

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

Commission file number 1-32737

**KOPPERS HOLDINGS INC.**

(Exact name of registrant as specified in its charter)

Pennsylvania  
(State of incorporation)

20-1878963  
(IRS Employer Identification No.)

436 Seventh Avenue  
Pittsburgh, Pennsylvania 15219  
(Address of principal executive offices)

(412) 227-2001  
(Registrant's telephone number, including area code)

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

Common Stock, par value \$0.01 per share  
Title of Each Class

New York Stock Exchange  
Name of Exchange on which registered

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock	KOP	The New York Stock Exchange

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

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

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

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

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

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

Emerging Growth Company

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

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

The aggregate market value of shares of Common Stock held by non-affiliates of the registrant, based on the closing sales price of the Common Stock on the New York Stock Exchange on June 28, 2019 was \$588.7 million (affiliates, for this purpose, have been deemed to be Directors and executive officers of Koppers Holdings Inc.).

As of January 31, 2020, 20,805,162 shares of Common Stock of the registrant were issued and outstanding.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's definitive Proxy Statement for the 2020 Annual Meeting of Shareholders are incorporated by reference into Part III of this Annual Report on Form 10-K.

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## FORWARD-LOOKING STATEMENTS

This report and the documents incorporated herein by reference contain “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995 and may include, but are not limited to, statements about sales levels, restructuring, profitability and anticipated synergies, expenses and cash outflows. All forward-looking statements involve risks and uncertainties. All statements contained herein that are not clearly historical in nature are forward-looking, and words such as “believe”, “anticipate”, “expect”, “estimate”, “may”, “will”, “should”, “continue”, “plan”, “intend”, “likely” or other similar words or phrases are generally intended to identify forward-looking statements. Any forward-looking statement contained herein, regarding expectations with respect to sales, earnings, cash flows, operating efficiencies, product introduction or expansion, the benefits of acquisitions and divestitures or other matters, are subject to known and unknown risks, uncertainties and contingencies.

Many of these risks, uncertainties and contingencies are beyond our control, and may cause actual results, performance or achievements to differ materially from anticipated results, performance or achievements. Factors that might affect such forward-looking statements include, among other things:

- availability of and fluctuations in the prices of key raw materials, including coal tar, lumber and scrap copper;
- the impact of changes in commodity prices, such as oil, copper and chemicals, on product margins;
- the ratings on our debt and our ability to repay or refinance our outstanding indebtedness as it matures;
- our ability to operate within the limitations of our debt covenants;
- capital market conditions, including interest rates, borrowing costs and foreign currency rate fluctuations;
- general economic and business conditions, including demand for our goods and services;
- potential difficulties in protecting intellectual property;
- potential impairment of our goodwill and/or long-lived assets;
- the effects of competition in the industries in which we operate, including locations of competitors and operating and market competition;
- economic, political and environmental conditions in international markets, including governmental changes, tariffs, restrictions on trade and restrictions on the ability to transfer capital across countries;
- changes in laws, including tax regulations or accounting standards, third-party relations and approvals, and decisions of courts, regulators and governmental bodies;
- parties who are obligated to indemnify us for liabilities, including legal and environmental liabilities, fail to perform under their legal obligations;
- unfavorable resolution of litigation against us;
- the other factors set forth under “Risk Factors”; as well as those discussed more fully elsewhere in this Form 10-K.

We caution you that the foregoing list of important factors may not contain all of the material factors that are important to you. In addition, in light of these risks and uncertainties, the matters referred to in the forward-looking statements contained in this report and the documents incorporated by reference herein may not in fact occur. We undertake no obligation to publicly update or revise any forward-looking statement as a result of new information, future events or otherwise, except as otherwise required by law.

