ¾% senior notes (incorporated by reference to Exhibit 4.7 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2007, filed on February 20, 2008, File No. 1-32260).
4.7	Sixth Supplemental Indenture, dated as of July 17, 2012, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on July 16, 2012, File No. 1-32260).
4.8	Seventh Supplemental Indenture, dated as of February 12, 2013, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.16 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2012, filed on February 22, 2013, File No. 1-32260).

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Exhibit No.	Exhibit Index
4.9	Eighth Supplemental Indenture (including the form of the Notes), dated as of August 10, 2016, among Westlake Chemical Corporation, the Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to Westlake's Current Report on Form 8-K, filed on August 10, 2016, File No. 001-32260).
4.10	Fourth Supplemental Indenture, dated as of August 22, 2016, to the Indenture, dated as of February 1, 2013, by and among Axiall Corporation, the guarantors party thereto and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to Axiall's Current Report on Form 8-K, filed on August 22, 2016, File No. 001-09753).
4.11	Fifth Supplemental Indenture, dated as of August 22, 2016, to the Indenture, dated as of January 28, 2013, by and among Eagle Spinco Inc., the guarantors party thereto and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.2 to Axiall's Current Report on Form 8-K, filed on August 22, 2016, File No. 001-09753).
4.12	Ninth Supplemental Indenture (including the form of the Notes) as of September 7, 2016, among Westlake Chemical Corporation, the Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to Westlake's Current Report on Form 8-K, filed on September 7, 2016, File No. 001-32260).
4.13	Tenth Supplemental Indenture (including the form of the Notes), dated as of November 29, 2017, among Westlake Chemical Corporation, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to Westlake's Current Report on Form 8-K, filed on November 28, 2017, File No. 001-32260).
4.14	Eleventh Supplemental Indenture (including the form of the Notes), dated as of November 28, 2017, among Westlake Chemical Corporation, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to Westlake's Current Report on Form 8-K, filed on November 28, 2017, File No. 001-32260).
4.15	Twelfth Supplemental Indenture (including the form of the Notes), dated as of July 17, 2019, between Westlake Chemical Corporation and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to Westlake's Current Report on Form 8-K filed on July 17, 2019, File No. 1-32260).
4.16	Supplemental Indenture dated February 1, 2018, among Westlake Chemical Corporation, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.19 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017, filed on February 21, 2018, File No. 001-32260)
4.17	Paying Agency Agreement dated as of July 17, 2019, between Westlake Chemical Corporation and The Bank of New York Mellon, London Branch, as paying agent (incorporated by reference to Exhibit 4.4 to Westlake's Current Report on Form 8-K, filed on July 17, 2019, File No. 1-32260).
	Westlake and its subsidiaries are party to other long-term debt instruments not filed herewith under which the total amount of securities authorized does not exceed 10% of the total assets of Westlake and its subsidiaries on a consolidated basis. Pursuant to paragraph 4(iii)(A) of Item 601(b) of Regulation S-K, Westlake agrees to furnish a copy of such instruments to the SEC upon request.
10.1	Credit Agreement, dated as of August 10, 2016, by and between Bank of America, N.A. and Westlake International Holdings II C.V. (incorporated by reference to Exhibit 10.3 to Westlake's Quarterly Report on Form 10-Q for the quarter ended on September 30, 2016, and filed on November 9, 2016, File No. 001-32260).
10.2	Credit Agreement, dated as of August 23, 2016, by and among Westlake Chemical Corporation, the other borrowers and guarantors referred to therein, the lenders from time to time party thereto, the issuing banks party thereto and JPMorgan Chase Bank, National Association, as Administrative Agent, relating to a $1 billion senior unsecured revolving credit facility (incorporated by reference to Exhibit 10.1 to Westlake's Current Report on Form 8-K, filed on August 24, 2016, File No. 001-32260).
10.3	Joinder Agreement, dated as of October 14, 2016, among JPMorgan Chase Bank, N.A., as Administrative Agent, and certain new guarantors (as defined therein) (incorporated herein by reference to Exhibit 10.5 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2016, filed on February 22, 2017, File No. 001-32260).

Exhibit No.	Exhibit Index
10.4	Joinder Agreement, dated as of August 23, 2016, among Westlake Compounds, LLC, the Guarantors (as defined therein) and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated herein by reference to Exhibit 10.4 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017, filed on February 21, 2018, File No. 001-32260).
10.5	Amended and Restated Loan Agreement, dated as of July 2, 2010, by and between the Company and the Louisiana Local Government Environmental Facilities and Community Development Authority (incorporated by reference to Westlake's Current Report on Form 8-K, filed on July 8, 2010, File No. 1-32260).
10.6	Loan Agreement, dated as of November 1, 2010, by and between the Company and the Louisiana Local Government Environmental Facilities and Community Development Authority, relating to the 2035 GO Zone Notes (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).
10.7	Loan Agreement, dated as of November 1, 2010, by and between the Company and the Louisiana Local Government Environmental Facilities and Community Development Authority, relating to the 2035 IKE Zone Notes (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).
10.8	Amended and Restated Loan Agreement, dated as of November 1, 2017, by and between the Louisiana Local Government Environmental Facilities and Community Development Authority and Westlake Chemical Corporation (incorporated by reference to Exhibit 4.6 to Westlake's Current Report on Form 8-K, filed on November 28, 2017, File No. 001-32260).
10.9	Senior Unsecured Revolving Credit Agreement between Westlake Chemical OpCo LP and Westlake Development Corporation (incorporated by reference to Exhibit 10.13 to Westlake Chemical Partners LP's Registration Statement on Form S-1/A, filed on June 30, 2014, File No. 1-36567).
10.10	Senior Unsecured Revolving Credit Agreement by and among Westlake Chemical Partners LP and Westlake Chemical Finance Corporation, dated as of April 29, 2015 (incorporated by reference to Exhibit 10.1 to Westlake Chemical Partners LP's Current Report on Form 8-K filed on April 30, 2015, File No. 1-36567).
10.11	First Amendment to Senior Unsecured Revolving Credit Agreement by and between Westlake Chemical Partners LP, as borrower, and Westlake Chemical Finance Corporation, as lender, dated as of August 1, 2017 (incorporated by reference to Exhibit 10.1 to Westlake Chemical Partners LP's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017, File No. 01-36567).
10.12	Second Amendment to Senior Unsecured Revolving Credit Agreement by and between Westlake Chemical Partners LP, as borrower, and Westlake Chemical Finance Corporation, as lender, dated as of November 28, 2017 (incorporated herein by reference to Exhibit 10.12 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017, filed on February 21, 2018, File No. 001-32260).
10.13	Form of Registration Rights Agreement between Westlake and TTWF LP (incorporated by reference to Westlake's Registration Statement on Form S-1/A, filed on July 2, 2004).
10.14+	Westlake Chemical Corporation 2013 Omnibus Incentive Plan (as amended and restated as of May 19, 2017) (incorporated by reference to Appendix B to Westlake's Definitive Proxy Statement on Schedule 14A filed on April 7, 2017, File No.1-32260).
10.15+	Westlake Chemical Corporation Amended and Restated Annual Incentive Plan adopted by the Compensation Committee of the Board of Directors on March 24, 2011 (incorporated by reference to Westlake's Quarterly Report on Form 10-Q for the quarter ended March 31, 2011, filed on May 4, 2011, File No. 1-32260).
10.16+	Form of Stock Option Award Letter for 2015 Executive Officer Awards (incorporated by reference to Exhibit 10.3 to Westlake's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015, File No. 1-32260).
10.17+	Form of Long-Term Cash Performance Award Letter for 2015 Executive Officer Awards (incorporated by reference to Exhibit 10.5 to Westlake's Quarterly Report on From 10-Q for the quarter ended March 31, 2015, File No. 1-32260).
10.18	Investment Management Agreement among Westlake Chemical Corporation, Westlake Chemical OpCo LP and Westlake Chemical Partners LP, dated as of August 1, 2017 (incorporated herein by reference to Exhibit 10.1 to Westlake's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017, filed on November 7, 2017, File No. 001-32260).

Exhibit No.	Exhibit Index
10.19	Credit Agreement dated as of July 24, 2018, by and among Westlake Chemical Corporation, the lenders from time to time party thereto, the issuing banks party thereto and JPMorgan Chase Bank, National Association, as Administrative Agent, relating to a $1 billion senior unsecured revolving credit facility (incorporated by reference to Exhibit 10.1 to Westlake's Current Report on Form 8-K filed on July 26, 2018, File No. 001-32260).
10.20+	Form of Stock Option Award Letter for 2018 Executive Officer Awards (incorporated by reference to Exhibit 10.21 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017 filed on February 21, 2018, File No. 001-32260).
10.21+	Form of Restricted Stock Unit Award Letter for 2018 Executive Officer Awards (incorporated by reference to Exhibit 10.22 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017 filed on February 21, 2018, File No. 001-32260).
10.22+	Form of Special Incentive Award Letter for 2018 Executive Officer Awards (incorporated by reference to Exhibit 10.24 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017 filed on February 21, 2018, File No. 001-32260).
10.23+	Form of Performance Stock Unit Award Letter for 2019 Executive Officer Awards (incorporated by reference to Exhibit 10.25 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2018 filed on February 20, 2019, File No. 001-32260).
21†	Subsidiaries of Westlake.
23.1†	Consent of PricewaterhouseCoopers LLP.
31.1†	Rule 13a-14(a) / 15d-14(a) Certification (Principal Executive Officer).
31.2†	Rule 13a-14(a) / 15d-14(a) Certification (Principal Financial Officer).
32.1††	Section 1350 Certification (Principal Executive Officer and Principal 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 Inline 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 - The cover page interactive data file does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document and contained in Exhibit 101.

† Filed herewith.
†† Furnished herewith.
\+ Management contract, compensatory plan or arrangement.

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.

WESTLAKE CHEMICAL CORPORATION

Date: February 19, 2020

/S/ ALBERT CHAO
Albert Chao, President and Chief Executive Officer

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 dates indicated.