## **PART I**

### **ITEM 1. BUSINESS**

#### **General**

*In this report, unless otherwise noted or the context otherwise requires, (i) the term “Koppers”, “Koppers Holdings”, the “Company”, “we” or “us” refers to Koppers Holdings Inc. and its consolidated subsidiaries, (ii) the term “KH” refers to Koppers Holdings Inc. and not any of its subsidiaries and (iii) the term “KI” refers to Koppers Inc. and not any of its subsidiaries. Koppers Inc. is a wholly-owned subsidiary of Koppers Holdings Inc. Koppers Holdings Inc. has substantially no operations independent of Koppers Inc. and its subsidiaries. The use of these terms is not intended to imply that Koppers Holdings and Koppers Inc. are not separate and distinct legal entities from each other and from their respective subsidiaries. Koppers Holdings Inc. was incorporated in November 2004 as a holding company for Koppers Inc.*

We are a leading integrated global provider of treated wood products, wood treatment chemicals, and carbon compounds. Our products and services are used in a variety of niche applications in a diverse range of end-markets, including the railroad, specialty chemical, utility, residential lumber, agriculture, aluminum, steel, rubber, and construction industries. We serve our customers through a comprehensive global manufacturing and distribution network, with manufacturing facilities located in North America, South America, Australasia, China and Europe.

#### **Business Segments and Products**

We operate three principal business segments: Railroad and Utility Products and Services (“RUPS”), Performance Chemicals (“PC”), and Carbon Materials and Chemicals (“CMC”).

We believe our three business segments command leading market positions. Through our RUPS business, we believe that we are the largest supplier of railroad crossties to the Class I railroads in North America. Through our CMC business, we believe we are the largest global supplier of creosote to the North American railroad industry. Through our PC business, we believe that we are the largest global manufacturer and supplier of water-based wood preservatives and wood specialty additives to treaters who supply the residential, agricultural and industrial pressure-treated wood markets.

Our RUPS and CMC operations are, to a substantial extent, vertically integrated. Through our CMC business, we process coal tar into a variety of products, including creosote, which is an intermediate material necessary in the pressure treatment of wood crossties and other related railroad products. The majority of the creosote we produce in North America and Europe is sold internally to our RUPS business for treating railroad crossties.

Our RUPS and PC operations are also vertically integrated. Through our PC business, we produce a variety of products, including chromated copper arsenate, which is used in the pressure treatment of utility poles and pilings. A portion of the chromated copper arsenate we produce in North America and Australia is sold internally to our RUPS business for treating poles and pilings.

#### **Railroad and Utility Products and Services**

Our RUPS business sells treated and untreated wood products, rail joint bars and services primarily to the railroad markets in the United States and Canada and the utility markets in the United States and Australia. We also operate a railroad services business that conducts engineering, design, repair and inspection services for railroad bridges and a business related to the recovery of used crossties, serving the same customer base as our North American railroad business.

Railroad products and services include procuring and treating items such as crossties, switch ties and various types of lumber used for railroad bridges and crossings. Railroad products also include manufacturing and selling rail joint bars, which are steel bars used to join rails together for railroads. Utility products, located in the United States and Australia, include the pressure treatment of transmission and distribution poles for electric and telephone utilities. The RUPS business operates 21 wood treating plants and one rail joint bar manufacturing facility located throughout the United States, Canada and Australia. Our network of plants is strategically located near timber supplies to enable us to access raw materials and service customers effectively. In addition, our crosstie treating plants are typically adjacent to our largest railroad customers' rail lines.

Our RUPS business manufactures its primary products and sells them directly to our customers through long-term contracts and purchase orders negotiated by our regional sales personnel and coordinated through our marketing group at corporate headquarters.

Hardwoods, such as oak and other species, are the major raw materials in wood crossties. Hardwood prices, which account for more than 50 percent of a finished crosstie's cost, fluctuate with the demand from other hardwood lumber markets, such as oak flooring, pallets and other specialty lumber products. Weather conditions can be a factor in the supply of raw material, as unusually wet or inclement conditions may make it difficult to harvest timber.

In the United States, hardwood lumber for crossties is procured by us from hundreds of small sawmills throughout the northeastern, midwestern and southern areas of the country. The crossties are shipped via rail car or trucked directly to one of our crosstie treating plants, all of which are on line with a major railroad. The crossties are either air-stacked for a period of six to nine months or artificially dried by a process called boultonizing. Once dried, the crossties are pressure treated with creosote, a product of our CMC business. A substantial portion of our crossties are treated with borate, which is purchased from PC, in combination with creosote.

We believe we are the largest supplier of railroad crossties to the Class I railroads in North America. We have one principal competitor, Stella-Jones Inc., and several smaller regional competitors in the North American market. Competitive factors in the railroad crosstie market include price, quality, location, service and security of supply. We believe we have a competitive advantage due to our ability to obtain internally-sourced creosote and our national network of treating plants which have direct access to our major customers' rail lines. These advantages provide for security of supply and logistics advantages for our customers.