Signature	Title	Date
/S/ ALBERT CHAO **Albert Chao**	President and Chief Executive Officer (Principal Executive Officer)	February 19, 2020
/S/ M. STEVEN BENDER **M. Steven Bender**	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 19, 2020
/S/ GEORGE J. MANGIERI **George J. Mangieri**	Senior Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 19, 2020
/S/ JAMES CHAO **James Chao**	Chairman of the Board of Directors	February 19, 2020
/S/ ALBERT CHAO **Albert Chao**	Director	February 19, 2020
/S/ DAVID T. CHAO **David T. Chao**	Director	February 19, 2020
/S/ JOHN CHAO **John Chao**	Director	February 19, 2020
/S/ MICHAEL J. GRAFF **Michael J. Graff**	Director	February 19, 2020
/S/ MARIUS A. HAAS **Marius A. Haas**	Director	February 19, 2020
/S/ DOROTHY C. JENKINS **Dorothy C. Jenkins**	Director	February 19, 2020
/S/ MAX L. LUKENS **Max L. Lukens**	Director	February 19, 2020
/S/ MARK A. MCCOLLUM **Mark A. McCollum**	Director	February 19, 2020
/S/ R. BRUCE NORTHCUTT **R. Bruce Northcutt**	Director	February 19, 2020
/S/ JEFFREY W. SHEETS **Jeffrey W. Sheets**	Director	February 19, 2020

EXHIBIT 4.1

**DESCRIPTION OF THE REGISTRANT'S SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE
SECURITIES EXCHANGE ACT OF 1934**

Common Stock

The following is a summary of Westlake Chemical Corporation's ("Westlake," "we," "us" and "our") common stock, par value $0.01 per share, which is listed on the New York Stock Exchange under the symbol "WLK." This summary does not purport to be complete and is subject to and qualified by reference to our amended and restated certificate of incorporation and amended and restated bylaws and to provisions of applicable law.

Each share of common stock entitles the holder to one vote on all matters on which holders are permitted to vote, including the election of directors. There are no cumulative voting rights. Accordingly, holders of a majority of the total votes entitled to vote in an election of directors will be able to elect all of the directors standing for election. Subject to preferences that may be applicable to any outstanding preferred stock, the holders of the common stock will share equally on a per share basis any dividends when, as and if declared by the Board of Directors out of funds legally available for that purpose. If we are liquidated, dissolved or wound up, the holders of our common stock will be entitled to a ratable share of any distribution to stockholders, after satisfaction of all of our liabilities and of the prior rights of any outstanding class of our preferred stock. Our common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to our common stock. All outstanding shares of our common stock are fully paid and nonassessable.

Election and Removal of Directors

Our Board of Directors consists of between one and 15 directors, excluding any directors elected by holders of preferred stock pursuant to provisions applicable in the case of defaults. The exact number of directors will be fixed from time to time by resolution of the Board. Our Board of Directors is divided into three classes serving staggered three-year terms, with only one class being elected each year by our stockholders. At each annual meeting of stockholders, directors will be elected to succeed the class of directors whose terms have expired. This system of electing and removing directors may discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors. In addition, no director may be removed except for cause, and directors may be removed for cause by an affirmative vote of shares representing a majority of the shares then entitled to vote at an election of directors. Any vacancy occurring on the Board of Directors and any newly created directorship may only be filled by the affirmative vote of a majority of the remaining directors in office.

Stockholder Meetings

Our amended and restated certificate of incorporation and our amended and restated bylaws provide that special meetings of our stockholders may be called only by the chairman of our Board of Directors or a majority of the directors. Our amended and restated certificate of incorporation and our amended and restated bylaws specifically deny any power of any other person to call a special meeting.

Stockholder Action by Written Consent

Our amended and restated certificate of incorporation and our amended and restated bylaws provide that holders of our common stock will not be able to act by written consent without a meeting, unless such consent is unanimous.

Amendment of Certificate of Incorporation

The provisions of our amended and restated certificate of incorporation described above under"—Election and Removal of Directors," "—Stockholder Meetings" and "—Stockholder Action by Written Consent" may be amended only by the affirmative vote of holders of at least 75% of the voting power of our outstanding shares of voting stock, voting together as a single class. The affirmative vote of holders of at least a majority of the voting power of our outstanding shares of voting stock is generally required to amend other provisions of our amended and restated certificate of incorporation.

Amendment of Bylaws

Our amended and restated bylaws may generally be altered, amended or repealed, and new bylaws may be adopted, with:

- the affirmative vote of a majority of directors present at any regular or special meeting of the Board of Directors called for that purpose, provided that any alteration, amendment or repeal of, or adoption of any bylaw inconsistent with specified provisions of the bylaws, including those related to special and annual meetings of stockholders, action of stockholders by written consent, classification of the Board of Directors, nomination of directors, special meetings of directors, removal of directors, committees of the Board of Directors and indemnification of directors and officers, requires the affirmative vote of at least 75% of all directors in office at a meeting called for that purpose; or
- the affirmative vote of holders of 75% of the voting power of our outstanding shares of voting stock, voting together as a single class.

Other Limitations on Stockholder Actions

Our amended and restated bylaws also impose some procedural requirements on stockholders who wish to:

- make nominations in the election of directors;
- propose that a director be removed;
- propose any repeal or change in our bylaws; or
- propose any other business to be brought before an annual or special meeting of stockholders.

Under these procedural requirements, in order to bring a proposal before a meeting of stockholders, a stockholder must deliver timely notice of a proposal pertaining to a proper subject for presentation at the meeting to our corporate secretary along with the following:

- a description of the business or nomination to be brought before the meeting and the reasons for conducting such business at the meeting;

- the stockholder's name and address;
- the number of shares of our stock beneficially owned by the stockholder and evidence of such ownership; and
- the names and addresses of all persons with whom the stockholder is acting in concert and a description of all arrangements and understandings with those persons, and the number of shares of our stock such persons beneficially own.

To be timely, a stockholder must generally deliver notice:

- in connection with an annual meeting of stockholders, not less than 120 nor more than 180 days prior to the date on which the annual meeting of stockholders was held in the immediately preceding year, but in the event that the date of the annual meeting is more than 30 days before or more than 60 days after the anniversary date of the preceding annual meeting of stockholders, a stockholder notice will be timely if received by us not later than the close of business on the later of (1) the 120th day prior to the annual meeting and (2) the 10th day following the day on which we first publicly announce the date of the annual meeting; or
- in connection with the election of a director at a special meeting of stockholders, not less than 40 nor more than 60 days prior to the date of the special meeting, but in the event that less than 55 days' notice or prior public disclosure of the date of the special meeting of the stockholders is given or made to the stockholders, a stockholder notice will be timely if received by us not later than the close of business on the 10th day following the day on which a notice of the date of the special meeting was mailed to the stockholders or the public disclosure of that date was made.

In order to submit a nomination for our Board of Directors, a stockholder must also submit any information with respect to the nominee that we would be required to include in a proxy statement, as well as some other information. If a stockholder fails to follow the required procedures, the stockholder's proposal or nominee will be ineligible and will not be voted on by our stockholders.

Limitation on Liability of Directors

Our amended and restated certificate of incorporation provides that no director will be personally liable to us or our stockholders for monetary damages for breach of fiduciary duties as a director, except as required by applicable law, as in effect from time to time. Currently, Delaware law requires that liability be imposed for the following:

- any breach of the director's duty of loyalty to our company or our stockholders;
- any act or omission not in good faith or which involved intentional misconduct or a knowing violation of law;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; and
- any transaction from which the director derived an improper personal benefit.

Our amended and restated bylaws provide that, to the fullest extent permitted by law, we will indemnify any officer or director of our company against all damages, claims and liabilities arising out of the fact that the person is or was our director or officer, or served any other enterprise at our request as a director, officer, employee, agent or fiduciary. We will reimburse the expenses, including attorneys' fees, incurred by a person indemnified by this provision when we receive an undertaking to repay such amounts if it is ultimately determined that the person is not entitled to be indemnified by us. Amending this provision will not reduce our indemnification obligations relating to actions taken before an amendment.

Anti-Takeover Effects of Some Provisions

Some provisions of our amended and restated certificate of incorporation and amended and restated bylaws could make the following more difficult:

- acquisition of control of us by means of a proxy contest or otherwise; or
- removal of our incumbent officers and directors.

These provisions, as well as our ability to issue preferred stock, are designed to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our Board of Directors. We believe that the benefits of increased protection give us the potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us, and that the benefits of this increased protection outweigh the disadvantages of discouraging those proposals, because negotiation of those proposals could result in an improvement of their terms.

Transactions and Corporate Opportunities

Our amended and restated certificate of incorporation includes provisions that regulate and define the conduct of specified aspects of the business and affairs of our company. These provisions serve to determine and delineate the respective rights and duties of our company, our principal stockholder, TTWF LP, and its direct and indirect equity owners and directors, officers, employees, partners or equity owners of such entities (the "principal stockholder affiliates"), and some of our directors and officers in anticipation of the following:

- the principal stockholder affiliates serving as our directors and/or officers;
- the principal stockholder affiliates engaging in lines of business that are the same as, or similar to, our lines of business;
- the principal stockholder affiliates having an interest in the same areas of corporate opportunity as we have; and
- we and the principal stockholder affiliates engaging in material business transactions.

We may enter into agreements with the principal stockholder affiliates to engage in any transaction. We may also enter into agreements with the principal stockholder affiliates to compete or not to compete with each other, including agreements to allocate, or to cause our directors, officers and employees and the principal stockholder affiliates to allocate, opportunities between the principal stockholder affiliates and us. Our amended and restated certificate of incorporation provides that no such agreement will be considered contrary to any fiduciary duty of the principal stockholder affiliates, as our direct and indirect controlling stockholders, or our directors, officers or employees. Neither the principal stockholder affiliates nor any of our directors, officers or employees who are also principal stockholder affiliates are under any fiduciary duty to us to refrain from acting on our behalf or on behalf of the principal stockholder affiliates in respect of any such agreement or transaction. These provisions are generally subject to the corporate opportunity obligations described below with which the principal stockholder affiliates and our officers and directors who are also principal stockholder affiliates must comply.