Our RUPS business' largest customer base is the North American Class I railroad market, which buys approximately 72 percent of all crossties produced in the United States and Canada. Approximately 72 percent of our North American RUPS sales are under long-term contracts and we currently supply all North American Class I railroads. We also have relationships with many of the approximately 560 short-line and regional rail lines. This also forms the customer base for our rail joint bar products. The railroad crosstie market trended lower in 2019, with approximately 18.5 million replacement crossties purchased during the year, down from 21.2 million and 23.4 million purchased during 2018 and 2017, respectively.

Demand for railroad crossties may decline during winter months due to inclement weather conditions which make it difficult to harvest lumber and to install railroad crossties. As a result, operating results may vary from quarter to quarter depending on the severity of weather conditions and other variables affecting our products.

We believe our North American utility pole business is the second largest producer of utility poles in the United States, and we believe our Australian utility pole business is the largest producer of utility poles for the electrical communications utilities in Australia. Utility poles are produced mainly from pine species in the United States and the eucalyptus species in Australia. Most of these poles are purchased from large timber owners and individual landowners and shipped to one of our pole-peeling facilities. In North America and Australia, in addition to utility poles, we market smaller poles to the agricultural landscape and vineyard markets. We treat poles with a variety of preservatives, including chromated copper arsenate and creosote, which we produce internally and purchase from PC and CMC, respectively, and pentachlorophenol, which we purchase from an outside supplier.

### **Performance Chemicals**

Our PC business maintains sales and manufacturing operations in the United States, Canada, Europe, South America, Australia and New Zealand. The primary products supplied by PC are copper-based wood preservatives, including micronized copper quaternary and micronized copper azole ("MicroPro®"), micronized pigments (MicroShades®), alkaline copper quaternary, amine copper azole and chromated copper arsenate. The primary applications for these products include decking, fencing, utility poles, construction lumber and timbers, and vineyard stakes. Additionally, we are now a leading supplier of fire-retardant chemicals for pressure treatment of wood, primarily in commercial construction, where applicable. Because we are a global supplier of wood preservatives, we face various competitors in all the geographic regions in which we participate.

PC supplies seven of the ten largest lumber treating companies in the United States, the largest treated wood market in the world, in addition to the four largest lumber treating companies in Canada. In North America, our PC business is vertically integrated through the manufacturing of copper compounds for our copper-based wood preservatives. We purchase over 40 million pounds of scrap copper or other compounds containing copper, our key raw material, which we process to meet the annual demand of this major market. When we purchase scrap copper, it is shipped to our manufacturing plants in Hubbell, Michigan and Millington, Tennessee for further processing into other copper compounds. We utilize swap contracts to hedge our exposure to copper price risk.

We believe that being vertically integrated in copper manufacturing provides PC with an important competitive advantage and also provides our customers with the security of a continuous supply of wood preservatives. Likewise, we believe that our marketing, engineering, and technical support services provide added value to our customer base, who supply pressure-treated wood products to large retailers and independent lumber dealers. We believe another competitive advantage is provided by our strategic sourcing group, which procures scrap copper and other raw materials, such as chromic acid, tebuconazole, arsenic trioxide, dispersants and various biocides and co-biocides through the global market.

## Carbon Materials and Chemicals

Our CMC business manufactures its primary products and sells them directly to our global customer base under long-term contracts or through purchase orders negotiated by our regional sales personnel and coordinated through our global marketing group in the United States. Our four coal tar distillation facilities and five carbon materials terminals give us the ability to offer customers multiple sourcing options and a consistent supply of high-quality products.

For much of the past decade, the coal tar distillation industry has operated in an excess capacity mode, which further increased the competition for a limited amount of coal tar in North America and Europe. In 2014, we embarked on a plan to restructure our CMC operating footprint that reduced our global number of coal tar distillation facilities from the 11 that existed as of January 1, 2014 to four in total as of December 31, 2019. Our CMC business has experienced challenges over the past several years due to the closure of aluminum smelters that has occurred in North America, Western Europe and Australia. The smelting of aluminum requires significant amounts of energy, which is a major cost component for the aluminum industry. As a result, new production facilities are being built in regions with low energy costs such as the Middle East, while regions with higher energy costs such as North America, Western Europe and Australia have seen significant amounts of smelting capacity idled or closed over the last several years.

Our CMC business manufactures the following principal products:

- creosote, used in the treatment of wood or as a feedstock in the production of carbon black;
- carbon pitch, a critical raw material used in the production of aluminum and steel;
- naphthalene, used as a feedstock in the production of phthalic anhydride and as a surfactant in the production of concrete, and
- phthalic anhydride, used in the production of plasticizers, polyester resins and alkyd paints, respectively.

Creosote, carbon pitch, naphthalene, and carbon black feedstock are produced through the distillation of coal tar, a by-product generated through the processing of coal into coke for use in steel and iron manufacturing. Coal tar distillation involves the conversion of coal tar into a variety of intermediate chemical products in processes beginning with distillation. During the distillation process, heat and vacuum are utilized to separate coal tar into three primary components: chemical oils, distillate, and carbon pitch.

In the United States, our primary coal tar raw material supply contracts generally have terms ranging from three to ten years, and most provide options for renewal. Pricing under these contracts is either formula-based or negotiated on a quarterly or semi-annual basis. Our primary European tar supply contract has a remaining term of approximately six years, extending indefinitely thereafter unless terminated by a one-year advance notice, and contains formula-based tar pricing. Our primary Australian supply contracts have terms ranging from three to ten years and contain formula-based pricing which is adjusted on an annual or semi-annual basis. Finally, in China, we have a raw material contract in place with our joint venture partner. This contract is coterminous with the applicable joint venture arrangement and provides for formula-based pricing adjusted on a monthly or quarterly basis.

On February 18, 2020, we entered into a definitive agreement to sell Koppers (Jiangsu) Carbon Chemical Company Limited (“KJCC”) to Fangda Carbon New Material Co., Ltd and C-Chem Co., Ltd., a subsidiary of Nippon Steel Chemical & Material Co., Ltd. KJCC is a 75 percent-owned coal tar distillation company which is part of our CMC segment. The transaction’s closing is expected to occur in four to six months due to required regulatory approvals in China and achievement of other closing conditions.

## Technology and Licensing

In 1988, we acquired the “Koppers” trademark from Koppers Company, Inc. The association of the name with the chemical, building, wood preservation and coke industries is beneficial to our company, as it represents long-standing, high quality products. Trademarks relating to our PC business, such as “MicroPro®”, “FlamePro®”, “Protim” and “Solignum” are important in this segment of our business, and as long as we continue to use the name “Koppers” and the trademarks associated with our wood preservation business and comply with applicable registration requirements, our right to use the name “Koppers” and the other trademarks should continue without expiration. The expiration of other trademark rights is not expected to materially affect our business.

## Backlog

Generally, Koppers does not manufacture its products against a backlog of orders. Inventory and production levels are typically driven by expectations of future demand based on contractual obligations. Our RUPS business carries significant amounts of untreated crosstie inventory, which typically requires air-seasoning for a period of six- to nine-months.

## Seasonality

Demand for residential, commercial, and agricultural treated lumber may decline during winter months due to weather conditions. In addition, inclement or winter weather may affect access to certain raw materials or impact operations at our facilities. As a result, operating results may vary from quarter to quarter depending on the severity of weather conditions and other variables affecting our products. Historically, our operating results have been significantly lower in the first and fourth calendar quarters as compared to the second and third calendar quarters.

## Segment Information

Please see Note 9, "Segment Information," under Item 8 of this Form 10-K for financial information relating to business segments and geographic areas. See also "Item 1A. Risk Factors – Risks Related to Our Business – Demand for our products is cyclical and we may experience prolonged depressed market conditions for our products."

## Non-U.S. Operations

Koppers has a significant investment in non-U.S. operations. Therefore, we are subject to certain risks that are inherent to foreign operations, including complying with applicable laws relating to foreign practices, the laws of foreign countries in which we operate, political and economic conditions in international markets, the imposition of tariffs and fluctuations in foreign exchange rates. See also "Item 1A. Risk Factors – Risks Related to Our Business – We are subject to risks inherent in foreign operations, including additional legal regulation, changes in social, political and economic conditions."