Under our amended and restated certificate of incorporation, the principal stockholder affiliates have no duty to refrain from engaging in activities or lines of business similar to ours or from doing business with any of our clients, customers or vendors and, except as discussed in the above paragraph, the principal stockholder affiliates will not be liable to us or our stockholders for breach of any fiduciary duty as a stockholder by reason of any of these activities. In addition, if the principal stockholder affiliates or one of our directors or officers who is also a principal stockholder affiliate acquires knowledge of a potential transaction or matter which may be a corporate opportunity for both our company and the principal stockholder affiliates, then neither the principal stockholder affiliates nor any such person will have a duty to communicate or offer this corporate opportunity to us and will not be liable to us or our stockholders for breach of any fiduciary duty by reason of the fact that the principal stockholder affiliates pursue or acquire the corporate opportunity for themselves, direct the corporate opportunity to another person or do not communicate information regarding the corporate opportunity to us, so long as the principal stockholder affiliates act in a manner consistent with the following policy: A corporate opportunity offered to the principal stockholder affiliates or to any person who is one of our officers or directors and who is also a principal stockholder affiliate will belong to the principal stockholder affiliates, unless the opportunity was expressly offered in writing to the principal stockholder affiliates solely in their capacity as direct and indirect stockholders of our company or to that person solely in his or her capacity as one of our directors or officers.

Anyone becoming one of our stockholders will be deemed to have notice of and consented to these provisions of our amended and restated certificate of incorporation. Our amended and restated certificate of incorporation provides that in no event shall any amendment of these provisions subject any principal stockholder affiliate to liability for any act or omission occurring prior to such amendment for which such person would be deemed not to be liable under these provisions prior to such amendment.

Delaware Business Combination Statute

We have expressly elected not to be subject to Section 203 of the General Corporation Law of the State of Delaware, which is described below. However, our stockholders can amend our amended and restated certificate of incorporation and amended and restated bylaws to elect to be subject to Section 203. Section 203 provides that, subject to specified exceptions, an interested stockholder of a Delaware corporation is not permitted to engage in any business combination, including mergers or consolidations or acquisitions of additional shares of the corporation, with the corporation for a three-year period following the time that stockholder became an interested stockholder, unless one of the following conditions is met:

- prior to the time the stockholder became an interested stockholder, the Board of Directors approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, other than statutorily excluded shares; or
- on or subsequent to the time the stockholder became an interested stockholder, the business combination is approved by the Board of Directors and authorized at an annual or special meeting of stockholders by the affirmative vote of at least 66 ⅔% of the outstanding voting stock which is not owned by the interested stockholder.

Except as otherwise set forth in Section 203, "interested stockholder" means:

- any person that is the owner of 15% or more of the outstanding voting stock of the corporation, or is an affiliate or associate of the corporation and was the owner of 15% or more of the outstanding voting stock of the corporation at any time within three years immediately prior to the date of determination; and
- the affiliates and associates of any such person.

If we ever become subject to Section 203, it may be more difficult for a person who is an interested stockholder to effect various business combinations with us for the applicable three-year period. Section 203, if it becomes applicable, also may have the effect of preventing changes in our management. It is possible that Section 203, if it becomes applicable, could make it more difficult to accomplish transactions which our stockholders may otherwise deem to be in their best interests. The provisions of Section 203, if it becomes applicable, may cause persons interested in acquiring us to negotiate in advance with our Board of Directors. The restrictions on business combinations set forth in Section 203 are not applicable to the principal stockholder so long as the principal stockholder holds 15% or more of our outstanding shares of common stock. Because we are not currently subject to Section 203, the principal stockholder, as a controlling stockholder, may find it easier to sell its controlling interest to a third party because Section 203 would not apply to the third party.

1.625% Senior Notes due 2029

The following is a summary of our 1.625% senior notes due 2029, which are listed on the New York Stock Exchange under the symbol "WLK29." This summary does not purport to be complete and is subject to and qualified by reference to the indenture governing the notes.

General

Westlake issued the notes under an indenture, dated as of January 1, 2006, among itself, the potential subsidiary guarantors listed therein and The Bank of New York Mellon Trust Company, N.A. (as successor to JPMorgan Chase Bank, National Association), as trustee, as supplemented and amended by a twelfth supplemental indenture entered into on July 17, 2019. The terms of the notes include those stated in the indenture and those made part of the indenture by reference to the Trust Indenture Act of 1939, as amended.

The indenture does not limit the amount of debt securities that may be issued under the indenture. We may issue additional debt securities under the indenture from time to time in one or more series. We may from time to time, without giving notice to or seeking the consent of the holders of the notes, issue additional notes having the same terms (except for the issue date, and, in some cases, the public offering price and, to the extent applicable, the first date of interest accrual and the first interest payment date) as, and ranking equally and ratably with, the notes; *provided* that any additional notes shall be issued under a separate CUSIP or ISIN number unless the additional notes are issued pursuant to a "qualified reopening" of the original series, are otherwise treated as part of the same "issue" of debt instruments as the original series or are issued with no more than a de minimis amount of original discount, in each case for U.S. federal income tax purposes. Any additional notes having such similar terms, together with the notes, will constitute a single series of securities under the indenture, including for purposes of voting. No such additional notes may be issued if an "event of default" (as such term is defined below) has occurred and is continuing with respect to the notes.

The registered holder of a note will be treated as the owner of the note for all purposes. Only registered holders will have rights under the indenture.

Principal, Maturity and Interest

Westlake issued €700,000,000 in aggregate principal amount of notes in July 2019. The notes will mature on July 17, 2029. Interest on the notes accrues at the rate of 1.625% per annum and is payable annually in arrears on July 17 of each year, commencing on July 17, 2020. Westlake will make each interest payment in accordance with the provisions set forth under "—Payments and Paying Agents" below.

Interest on the notes accrues from the date of original issuance or, if interest has already been paid or duly provided for, from the date it was most recently paid or duly provided for. Interest on the notes is computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the notes (or from July 17, 2019, if no interest has been paid on the notes), to but excluding the next scheduled interest payment date. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Market Association.

If the principal of or any premium or interest on the notes is payable on a day that is not a business day, the payment will be made on the following business day and no interest shall accrue for the intervening period. For these purposes, a "business day" is any day that is: (a) not a Saturday, a Sunday or a day on which banking institutions in any of New York, New York, Houston, Texas or London, United Kingdom is authorized or obligated by law, regulation or executive order to remain closed; and (b) a day on which commercial banking institutions are open for business and carrying out transactions in Euros in the United Kingdom and in the country in which the paying agent has its specified office and is a day on which the Trans-European Automated Real Time Gross Settlement Express Transfer System is operating.

The notes were issued in denominations of €100,000 and integral multiples of €1,000 in excess thereof in book-entry form only. See "—Book-Entry, Clearance and Settlement."

Issuance in Euro

Initial holders were required to pay for the notes in Euros, and all payments of interest and principal, including payments made upon any redemption of the notes, will be payable in Euros. If the Euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or if the Euro is no longer being used by the then member states of the European Monetary Union that have adopted the Euro as their currency or for the settlement of transactions by public institutions of or within the international banking community, then all payments in respect of the notes will be made in dollars until the Euro is again available to us or so used. The amount payable on any date in Euros will be converted into dollars on the basis of the most recently available market exchange rate for Euros. Any payment in respect of the notes so made in dollars will not constitute an event of default under the notes or the indenture governing the notes. Neither the trustee nor the paying agent shall have any responsibility for any calculation or conversion in connection with the foregoing.

Ranking

The notes are senior unsecured obligations of Westlake and rank equally in right of payment with all existing and future unsecured and unsubordinated obligations of Westlake.

The notes effectively rank junior to all existing and future secured indebtedness of Westlake to the extent of the value of the assets securing such indebtedness. In the event of any distribution or payment of Westlake's assets in any foreclosure, dissolution, winding-up, liquidation, reorganization or other bankruptcy proceeding, holders of secured indebtedness will have prior claim to such assets that constitute their collateral. Holders of the notes will participate ratably with all holders of our senior unsecured indebtedness, and potentially with all of our other general creditors, based upon the respective amounts owed to each holder or creditor, in our remaining assets.

In addition, none of our subsidiaries guarantee the notes. We may in the future incur indebtedness guaranteed by our subsidiaries. In the event of a bankruptcy, liquidation or reorganization of any of these subsidiaries, that subsidiary will pay the holders of its debt, the holders of any of our debt which is guaranteed by such subsidiary and its trade creditors before it will be able to distribute any of its assets to us. Accordingly, the notes are effectively subordinated to creditors, including trade creditors, if any, of our subsidiaries.

Optional Redemption

The notes are redeemable at our option, in whole or in part, at any time and from time to time prior to April 17, 2029 (three months prior to the maturity date of the notes (the "Par Call Date")), in principal amounts of €1,000 and integral multiples of €1,000 in excess thereof, provided that the unredeemed portion of a note must be in a minimum principal amount of €100,000, for a redemption price equal to the greater of:

- 100% of the principal amount of the notes to be redeemed; and
- the sum of the present values of the Remaining Scheduled Payments on the notes being redeemed that would be due if the notes matured on the Par Call Date (excluding accrued and unpaid interest to the redemption date), discounted to the redemption date on an annual basis (ACTUAL/ACTUAL (ICMA)) at the applicable Comparable Government Bond Rate plus 30 basis points,

plus accrued and unpaid interest on the notes being redeemed to the redemption date.

In addition, at any time on or after the Par Call Date, the notes will be redeemable at our option, in whole or in part, in principal amounts of €1,000 and integral multiples of €1,000 in excess thereof, provided that the unredeemed portion of a note must be in a minimum principal amount of €100,000, at a redemption price equal to 100% of the principal amount of the notes being redeemed plus accrued and unpaid interest to the redemption date.