## Environmental Matters

Our operations and properties are subject to extensive federal, state, local and foreign environmental laws and regulations relating to protection of the environment and human health and safety, including those concerning the treatment, storage and disposal of wastes, the investigation and remediation of contaminated soil and groundwater, the discharge of effluents into waterways, the emission of substances into the air, as well as various health and safety matters. Environmental laws and regulations are subject to frequent amendment and have historically become more stringent over time. We have incurred and could incur in the future significant costs if we fail to comply with regulations and responsibilities under environmental laws and regulations, including cleanup costs, civil and criminal penalties, injunctive relief and denial or loss of, or imposition of significant restrictions on, environmental permits. In addition, we have been and could in the future be subject to suit by private parties in connection with alleged violations of, or liabilities under, environmental laws and regulations. Additional information on environmental matters is available in Item 1A under "Risks Related to Our Business" and Note 20 of the Notes to Consolidated Financial Statements, "Commitments and Contingent Liabilities."

## Employees and Employee Relations

As of December 31, 2019, we had 990 salaried employees and 1,130 non-salaried employees. Listed below is a breakdown of employees by our businesses, including administration.

<i>Business</i>	<i>Salaried</i>	<i>Non-Salaried</i>	<i>Total</i>
Railroad and Utility Products and Services	363	753	1,116
Performance Chemicals	227	150	377
Carbon Materials and Chemicals	284	216	500
Administration	116	11	127
<b>Total Employees</b>	<b>990</b>	<b>1,130</b>	<b>2,120</b>

Approximately 523 of our employees are represented by a number of different labor unions and are covered under numerous labor agreements. The labor contracts at three of our facilities covering approximately 144 employees are scheduled to expire during 2020.

## Environmental, Social and Governance

Corporate social responsibility, our obligation to people, the environment, and to good corporate governance processes, has been a part of our culture for many years. We believe this culture, supported by a spirit of collaboration and innovation, allows us to decrease our impact on the environment and create value for all of our stakeholders. We published our first Corporate Social Responsibility report (CSR) in 2003 and our historical CSR reports are available on [www.koppers.com/sustainability](http://www.koppers.com/sustainability). We do not intend to incorporate the contents of our CSR reports or our website into this report.

We believe this commitment is reflected in our improving safety culture and our trend of greenhouse gas and energy usage reductions. In 2018, our greenhouse gas emissions decreased 48 percent, and energy usage declined 41 percent, respectively, from our 2012 baseline.

Our investment in the training and safety leadership skills of our employees continues to grow. We have formed a Sustainability Council to review our practices using standard ESG rating metrics and to develop and drive practices designed to improve our performance against those expectations. Toward this goal, in 2019, we began work on a materiality analysis, both internal and external, that will highlight the areas where we can most effectively address the needs of our stakeholders

#### *Environmental*

The circular nature of our business starts with our raw materials, the majority volume of which are by-products generated by other industries (including scrap copper and coal tar) and renewable resources (trees). We purchase approximately 40 million pounds of scrap copper or other compounds containing copper, all of which is postconsumer or post-industrial in nature. We believe this places Koppers in the center of what is known as the “circular economy” that emphasizes the “reduce, reuse, recycle” mentality that continues to frame global conservation efforts. Our wood-treatment solutions, while supporting an important role in our global infrastructure across multiple industries, also support an important role in the carbon cycle. Treating wood significantly increases its useful lifespan, allowing the carbon stored within the wood to be immobilized for up to 50 years, keeping it out of the atmosphere and limiting carbon's impact on the environment.

In 2018, we advanced our circular business model even further through our acquisitions of Koppers Recovery Resources (“KRR”) and Koppers Utility and Industrial Products (“UIP”). Both businesses add product life cycle management capabilities to help solve our customers' challenge of responsibly disposing of end-of-life crossties and utility poles by repurposing used wood products, including as a fuel source. This reduces the end-of-life impact of our ties and poles, contributing to greater product sustainability.

#### *Social*

We are committed to proactively evaluating and addressing community needs in the areas where we operate. Many of our locations have made strong connections with local community members, allowing Koppers representatives to share facility information and address any questions, observations, concerns and ideas. Our community impact is demonstrated through our employees' volunteer commitments and a corporate philanthropy program. Employees worldwide volunteer their time to mentor students, enhance local education initiatives, take care of the elderly, assist at homeless shelters and provide hands-on help to those affected by natural disasters.

We believe our ability to positively impact our communities and environment starts with investing in our employees. Our people-focused strategy considers all aspects of the employee experience, from hiring practices and onboarding to health and wellness and talent management.

- Collaboration – Communication across our global footprint drives our efforts. All Koppers employees take part in safety training programs and provide direct feedback to leadership as part of the company's annual engagement survey.
- Diversity and inclusion – We are committed to supporting diversity and inclusion in process and practice. Our Culture and Engagement team ensures that a diverse slate of candidates is considered for open positions. Our first employee resource group launched in 2018, provides an important development forum for employees and serves as a model for future initiatives. Additionally, our Board of Directors has been recognized for gender and racial diversity.

#### *Governance*

We believe our corporate governance structure is designed to assure accountability to our stakeholders and to make certain that we conduct business in a responsible, ethical way. We maintain a comprehensive Code of Conduct that details the expectations and requirements we have as an organization for our employees. This Code of Conduct applies to all employees, whether we are engaging in peer-to-peer interactions, working to comply with complex regulations, marketing our products, purchasing materials, creating new products, managing our finances or interacting with our communities.

Our Board of Directors is broadly responsible for contributing to the strategic direction and oversight of the company. There are five board committees, including: Audit; Nominating and Corporate Governance; Management Development and Compensation; Strategy and Risk; and Sustainability. Among their duties and responsibilities, the Board directs the legal, ethical and socially responsible behavior of the company, such as developing effective performance measurement systems, reviewing the company's long-term strategy and overseeing risk management processes.



As stewards of our corporate governance and overall performance, Board members communicate with our shareholders and other stakeholders through financial reports, proxy statements, periodic filings and similar reports. Our Senior Management Team is responsible for directing the development and implementation of the company's strategic plan, and business operations around the globe. These executive leaders establish and maintain our commitment to ethics, integrity, fiscal responsibility, growth and sustainability.

### Internet Access

Our Internet address is [www.koppers.com](http://www.koppers.com). Our recent filings on Forms 10-K, 10-Q and 8-K and any amendments to those documents can be accessed without charge on our website under Investor Relations – SEC Filings as soon as reasonably practicable after such filings are made with the Securities and Exchange Commission. The contents of our internet site are not incorporated by reference into this document.

## ITEM 1A. RISK FACTORS

*You should carefully consider the risks described below before investing in our publicly traded securities. Our business is subject to the risks that affect many other companies, such as competition, technological obsolescence, labor relations, general economic conditions, geopolitical events and international operations.*

### Risks Related to Our Business

#### **Fluctuations in the price, quality and availability of our primary raw materials could reduce our profitability.**

Our operations depend on an adequate supply of quality raw materials being available on a timely basis. The loss of a key source of supply or a delay in shipments could cause a significant increase in our operating expenses. For example, our operations are highly dependent on a relatively small number of freight transportation services. We are also dependent on specialized ocean-going transport vessels that we lease to deliver raw materials to our facilities and finished goods to our customers. Interruptions in such freight services could impair our ability to receive raw materials and ship finished products in a timely manner. We are also exposed to price and quality risks associated with raw material purchases. Such risks include the following:

- The availability and cost of lumber are critical elements in our production of railroad crossties and pole products for our RUPS business. Historically, the supply and cost of hardwood for railroad crossties have been subject to availability and price pressures. We may not be able to obtain wood raw materials at economical prices in the future.
- The availability of scrap copper is a critical element in our production of copper-based wood preservation chemicals for our PC business. Our purchase price for scrap copper is based upon spot prices in the copper market, which may be subject to sudden price changes. We may not be able to obtain scrap copper at prices that match underlying pricing commitments to our customers.
- The primary raw material used by our CMC business is coal tar, a by-product of furnace coke production. Currently, our CMC business supplies our North American RUPS business with 100 percent of its creosote requirements. A shortage in the supply of domestic coal tar or a reduction in the quality of coal tar could require us to increase coal tar or creosote imports to meet future creosote demand. This could cause a significant increase in our operating expenses and we may be unable to pass some or all of these costs on to our customers.
- In certain circumstances coal tar may also be used as an alternative to fuel. In the past, increases in energy prices have resulted in higher coal tar costs which we have attempted to pass through to our customers. If these increased costs cannot be passed through to our customers, it could result in margin reductions for our coal tar-based products.
- Our price realizations and profit margins for phthalic anhydride have historically fluctuated with the price of orthoxylene and its relationship with phthalic anhydride; however, during periods of excess supplies of phthalic anhydride, margins may be reduced despite high levels for orthoxylene prices.
- Our price realizations and profit margins for phthalic anhydride, naphthalene and carbon black feedstock have historically fluctuated with the market price of crude oil, market prices for chemicals derived from crude oil, such as orthoxylene, or market indices derived from crude oil.
- Our profit margins at one of our coal tar distillation facilities have fluctuated with the market price of needle coke.
- We import certain raw materials that are used in our products that are, or may become, subject to tariffs and trade restrictions.