"Comparable Government Bond" means, in relation to any Comparable Government Bond Rate calculation, at the discretion of an independent investment bank selected by us, a German government bond whose maturity is closest to the maturity of the notes to be redeemed, or if such independent investment bank in its discretion determines that such similar bond is not in issue, such other German government bond as such independent investment bank may, with the advice of three brokers of, and/or market makers in, German government bonds selected by us, determine to be appropriate for determining the Comparable Government Bond Rate.

"Comparable Government Bond Rate" means, with respect to any redemption date, the price, expressed as a percentage (rounded to three decimal places, with 0.0005 being rounded upwards), at which the gross redemption yield on the notes to be redeemed, if they were to be purchased at such price on the third business day prior to the date fixed for redemption, would be equal to the gross redemption yield on such business day of the Comparable Government Bond (as defined above) on the basis of the middle market price of the Comparable Government Bond prevailing at 11:00 a.m. (London time) on such business day as determined by an independent investment bank selected by us.

"*Remaining Scheduled Payments*" means the remaining scheduled payments of the principal of and interest on each note to be redeemed that would be due after the related redemption date but for such redemption.

We will deliver notice of a redemption not less than 10 days nor more than 60 days before the redemption date to holders of notes to be redeemed. Once notice of redemption is sent, the notes called for redemption will become due and payable on the redemption date at the applicable redemption price. A notice of redemption may not be conditional.

If we elect to redeem less than all of the notes, and such notes are at the time represented by a global note, then the particular notes to be redeemed will be selected in accordance with the procedures of the Clearing Systems. If we elect to redeem less than all of the notes, and any of such notes are not represented by a global note, then the notes to be redeemed shall be selected by lot or pro rata. Unless there is a default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on the notes or portions thereof called for redemption.

We may at any time, and from time to time, purchase the notes at any price or prices in the open market, through negotiated transactions, by tender offer or otherwise.

Redemption for Tax Reasons

If, as a result of any change in, or amendment to, the laws (or any regulations or rulings promulgated under the laws) of the United States (or any taxing authority in the United States), or any change in, or amendment to, an official position regarding the application or interpretation of such laws, regulations or rulings, which change or amendment is announced and becomes effective on or after the issue date of the notes, we determine (based on an opinion issued to us by counsel of recognized standing with respect to U.S. federal income tax matters) that we become obligated to pay additional amounts as described under the heading "—Payment of Additional Amounts" with respect to the notes, then we may at any time at our option redeem, in whole, but not in part, the notes on not less than 30 nor more than 60 days' prior notice, at a redemption price equal to 100% of their principal amount, together with accrued and unpaid interest on the notes to, but not including, the date fixed for redemption.

Payment of Additional Amounts

We will, subject to the exceptions and limitations set forth below, pay as additional interest on the notes such additional amounts as are necessary in order that the net payment of the principal of and interest on the notes to a holder that is not a United States person (as defined below), after withholding or deduction for any present or future tax, assessment or other governmental charge imposed by the United States or a taxing authority in the United States, will not be less than the amount provided in the notes to be then due and payable; provided, however, that the foregoing obligation to pay additional amounts shall not apply:

(1) to any tax, assessment or other governmental charge that is imposed solely by reason of the holder (or the beneficial owner for whose benefit such holder holds such note), or a fiduciary, settlor, beneficiary, member or shareholder of the holder if the holder is an estate, trust, partnership or corporation, or a person holding a power over an estate or trust administered by a fiduciary holder, being considered as:

(a) being or having been engaged in a trade or business in the United States or having or having had a permanent establishment in the United States;

(b) having a current or former connection with the United States (other than a connection arising solely as a result of the ownership of the notes or the receipt of any payment or the enforcement of any rights thereunder), including being or having been a citizen or resident of the United States;

(c) being or having been a personal holding company, a passive foreign investment company or a controlled foreign corporation for United States federal income tax purposes or a corporation that has accumulated earnings to avoid United States federal income tax;

(d) being or having been a "10-percent shareholder" of the Company as defined in section 871(h)(3) of the United States Internal Revenue Code of 1986, as amended (the "Code"), or any successor provision; or

(e) being a bank receiving payments on an extension of credit made pursuant to a loan agreement entered into in the ordinary course of its trade or business;

(2) to any holder that is not the sole beneficial owner of the notes, or a portion of the notes, or that is a fiduciary, partnership or limited liability company, but only to the extent that a beneficial owner with respect to the holder, a beneficiary or settlor with respect to the fiduciary, or a beneficial owner or member of the partnership or limited liability company would not have been entitled to the payment of an additional amount had the beneficiary, settlor, beneficial owner or member received directly its beneficial or distributive share of the payment;

(3) to any tax, assessment or other governmental charge that would not have been imposed but for the failure of the holder or any other person to comply with certification, identification or information reporting requirements concerning the nationality, residence, identity or connection with the United States of the holder or beneficial owner of the notes, if compliance is required by statute, by regulation of the United States or any taxing authority therein or as a precondition to exemption from such tax, assessment or other governmental charge;

(4) to any tax, assessment or other governmental charge that is imposed otherwise than by withholding by us or an applicable withholding agent from the payment;

(5) to any estate, inheritance, gift, sales, transfer, wealth, capital gains or personal property tax or similar tax, assessment or other governmental charge;

(6) to any tax, assessment or other governmental charge that would not have been imposed but for the presentation by the holder of any note, where presentation is required, for payment on a date more than 30 days after the date on which payment became due and payable or the date on which payment thereof is duly provided for, whichever occurs later;

(7) to any tax, assessment or other governmental charge imposed under Sections 1471 through 1474 of the Code (or any amended or successor provisions), any current or future regulations or official interpretations thereof, any agreement entered into pursuant to Section 1471(b) of the Code or any fiscal or regulatory legislation, rules or practices adopted pursuant to any intergovernmental agreement entered into in connection with the implementation of such sections of the Code; or

(8) in the case of any combination of items (1), (2), (3), (4), (5), (6) and (7).

The notes are subject in all cases to any tax, fiscal or other law or regulation or administrative or judicial interpretation applicable to the notes. Except as specifically provided under this heading "—Payment of Additional Amounts," we will not be required to make any payment for any tax, assessment or other governmental charge imposed by any government or a political subdivision or taxing authority of or in any government or political subdivision.

As used under this heading "—Payment of Additional Amounts" and under the heading "—Redemption for Tax Reasons", the term "United States" means the United States of America, the states of the United States, and the District of Columbia, and the term "United States person" means any individual who is a citizen or resident of the United States for United States federal income tax purposes, a corporation, partnership or other entity created or organized in or under the laws of the United States, any state of the United States or the District of Columbia, or any estate or trust the income of which is subject to United States federal income taxation regardless of its source.

Sinking Fund

The notes are not entitled to any sinking fund.

Change of Control Triggering Event

Upon the occurrence of a Change of Control Triggering Event, unless we have exercised our right to redeem the notes as described under "—Optional Redemption" in accordance with the indenture, each holder of the notes will have the right to require us to purchase all or a portion (€1,000 or an integral multiple of €1,000 in excess thereof) of such holder's notes pursuant to the offer described below (the "Change of Control Offer"), at a purchase price equal to 101% of the principal amount thereof plus accrued and unpaid interest, if any, to the date of purchase (the "Change of Control Payment"), subject to the rights of holders of the notes on the relevant record date to receive interest due on the relevant interest payment date; provided that the principal amount of a note remaining outstanding after a repurchase in part shall be €100,000 or an integral multiple of €1,000 in excess thereof.

Within 30 days following the date upon which the Change of Control Triggering Event occurred, or at our option, prior to any Change of Control but after the public announcement of the pending Change of Control, we will be required to deliver a notice to each holder of the notes not redeemed, with a copy to the trustee, which notice will govern the terms of the Change of Control Offer. Such notice will, among other things, state the purchase date, which must be no earlier than 30 days nor later than 60 days from the date such notice is sent, other than as may be required by applicable law (the "Change of Control Payment Date"), describe the transaction or transactions constituting the Change of Control Triggering Event and offer to repurchase the notes. The notice, if sent prior to the date of consummation of the Change of Control, will state that the Change of Control Offer is conditioned on the Change of Control being consummated on or prior to the Change of Control Payment Date.

On the Change of Control Payment Date, we will, to the extent lawful:

- accept or cause a third party to accept for payment all notes or portions of notes properly tendered pursuant to the Change of Control Offer;
- deposit or cause a third party to deposit with the paying agent an amount equal to the Change of Control Payment in respect of all notes or portions of notes properly tendered; and
- deliver or cause to be delivered to the trustee the notes to be redeemed properly accepted together with an officer's certificate stating the aggregate principal amount of notes or portions of notes being repurchased and that all conditions precedent to the Change of Control Offer and to the repurchase by us of notes pursuant to the Change of Control Offer have been complied with.

We will not be required to make a Change of Control Offer with respect to the notes if (1) a third party makes such an offer in the manner, at the times and otherwise in compliance with the requirements for such an offer otherwise required to be made by us and such third party purchases all such notes properly tendered and not withdrawn under its offer or (2) a notice of redemption has been given to the holders of all of the notes in accordance with the terms of the indenture, unless and until there is a default in payment of the redemption price.

A Change of Control Offer may be made in advance of a Change of Control, conditional upon such Change of Control, if a definitive agreement is in place with respect to the Change of Control at the time of making of the Change of Control Offer.

We will comply in all material respects with the requirements of Rule 14e-1 under the Exchange Act, and any other securities laws and regulations thereunder to the extent those laws and regulations are applicable in connection with the repurchase of the notes as a result of a Change of Control Triggering Event. To the extent that the provisions of any such securities laws or regulations conflict with the Change of Control Offer provisions of the notes, we will comply with those securities laws and regulations and will not be deemed to have breached our obligations under the Change of Control Offer provisions of the notes by virtue of any such conflict.