If the costs of raw materials increase significantly and we are unable to offset the increased costs with higher selling prices, our profitability will decline.

### **We face risks related to our substantial indebtedness.**

As of December 31, 2019, we had total outstanding debt of \$911.9 million, and approximately \$221.6 million of additional unused borrowing capacity under our senior secured revolving credit facility that is part of our senior secured credit facility (the "Credit Facility"). Our substantial leverage could adversely affect our ability to raise additional capital to fund our operations, limit our ability to react to changes in the economy or our industry, expose us to interest rate risk associated with our variable rate debt and prevent us from meeting our obligations under the Senior Notes due 2025 (the "2025 Notes") and the Credit Facility as described in Note 16 of the Notes to Consolidated Financial Statements. Our high degree of leverage could have important consequences to us, including:

- making it more difficult for us to make payments on our debt;
- increasing our vulnerability to general economic and industry conditions;
- requiring a substantial portion of cash flow from operations to be dedicated to the payment of principal and interest on our debt, thereby reducing our ability to use our cash flow to fund our operations, capital expenditures, and future business opportunities;
- exposing us to the risk of increased interest rates as certain of our borrowings under our Credit Facility are at variable rates;
- restricting us from making strategic acquisitions or causing us to make non-strategic divestitures;
- limiting our ability to obtain additional financing for working capital, capital expenditures, product development, debt service requirements, acquisitions, and general corporate or other purposes; and
- limiting our ability to adjust to changing market conditions and placing us at a competitive disadvantage compared to our competitors who may be less highly leveraged.

We and our subsidiaries may be able to incur substantial additional indebtedness in the future, subject to the restrictions contained in our Credit Facility and the indenture governing the 2025 Notes. If new indebtedness is added to our current debt levels, the related risks that we now face could intensify.

### **Our debt agreements contain restrictions that limit our flexibility in operating our business.**

Our Credit Facility and the indenture governing the 2025 Notes contain various covenants that limit our ability to engage in specified types of transactions. These covenants limit our ability and the ability of our restricted subsidiaries to, among other things:

- incur additional debt;
- pay dividends or distributions on our capital stock or repurchase our capital stock;
- issue stock of subsidiaries;
- make certain investments;
- create liens on our assets to secure debt;
- enter into transactions with affiliates;
- merge or consolidate with another company; and
- sell or otherwise transfer assets.

In addition, under the Credit Facility, we are required to meet specified financial ratios in order to undertake certain actions, and we are required to maintain a specified minimum fixed charge coverage ratio, a maximum total secured leverage ratio and a maximum total leverage ratio. Our ability to meet those tests can be affected by events beyond our control, and we cannot assure you that we will meet them. A breach of any of these covenants could result in a default under our Credit Facility. Upon the occurrence of an event of default under our Credit Facility, the lenders could elect to declare all amounts outstanding under our Credit Facility to be immediately due and payable and terminate all commitments to extend further credit. Such a declaration by the lenders under our Credit Facility would also constitute an event of default under our 2025 Notes. Similarly, a default under our 2025 Notes could also constitute an event of default under our Credit Facility. If we were unable to repay those amounts, the lenders under our Credit Facility could proceed against the collateral granted to them to secure such indebtedness. We have pledged substantially all of our assets as collateral under our Credit Facility. If the lenders under our Credit Facility accelerate the repayment of borrowings, we cannot assure you that we will have sufficient assets to repay our Credit Facility, as well as our unsecured indebtedness, including notes.