For purposes of the foregoing discussion of a Change of Control Offer, the following definitions are applicable:

"*Below Investment Grade Rating Event*" means the rating on the notes is lowered and as a result the notes cease to be rated Investment Grade by each of the Rating Agencies on any date during the period (the "*Trigger Period*") commencing on the earlier of (a) the occurrence of a Change of Control and (b) the first public announcement by us of any Change of Control (or pending Change of Control) and ending 60 days following the consummation of such Change of Control (which Trigger Period will be extended if the rating of the notes is under publicly announced consideration for possible downgrade by any Rating Agency on such 60th day, such extension to last with respect to each Rating Agency until the date on which such Rating Agency considering such possible downgrade either (x) rates the notes below Investment Grade or (y) publicly announces that it is no longer considering the notes for possible downgrade; provided, that no such extension will occur if on such 60th day the notes are rated Investment Grade not subject to review for possible downgrade by any Rating Agency); provided, that a rating event will not be deemed to have occurred in respect of a particular Change of Control (and thus will not be deemed a Below Investment Grade Rating Event for purposes of the definition of Change of Control Triggering Event) if each Rating Agency making the reduction in rating does not publicly announce or confirm or inform the trustee in writing at our request that the reduction was the result, in whole or in part, of any event or circumstance comprised of or arising as a result of, or in respect of, the Change of Control (whether or not the applicable Change of Control has occurred at the time of the Below Investment Grade Rating Event). If any Rating Agency withdraws its rating on the notes or otherwise ceases to provide a rating on the notes on any day during the Trigger Period for any reason and we have not selected a replacement Rating Agency pursuant to the terms of the indenture, the rating of such Rating Agency shall be deemed to be below an Investment Grade Rating on such day.

"*Beneficial Owner*" has the meaning assigned to such term in Rule 13d-3 and Rule 13d-5 under the Exchange Act, except that in calculating the beneficial ownership of any particular "person" as such term is used in Section 13(d)(3) of the Exchange Act, such "person" will be deemed to have beneficial ownership of all securities that such "person" has the right to acquire by conversion or exercise of other securities, whether such right is currently exercisable or is exercisable only upon the occurrence of a subsequent condition.

"*Change of Control*" means the occurrence of any of the following after the date of issuance of the notes:

- the direct or indirect sale, lease, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the assets of Westlake and its Subsidiaries taken as a whole to any "person" or "group" (as those terms are used in Section 13(d)(3) of the Exchange Act) other than to Westlake or one of its Subsidiaries;
- the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any "person" or "group" (as those terms are used in Section 13(d)(3) of the Exchange Act, it being agreed that an employee of Westlake or any of its Subsidiaries for whom shares are held under an employee stock ownership, employee retirement, employee savings or similar plan and whose shares are voted in accordance with the instructions of such employee shall not be a member of a "group" (as that term is used in Section 13(d)(3) of the Exchange Act) solely because such employee's shares are held by a trustee under said plan) becomes the ultimate Beneficial Owner, directly or indirectly, of our Voting Stock representing more than 50% of the voting power of our outstanding Voting Stock;
- we consolidate with, or merge with or into, any Person, or any Person consolidates with, or merges with or into, us, in any such event pursuant to a transaction in which any of our outstanding Voting Stock or Voting Stock of such other Person is converted into or exchanged for cash, securities or other property, other than any such transaction where our Voting Stock outstanding immediately prior to such transaction constitutes, or is converted into or exchanged for, Voting Stock representing more than 50% of the voting power of the Voting Stock of the surviving Person or its parent immediately after giving effect to such transaction;

- during any period of 24 consecutive calendar months, the majority of the members of our board of directors shall no longer be composed of individuals (a) who were members of our board of directors on the first day of such period or (b) whose election or nomination to our board of directors was approved by individuals referred to in clause (a) above constituting, at the time of such election or nomination, at least a majority of our board of directors or, if directors are nominated by a committee of our board of directors, constituting at the time of such nomination, at least a majority of such committee; or
- the adoption of a plan relating to our liquidation or dissolution.

Notwithstanding the foregoing, a transaction will not be deemed to involve a Change of Control if (1) we become a direct or indirect wholly-owned subsidiary of a holding company and (2) the direct or indirect holders of the Voting Stock of such holding company immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction.

"*Change of Control Triggering Event*" means the occurrence of both a Change of Control and a Below Investment Grade Rating Event. Notwithstanding the foregoing, no Change of Control Triggering Event will be deemed to have occurred in connection with any particular Change of Control unless and until such Change of Control has actually been consummated.

"*Investment Grade*" means a rating of Baa3 or better by Moody's (or its equivalent under any successor rating category of Moody's) and a rating of BBB- or better by S&P (or its equivalent under any successor rating category of S&P), and the equivalent investment grade credit rating from any replacement rating agency or rating agencies selected by us under the circumstances permitting us to select a replacement rating agency and in the manner for selecting a replacement rating agency, in each case as set forth in the definition of "Rating Agency."

"*Moody's*" means Moody's Investors Service, Inc., a subsidiary of Moody's Corporation, and its successors.

"*Rating Agency*" means each of Moody's and S&P; provided, that if any of Moody's or S&P ceases to provide rating services to issuers or investors, we may appoint another "nationally recognized statistical rating organization" (as defined under the Exchange Act) as a replacement for such Rating Agency; provided, that we shall give written notice of such appointment to the trustee.

"*S&P*" means S&P Global Ratings, a division of S&P Global Inc., and its successors.

"*Voting Stock*" of any specified Person as of any date means the capital stock (or comparable equity interests) of such Person that is at the time entitled to vote generally in the election of the board of directors (or members of the governing body) of such Person.

For purposes of the notes, "*Person*" includes any individual, corporation, limited liability company, partnership, joint venture, association, joint stock company, trust, estate, unincorporated organization or government or any agency or political subdivision thereof or any other entity.

The definition of Change of Control includes a phrase relating to the direct or indirect sale, lease, transfer, conveyance or other disposition of "all or substantially all" of the properties or assets of Westlake and its Subsidiaries taken as a whole. Although there is a limited body of case law interpreting the phrase "substantially all," there is no precise, established definition of the phrase under applicable law. Accordingly, the applicability of the requirement that we offer to repurchase the notes as a result of a sale, lease, transfer, conveyance or other disposition of less than all of the assets of Westlake and its Subsidiaries taken as a whole to another Person or group may be uncertain.

Certain Covenants

The indenture will contain, among others, the following covenants:

Restrictions on Secured Debt

Under the indenture, Westlake will not, and we will not permit any Restricted Subsidiary (as defined below) to, incur, issue, assume or guarantee any notes, bonds, debentures or other similar evidences of indebtedness for money borrowed ("*Debt*"), secured by pledge of, or mortgage or lien on, any Principal Property (as defined below) of Westlake or any Restricted Subsidiary, or any shares of stock of or Debt of any Restricted Subsidiary (such pledges, mortgages and liens being called "*Mortgage*" or "*Mortgages*" and such Debt secured by such Mortgages being called "*Secured Debt*"), without effectively providing that the notes (together with, if we shall so determine, any other indebtedness of Westlake or such Restricted Subsidiary then existing or thereafter created which is not subordinate to the notes) shall be secured equally and ratably with (or prior to) such Secured Debt, so long as such Secured Debt shall be so secured, unless after giving effect thereto, the aggregate amount of all such Secured Debt plus all Attributable Debt of Westlake and its Restricted Subsidiaries in respect of any Sale and Leaseback Transaction (as defined below) would not, at the time of such incurrence, issuance, assumption or guarantee, exceed 15% of Consolidated Net Tangible Assets; provided, however, that this restriction shall not apply to, and there shall be excluded from Secured Debt in any computation under such restriction, indebtedness secured by:

- Mortgages on such property or shares of stock or Debt existing on the first date the notes were originally issued;
- Mortgages on such property or shares of stock of or Debt of any Person, which Mortgages are existing at the time (1) such Person became a Restricted Subsidiary, (2) such Person is merged into or consolidated with Westlake or any of its Subsidiaries or (3) Westlake or one of its Subsidiaries merges into or consolidates with such Person (in a transaction in which such Person becomes a Restricted Subsidiary), which Mortgage was not incurred in anticipation of such transaction and was outstanding prior to such transaction;
- Mortgages in favor of Westlake;
- Mortgages in favor of a governmental entity or in favor of the holders of securities issued by any such entity, pursuant to any contract or statute (including Mortgages to secure debt of the pollution control or industrial revenue bond type) or to secure any indebtedness incurred for the purpose of financing all or any part of the purchase price or the cost of construction of the property subject to such Mortgages;
- Mortgages in favor of any governmental entity to secure progress, advance or other payments pursuant to any contract or provision of any statute;
- Mortgages on such property or shares of stock or Debt existing at the time of acquisition thereof (including acquisition through merger or consolidation);
- Mortgages on such property or shares of stock or Debt to secure the payment of all or any part of the purchase price or construction cost thereof or to secure any Debt incurred prior to, at the time of, or within 180 days after, the acquisition of such property or shares or Debt, the completion of any construction or the commencement of full operation, for the purpose of financing all or any part of the purchase price or construction cost thereof;

- Mortgages incurred in connection with a Sale and Leaseback Transaction satisfying the provisions described under "—Limitations on Sale and Leaseback Transactions" below; and
- any extension, renewal or replacement (or successive extensions, renewals or replacements), as a whole or in part, of any Mortgage referred to in the foregoing bullet points; provided that such extension, renewal or replacement Mortgage shall be limited to all or a part of the same such property or shares of stock or Debt that secured the Mortgage extended, renewed or replaced (plus improvements on such property).

Limitations on Sale and Leaseback Transactions

Under the indenture, Westlake will not, and will not permit any Restricted Subsidiary to, enter into any arrangement with any bank, insurance company or other lender or investor (not including us or any Restricted Subsidiary) or to which any such lender or investor is a party, providing for the leasing by us or a Restricted Subsidiary for a period, including renewals, in excess of three years of any Principal Property the ownership of which has been or is to be sold or transferred, more than 180 days after the completion of construction and commencement of full operation thereof, by us or such Restricted Subsidiary to such lender or investor or to any Person to whom funds have been or are to be advanced by such lender or investor on the security of such Principal Property (referred to as a "*Sale and Leaseback Transaction*") unless:

- such Sale and Leaseback Transaction is with a governmental entity that provides financial or tax benefits;
- we or such Restricted Subsidiary could create Secured Debt pursuant to the provisions described under "—Restrictions on Secured Debt" on the Principal Property to be leased in an amount equal to the Attributable Debt with respect to such Sale and Leaseback Transaction without equally and ratably securing notes issued under the indenture; or
- the net proceeds of the sale or transfer of the Principal Property leased pursuant to such Sale and Leaseback Transaction is at least equal to the fair market value of such Principal Property and (b) within 180 days after such sale or transfer shall have been made by us or by a Restricted Subsidiary, we apply an amount not less than the greater of (1) the net proceeds of the sale of the Principal Property leased pursuant to such arrangement or (2) the fair market value of the Principal Property so leased at the time of entering into such arrangement (as evidenced by an officers' certificate delivered to the trustee) to the retirement of Funded Debt (as defined below) of Westlake; provided that the amount to be applied to the retirement of Funded Debt of Westlake shall be reduced by (x) the principal amount of notes issued under the indenture delivered within 180 days after such sale to the trustee for retirement and cancellation, and (y) the principal amount of Funded Debt other than notes issued under the indenture, voluntarily retired by us within 180 days after such sale. No retirement referred to in this bullet point may be effected by payment at maturity or pursuant to any mandatory sinking fund payment or mandatory prepayment provision.

Limitations on Consolidations, Mergers and Sales of Assets

The indenture will provide that we may not consolidate with or merge into any entity or sell, lease, convey, assign, transfer or dispose of all or substantially all of our assets to any entity unless:

- the resulting, surviving or transferee Person is either Westlake or is a corporation organized under the laws of the United States, any state thereof, or the District of Columbia, and, if not Westlake, the resulting entity assumes by a supplemental indenture the due and punctual payments on the notes and the performance of our covenants and obligations under the indenture; and
- immediately after giving effect to the transaction, no default or event of default under the indenture has occurred and is continuing or would result from the transaction.

Upon any transaction of the type described above, the resulting entity will succeed to and be substituted for and may exercise all of our rights and powers under the indenture and the notes with the same effect as if the resulting entity had been named as us in the indenture. In the case of any asset transfer or disposition other than a lease, when the resulting entity assumes all of our obligations and covenants under the indenture and the notes, we will be relieved of all such obligations.

Certain Definitions

"*Attributable Debt*" means, as to any lease in respect of a Sale and Leaseback Transaction under which any Person is at the time liable, at any date as of which the amount thereof is to be determined, the total net amount of rent required to be paid by such Person under such lease during the remaining term thereof (or, if earlier, the first date upon which such lease may be terminated without penalty), discounted from the respective due dates thereof to such date at the weighted average rate per annum borne by the notes, compounded annually. The net amount of rent required to be paid under any such lease for any such period shall be the aggregate amount of the rent payable by the lessee with respect to such period after excluding amounts required to be paid on account of maintenance and repairs, insurance, taxes, assessments, water rates and similar charges. Unless we elect to calculate the total amount of rent required to be paid through the first date upon which such lease may be terminated without penalty (if such a provision exists), in the case of any lease which is terminable by the lessee upon the payment of a penalty, such net amount shall also include the amount of such penalty, but no rent shall be considered as required to be paid under such lease subsequent to the first date upon which it may be so terminated.

"*Consolidated Net Tangible Assets*" means the aggregate amount of assets (less applicable reserves and other properly deductible items) after deducting therefrom (1) all current liabilities, except for (a) notes and loans payable, (b) current maturities of long-term debt and (c) current maturities of obligations under finance leases and (2) all goodwill, trade names, trademarks, patents, unamortized debt discount and expense and other like intangibles, all as set forth on the most recent balance sheet of Westlake and its consolidated Subsidiaries and computed in accordance with generally accepted accounting principles in the United States as in effect from time to time. Deferred income taxes, deferred investment tax credit or other similar items, as calculated in accordance with generally accepted accounting principles in the United States as in effect from time to time, will not be considered as a liability or as a deduction from or adjustment to total assets.

"*Euro*" or "*€*" means the official currency of the European Union member states participating in the European Monetary Union.

"*Funded Debt*" means all indebtedness for money borrowed having a maturity of more than 12 months from the date of the most recent balance sheet of Westlake and its consolidated Subsidiaries or having a maturity of less than 12 months but by its terms being renewable or extendible beyond 12 months from the date of such balance sheet at the option of the borrower of such indebtedness.

"*Principal Property*" means any single parcel of real estate, any single manufacturing plant or any single warehouse owned or leased in connection with a Sale and Leaseback Transaction by Westlake or any Subsidiary which is located within the United States and the net book value of which on the date as of which the determination is being made exceeds 1% of Consolidated Net Tangible Assets, other than any such manufacturing plant or warehouse or portion thereof (1) which is a pollution control or other facility financed by obligations issued by a state or local government unit and described in Sections 141(a), 142(a)(5), 142(a)(6), 142(a)(10) or 144(a) of the Internal Revenue Code (or their successor provisions) or by any other obligations the interest of which is excluded under Section 103 of the Internal Revenue Code (or its successor provision), or (2) which, in the good-faith opinion of our board of directors, as evidenced by a board resolution, is not of material importance to the total business conducted by Westlake and its Subsidiaries taken as a whole.

"*Restricted Subsidiary*" means a wholly-owned Subsidiary of Westlake substantially all of the assets of which are located in the United States (excluding territories or possessions) and which owns a Principal Property; provided, however, that the term Restricted Subsidiary shall not include any Subsidiary that is principally engaged in (1) the business of financing; (2) the business of owning, buying, selling, leasing, dealing in or developing real property; or (3) the business of exporting goods or merchandise from or importing goods or merchandise into the United States.

"*Subsidiary*" means a Person more than 50% of the outstanding Voting Stock (as defined above) of which is owned, directly or indirectly, by Westlake or by one or more other Subsidiaries, or by Westlake and one or more other Subsidiaries.

Events of Default

The following are events of default with respect to the notes:

- our failure to pay interest on the notes for 30 days after becoming due;
- our failure to pay principal of or any premium on the notes when due;
- our failure to comply with any covenant or agreement of the notes or the indenture (other than an agreement or covenant that has been included in the indenture solely for the benefit of another series of notes) for 60 days after written notice by the trustee or by the holders of at least 25% in principal amount of the outstanding notes issued under the indenture that are affected by that failure; and
- specified events involving bankruptcy, insolvency or reorganization of Westlake.

A default under one series of notes will not necessarily be a default under any other series. If a default or event of default for the notes occurs, is continuing and is known to the trustee, the trustee will notify the holders of the notes within 90 days after it occurs. The trustee may withhold notice to the holders of the notes of any default or event of default, except in any payment on the notes, if the trustee in good faith determines that withholding notice is in the interests of the holders of those notes.

If an event of default for the notes occurs and is continuing, the trustee or the holders of at least 25% in principal amount of the outstanding notes (or, in some cases, 25% in principal amount of all notes issued under the indenture that are affected, voting as one class) may declare the principal of and all accrued and unpaid interest on those notes to be due and payable immediately. If an event of default relating to certain events of bankruptcy, insolvency or reorganization of Westlake occurs, the principal of and accrued and unpaid interest on the notes will become immediately due and payable without any action on the part of the trustee or any holder. At any time after a declaration of acceleration has been made, the holders of a majority in principal amount of the outstanding notes (or, in some cases, of all notes issued under the indenture that are affected, voting as one class) may in some cases rescind this accelerated payment requirement and its consequences.

A holder of notes may pursue any remedy under the indenture only if:

- the holder gives the trustee written notice of a continuing event of default with respect to the notes;
- the holders of at least 25% in principal amount of the outstanding notes make a written request to the trustee to pursue the remedy;
- the holders offer to the trustee indemnity satisfactory to the trustee against any loss, liability or expense;
- the trustee does not comply with the request within 60 days after receipt of the request and offer of indemnity; and
- during that 60-day period, the holders of a majority in principal amount of the notes do not give the trustee a direction inconsistent with the request.

This provision does not, however, affect the right of a holder of notes to sue for enforcement of any overdue payment.

The trustee will be under no obligation to exercise any of its rights or powers under the indenture at the request or direction of any of the holders unless those holders have offered to the trustee indemnity satisfactory to it. Subject to this provision for indemnification, the holders of a majority in principal amount of the outstanding notes (or a majority in principal amount of all notes issued under the indenture that are affected, voting as one class) generally may direct the time, method and place of:

- conducting any proceeding for any remedy available to the trustee; or
- exercising any trust or power conferred on the trustee relating to or arising as a result of an event of default.

If an event of default occurs and is continuing, the trustee will be required to use the degree of care and skill of a prudent person in the conduct of his own affairs.

The indenture requires us to furnish to the trustee annually a statement as to our performance of certain of our obligations under the indenture and as to any default in performance.

Modification and Waiver

We and the trustee may supplement or amend the indenture with the consent of the holders of at least a majority in principal amount of the outstanding notes of all series issued under the indenture that are affected by the amendment or supplement (voting as one class). Without the consent of the holder of each note affected, however, no modification may:

- reduce the amount of notes whose holders must consent to an amendment, supplement or waiver;
- reduce the rate of or change the time for payment of interest on the notes;
- reduce the principal of the notes or change their stated maturity;

- reduce any premium payable on the redemption of the notes or change the time at which the notes may or must be redeemed;
- change any obligation to pay additional amounts on the notes;
- make payments on the notes payable in currency other than as originally stated in the notes;
- impair the holder's right to institute suit for the enforcement of any payment on or with respect to the notes;
- make any change in the percentage of principal amount of notes necessary to waive compliance with certain provisions of the indenture or to make any change in the provision related to modification; and
- waive a continuing default or event of default regarding any payment on the notes.

We and the trustee may supplement or amend the indenture or waive any provision of the indenture without the consent of any holders of notes issued under the indenture in certain circumstances, including:

- to cure any ambiguity, omission, defect or inconsistency;
- to conform the provisions of the indenture (as amended or supplemented) or the notes to the"Description of the Senior Notes" section of the applicable prospectus supplement;
- to provide for the assumption of our obligations under the indenture by a successor upon any merger, consolidation or asset transfer permitted under the indenture;
- to provide for uncertificated notes in addition to or in place of certificated notes or to provide for bearer notes;
- to provide any security for, or to add any guarantees of or obligors on, any series of notes;
- to comply with any requirement to effect or maintain the qualification of the indenture under the Trust Indenture Act of 1939;
- to add covenants that would benefit the holders of any notes or to surrender any rights we have under the indenture;
- to add events of default with respect to any series of notes;
- to make any change that does not adversely affect any outstanding notes of any series issued under the indenture in any material respect; and
- to establish the form or terms of any notes and to accept the appointment of a successor trustee, each as permitted under the indenture.

The holders of a majority in principal amount of the outstanding notes (or, in some cases, a majority in principal amount of all notes issued under the indenture that are affected, voting as one class) may waive any existing or past default or event of default with respect to the notes. Those holders may not, however, waive any default or event of default in any payment on any note or compliance with a provision that cannot be amended or supplemented without the consent of each holder affected.

Defeasance and Discharge

Defeasance. When we use the term defeasance, we mean discharge from some or all of our obligations under the indenture. If we deposit with the trustee under the indenture any combination of money or government securities sufficient to make payments on the notes on the dates those payments are due, then, at our option, either of the following will occur:

- we will be discharged from our obligations with respect to the notes ("legal defeasance"); or
- we will no longer have any obligation to comply with specified restrictive covenants with respect to the notes, the covenant described under "—Certain Covenants—Limitations on Consolidations, Mergers and Sales of Assets" above and other specified covenants under the indenture, and the related events of default will no longer apply ("covenant defeasance").

If the notes are defeased, the holders of the notes will not be entitled to the benefits of the indenture, except for obligations to register the transfer or exchange of notes, replace stolen, lost or mutilated notes or maintain paying agencies and hold money for payment in trust. In the case of covenant defeasance, our obligation to pay principal, premium and interest on the notes will also survive.

We will be required to deliver to the trustee an opinion of counsel that the deposit and related defeasance would not cause the beneficial owners of the notes to recognize income, gain or loss for U.S. federal income tax purposes and that the beneficial owners would be subject to U.S. federal income tax on the same amounts, in the same manner and at the same times as would have been the case if the deposit and related defeasance had not occurred. If we elect legal defeasance, that opinion of counsel must be based upon a ruling from the United States Internal Revenue Service or a change in law to that effect.

Satisfaction and Discharge. In addition, the indenture will cease to be of further effect with respect to the notes, subject to exceptions relating to compensation and indemnity of the trustee under the indenture and repayment to us of excess money or government securities, when:

- either
  - all outstanding notes have been delivered to the trustee for cancellation; or
  - all outstanding notes not delivered to the trustee for cancellation either:
    - have become due and payable

- will become due and payable at their stated maturity within one year,
  or
- are to be called for redemption within one year;
  and
- we have deposited with the trustee any combination of money or government securities in trust sufficient to pay the entire indebtedness on the notes when due; and
- we have paid all other sums payable by us with respect to the
  notes.

Governing Law

New York law governs the indenture and the notes.

The Trustee

The Bank of New York Mellon Trust Company, N.A. (successor to JPMorgan Chase Bank, National Association) acts as the trustee under the indenture. The Bank of New York Mellon Trust Company, N.A. acts as the trustee with respect to the notes.

The indenture contains limitations on the right of the trustee, if it or any of its affiliates is then our creditor to obtain payment of claims or to realize on certain property received for any such claim, as security or otherwise. The trustee and its affiliates are permitted to engage in other transactions with us. If, however, the trustee acquires any conflicting interest, it must eliminate that conflict or resign within 90 days after ascertaining that it has a conflicting interest and after the occurrence of a default under the indenture, unless the default has been cured, waived or otherwise eliminated within the 90-day period.

Payments and Paying Agents

We will make payments on the notes in Euros and such payments on notes represented by a global security will be made through one or more paying agents to the Clearing Systems or their nominee.

We will make interest payments to the person in whose name the note is registered at the close of business on the record date for the interest payment. The regular record dates for the notes will be the close of business (in the relevant Clearing System) on the Clearing System Business Day immediately preceding each interest payment date (or, if the notes are held in definitive form, the 15th calendar day preceding each interest payment date, whether or not a business day).

The Bank of New York Mellon, London Branch is designated as the paying agent for payments on notes issued under the indenture pursuant to a paying agency agreement entered into on July 17, 2019. We may at any time designate additional paying agents or rescind the designation of any paying agent or approve a change in the office through which any paying agent acts.

If the principal of or any premium or interest on the notes is payable on a day that is not a Clearing System Business Day, the payment will be made on the following Clearing System Business Day. For these purposes, a "Clearing System Business Day" means a day on which each Clearing System for which any global security is being held is open for business.

Subject to the requirements of any applicable abandoned property laws, the trustee and paying agent will pay to us upon written request any money held by them for payments on the notes that remains unclaimed for two years after the date upon which that payment has become due. After payment to us, holders of notes entitled to the money must look to us for payment. In that case, all liability of the trustee or paying agent with respect to that money will cease.

Book-Entry, Clearance and Settlement

The description of the Clearing Systems in this section reflects our understanding of the rules and procedures of Clearstream Luxembourg and Euroclear as they are currently in effect. These systems could change their rules and procedures at any time. We have obtained the information in this section concerning Clearstream Luxembourg and Euroclear and their book-entry systems and procedures from sources that we believe to be reliable, but we take no responsibility for the accuracy of this information.

The notes will initially be represented by one or more fully registered global securities. Each such global security will be deposited with, or on behalf of, a common depositary, and registered in the name of the nominee of the common depositary for the accounts of Clearstream Luxembourg and Euroclear. Except as described below, the global securities may be transferred, in whole and not in part, only to Euroclear or Clearstream Luxembourg or their respective nominees. You may hold your interests in the global securities in Europe through Clearstream Luxembourg or Euroclear, either as a participant in such systems or indirectly through organizations which are participants in such systems. Clearstream Luxembourg and Euroclear will hold interests in the global securities on behalf of their respective participating organizations or customers through customers' securities accounts in Clearstream Luxembourg's or Euroclear's names on the books of their respective depositaries. Book-entry interests in the notes and all transfers relating to the securities will be reflected in the book-entry records of Clearstream Luxembourg and Euroclear.

Any secondary market trading of book-entry interests in the notes will take place through Clearstream Luxembourg and Euroclear participants and will settle in same-day funds. Owners of book-entry interests in the notes will receive payments relating to their notes in Euros.

Clearstream Luxembourg and Euroclear have established electronic securities and payment transfer, processing, depositary and custodial links among themselves and others, either directly or through custodians and depositaries. These links allow the notes to be issued, held and transferred among the Clearing Systems without the physical transfer of certificates. Special procedures to facilitate clearance and settlement have been established among the Clearing Systems to trade securities across borders in the secondary market.

The policies of Clearstream Luxembourg and Euroclear will govern payments, transfers, exchanges and other matters relating to your interest in the notes. We, the trustee and the paying agent have no responsibility for any aspect of the records kept by Clearstream Luxembourg or Euroclear or any of their direct or indirect participants. We, the trustee and the paying agent also do not supervise these systems in any way.

Clearstream Luxembourg and Euroclear and their participants perform these clearance and settlement functions under agreements they have made with one another or with their customers. You should be aware that they are not obligated to perform or continue to perform these procedures and may modify them or discontinue them at any time.

Except as provided below, owners of beneficial interests in the notes will not be entitled to have the notes registered in their names, will not receive or be entitled to receive physical delivery of the notes in definitive form and will not be considered the owners or holders of the notes under the indenture. Accordingly, each person owning a beneficial interest in a global security must rely on the procedures of the Clearing Systems and, if such person is not a participant, on the procedures of the participant through which such person owns its interest, in order to exercise any rights of a noteholder.

Clearstream Luxembourg

Clearstream Luxembourg has advised us that it is incorporated under the laws of Luxembourg as a professional depositary. Clearstream Luxembourg holds securities for its participating organizations ("Clearstream Participants") and facilitates the clearance and settlement of securities transactions between Clearstream Participants through electronic book-entry changes in accounts of Clearstream Participants, thereby eliminating the need for physical movement of certificates. Clearstream Luxembourg provides to Clearstream Participants, among other things, services for safekeeping, administration, clearance and settlement of internationally traded securities and securities lending and borrowing. Clearstream Luxembourg interfaces with domestic markets in several countries.

As a professional depositary, Clearstream Luxembourg is subject to regulation by the Luxembourg Commission for the Supervision of the Financial Sector (*Commission de Surveillance du Secteur Financier*). Clearstream Participants are recognized financial institutions around the world, including underwriters, securities brokers and dealers, banks, trust companies, clearing corporations and certain other organizations and may include the underwriters. Indirect access to Clearstream Luxembourg is also available to others, such as banks, brokers, dealers and trust companies that clear through or maintain a custodial relationship with a Clearstream Participant, either directly or indirectly.

Distributions with respect to interests in the notes held beneficially through Clearstream Luxembourg will be credited to cash accounts of Clearstream Participants in accordance with its rules and procedures.

Euroclear

Euroclear has advised us that it was created in 1968 to hold securities for participants of Euroclear ("Euroclear Participants") and to clear and settle transactions between Euroclear Participants through simultaneous electronic book-entry delivery against payment, thereby eliminating the need for physical movement of certificates and any risk from lack of simultaneous transfers of securities and cash. Euroclear includes various other services, including securities lending and borrowing and interfaces with domestic markets in several countries. Euroclear is operated by Euroclear Bank SA/NV (the "Euroclear Operator"). All operations are conducted by the Euroclear Operator, and all Euroclear securities clearance accounts and Euroclear cash accounts are accounts with the Euroclear Operator. Euroclear Participants include banks (including central banks), securities brokers and dealers and other professional financial intermediaries and may include the underwriters. Indirect access to Euroclear is also available to other firms that clear through or maintain a custodial relationship with a Euroclear Participant, either directly or indirectly.

The Terms and Conditions Governing Use of Euroclear and the related Operating Procedures of the Euroclear System, or the Euroclear Terms and Conditions, and applicable Belgian law govern securities clearance accounts and cash accounts with the Euroclear Operator. Specifically, these terms and conditions govern:

- transfers of securities and cash within Euroclear;
- withdrawal of securities and cash from Euroclear; and
- receipt of payments with respect to securities in Euroclear.

All securities in Euroclear are held on a fungible basis without attribution of specific certificates to specific securities clearance accounts. The Euroclear Operator acts under the terms and conditions only on behalf of Euroclear Participants and has no record of or relationship with persons holding securities through Euroclear Participants.

Distributions with respect to interests in the notes held beneficially through Euroclear will be credited to the cash accounts of Euroclear Participants in accordance with the Euroclear Terms and Conditions.

Clearance and Settlement Procedures

Investors that hold their securities through Clearstream Luxembourg or Euroclear accounts will follow the settlement procedures that are applicable to conventional eurobonds in registered form. Notes will be credited to the securities custody accounts of Clearstream Luxembourg and Euroclear participants on the business day following the issue date, for value on the issue date. They will be credited either free of payment or against payment for value on the issue date.

Secondary market trading between Clearstream Luxembourg and/or Euroclear participants will occur in the ordinary way following the applicable rules and operating procedures of Clearstream Luxembourg and Euroclear. Secondary market trading will be settled using procedures applicable to conventional eurobonds in registered form.

You should be aware that investors will only be able to make and receive deliveries, payments and other communications involving the notes through Clearstream Luxembourg and Euroclear on days when those systems are open for business. Those systems may not be open for business on days when banks, brokers and other institutions are open for business in the United States.

In addition, because of time-zone differences, there may be problems with completing transactions involving Clearstream Luxembourg and Euroclear on the same business day as in the United States. U.S. investors who wish to transfer their interests in the notes, or to make or receive a payment or delivery of the notes, on a particular day, may find that the transactions will not be performed until the next business day in Luxembourg or Brussels, depending on whether Clearstream Luxembourg or Euroclear is used.

Clearstream Luxembourg or Euroclear will credit payments to the cash accounts of Clearstream Luxembourg customers or Euroclear participants, as applicable, in accordance with the relevant system's rules and procedures, to the extent received by its depositary. Clearstream Luxembourg or the Euroclear Operator, as the case may be, will take any other action permitted to be taken by a holder under the indenture on behalf of a Clearstream Luxembourg customer or Euroclear participant only in accordance with its relevant rules and procedures.

Clearstream Luxembourg and Euroclear have agreed to the foregoing procedures in order to facilitate transfers of securities among participants of Clearstream Luxembourg and Euroclear. However, they are under no obligation to perform or continue to perform those procedures, and they may discontinue those procedures at any time.

If the Clearing Systems are at any time unwilling or unable to continue as depositary and a successor depositary is not appointed by us within 90 days, we will issue the notes in definitive form in exchange for the entire global note representing such notes. In addition, we may at any time, and in our sole discretion and subject to the procedures of the Clearing Systems, determine not to have the notes represented by the global note and, in such event, will issue notes in definitive form in exchange for the global note representing such notes. In any such instance, an owner of a beneficial interest in the global note will be entitled to physical delivery in definitive form of notes represented by such global note equal in principal amount to such beneficial interest and to have such notes registered in its name.

EXHIBIT 21

SUBSIDIARIES OF WESTLAKE *

Name of Subsidiary	State or Other Jurisdiction of Incorporation or Organization	Names Doing Business
Axiall Canada, Inc.	Canada	Axiall Canada, Inc.
Axiall Corporation	Delaware	Axiall Corporation
Axiall Holdco, Inc.	Delaware	Axiall Holdco, Inc.
Axiall Limited Partnership	Ontario	Axiall Limited Partnership
Axiall Noteco, Inc.	Delaware	Axiall Noteco, Inc.
Axiall Taiwan Ltd.	Taiwan	Axiall Taiwan Ltd.
Axiall, LLC	Delaware	Axiall, LLC
Eagle Natrium LLC	Delaware	Eagle Natrium LLC
Eagle Spinco Inc.	Delaware	Eagle Spinco Inc.
Eagle US 2 LLC	Delaware	Eagle US 2 LLC
Lagoon LLC	Delaware	Lagoon LLC
North American Pipe Corporation	Delaware	North American Pipe Corporation and NAPCO
North American Specialty Products LLC	Delaware	North American Specialty Products LLC
Plastic Trends, Inc.	Michigan	Plastic Trends, Inc.
Rome Acquisition Holding Corp.	Nova Scotia	Rome Acquisition Holding Corp.
Rome Delaware Corp.	Delaware	Rome Delaware Corp.
Royal Building Products (USA) Inc.	Delaware	Royal Building Products (USA) Inc.
Royal Group, Inc.	Canada	Royal Group, Inc.
Taiwan Chlorine Industries Ltd.	Taiwan	Taiwan Chlorine Industries Ltd.
Vinnolit Benelux-France B.V.B.A.	Dendermonde, Belgium	Vinnolit Benelux-France B.V.B.A.
Vinnolit GmbH & Co. KG	Ismaning, Germany	Vinnolit GmbH & Co. KG
Vinnolit Holdings GmbH	Ismaning, Germany	Vinnolit Holdings GmbH
Vinnolit Italia S.r.L.	Milan, Italy	Vinnolit Italia S.r.L.
Vinnolit Limited	United Kingdom	Vinnolit Limited
Vinnolit Monomer Geschäftsführungs GmbH	Ismaning, Germany	Vinnolit Monomer Geschäftsführungs GmbH
Vinnolit Schkopau GmbH	Ismaning, Germany	Vinnolit Schkopau GmbH
Vinnolit Treuhand GmbH	Ismaning, Germany	Vinnolit Treuhand GmbH
Westlake Chemical Finance Corporation	Delaware	Westlake Chemical Finance Corporation
Westlake Chemical Investments, Inc.	Delaware	Westlake Chemical Investments, Inc.
Westlake Chemical OpCo LP	Delaware	Westlake Chemical OpCo LP
Westlake Chemical Partners GP LLC	Delaware	Westlake Chemical Partners GP LLC
Westlake Chemical Partners LP	Delaware	Westlake Chemical Partners LP
Westlake Compounds LLC	Delaware	Westlake Compounds LLC

Westlake Development Corporation	Delaware	Westlake Development Corporation
Westlake International Holdings Cooperatief U.A.	The Netherlands	Westlake International Holdings Cooperatief U.A.
Westlake International Holdings II C.V.	The Netherlands	Westlake International Holdings II C.V.
Westlake International I B.V.	The Netherlands	Westlake International I B.V.
Westlake Longview Corporation	Delaware	Westlake Longview Corporation
Westlake Management Services, Inc.	Delaware	Westlake Management Services, Inc.
Westlake Olefins LLC	Delaware	Westlake Olefins LLC
Westlake Petrochemicals LLC	Delaware	Westlake Petrochemicals LLC, Westlake Petrochemicals LP and WPE
Westlake Polymers LLC	Delaware	Westlake Polymers LLC, Westlake Polymers LP and WPE
Westlake Styrene LLC	Delaware	Westlake Styrene LLC
Westlake Switzerland GmbH	Switzerland	Westlake Switzerland GmbH
Westlake Vinyls Company LP	Delaware	Westlake Vinyls Company LP
Westlake Vinyl Corporation	Delaware	Westlake Vinyl Corporation
Westlake Vinyls, Inc.	Delaware	Westlake Vinyls, Inc.
WPT LLC	Delaware	WPT LLC and WPT LP

* Westlake has elected to omit the names of certain subsidiaries. None of the omitted subsidiaries, considered either alone or together with the other omitted subsidiaries of its immediate parent, constitutes a “Significant Subsidiary” as set forth in Section 601(b)(21) of Regulation S-K.

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-234573) and Form S-8 (No. 333-118205) of Westlake Chemical Corporation of our report dated February 19, 2020 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Houston, Texas
February 19, 2020

EXHIBIT 31.1

CERTIFICATIONS

I, Albert Chao, certify that:

1. I have reviewed this annual report on Form 10-K of Westlake Chemical 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(s) 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(s) 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 19, 2020

/s/ ALBERT CHAO

Albert Chao
President and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATIONS

I, M. Steven Bender, certify that:

1. I have reviewed this annual report on Form 10-K of Westlake Chemical 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(s) 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(s) 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 19, 2020

/s/ M. STEVEN BENDER

M. Steven Bender
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

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 Westlake Chemical Corporation (the "Company") on Form 10-K for the fiscal year ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Albert Chao, President and Chief Executive Officer of the Company, and I, M. Steven Bender, Executive Vice President and Chief Financial Officer of the Company, certify, to the best of our knowledge, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d) 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.

Date: February 19, 2020

/s/ ALBERT CHAO

Albert Chao
President and Chief Executive Officer
(Principal Executive Officer)

Date: February 19, 2020

/s/ M. STEVEN BENDER

M. Steven Bender
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)