**We may not be able to generate sufficient cash to service all of our indebtedness, including the 2025 Notes, and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.**

Our ability to make scheduled payments on or to refinance our debt obligations depends on our financial condition and operating performance, which are subject to prevailing economic and competitive conditions and to certain financial, business and other factors beyond our control. We cannot assure you that we will maintain a level of cash flows from operating activities sufficient to permit us to pay the principal, premium, if any, and interest on our indebtedness, including the 2025 Notes.

If our cash flows and capital resources are insufficient to fund our debt service obligations, we may be forced to reduce or delay investments and capital expenditures, or to sell assets, seek additional capital or restructure or refinance our indebtedness, including the 2025 Notes. These alternative measures may not be successful and may not permit us to meet our scheduled debt service obligations. In the absence of such operating results and resources, we could face substantial liquidity problems and might be required to dispose of material assets or operations to meet our debt service and other obligations. Our Credit Facility restricts our ability to dispose of assets and use the proceeds from the disposition. We may not be able to consummate those dispositions or to obtain the proceeds that we could realize from them and these proceeds may not be adequate to meet any debt service obligations then due.

**Conditions in the global economy and global capital markets may adversely affect our results of operations, financial condition and cash flows.**

In recent history, the U.S. and global economy and capital markets have experienced significant uncertainties and volatility. Our business and operating results can be significantly affected by global economic issues. Our customers may experience deterioration of their business during the adverse business cycles. They may experience cash flow shortages and may have difficulty obtaining financing. As a result, our customers may delay or cancel plans to purchase our products and may not be able to fulfill their payment obligations to us in a timely fashion. Our suppliers may be experiencing similar conditions which could impact their ability to supply us with raw materials and otherwise fulfill their obligations to us. If global economic conditions deteriorate significantly, there could be a material adverse effect to our results of operations, financial condition and cash flows.

In addition, we rely on our Credit Facility with a consortium of banks to provide us with liquidity to meet our working capital needs. Our ability to fund our liquidity needs and working capital requirements could be impacted in the event that disruptions in the credit markets result in the banks being unable to lend to us under our Credit Facility.

**Global economic issues could prevent us from accurately forecasting demand for our products, which could have a material adverse effect on our results of operations and our financial condition.**

Adverse global economic issues, market instability and volatile commodity price fluctuations make it increasingly difficult for us, our customers and our suppliers to accurately forecast future product demands and sales prices, which could cause us to procure raw materials in excess of end-product demand. This could cause a material increase to our inventory carrying costs and, in the event of falling market prices for our end products, result in significant charges to write-down inventory to market prices.

**The interest rate of our Credit Facility is priced using a spread over LIBOR.**

LIBOR, the London interbank offered rate, is the basic rate of interest used in lending between banks on the London interbank market and is widely used as a reference for setting the interest rate on loans globally. We use LIBOR as a reference rate in our Credit Facility such that the interest due to our creditors pursuant to our Credit Facility is calculated using LIBOR and our Credit Facility contains a stated minimum value for LIBOR. On July 27, 2017, the United Kingdom's Financial Conduct Authority, which regulates LIBOR, announced that it intends to phase out LIBOR by the end of 2021. The U.S. Federal Reserve, in conjunction with the Alternative Reference Rates Committee, a steering committee comprised of large U.S. financial institutions, is focused on replacing U.S. dollar LIBOR with a new index calculated by short-term repurchase agreements, backed by Treasury securities – Secured Overnight Financing Rate ("SOFR"). SOFR is observed and backward looking, which stands in contrast with LIBOR under the current methodology, which is an estimated forward-looking rate and relies, to some degree, on the expert judgment of submitting panel members. Given that SOFR is a secured rate backed by government securities, it will be a rate that does not take into account bank credit risk (as is the case with LIBOR). SOFR is therefore likely to be lower than LIBOR and is less likely to correlate with the funding costs of financial institutions. Whether or not SOFR attains market traction as a LIBOR replacement tool remains in question. As such, the future of LIBOR at this time is uncertain. If LIBOR ceases to exist, we will renegotiate our credit agreements that utilize LIBOR as a factor in determining the interest rate to replace LIBOR with the new standard that is established.

**Intellectual property rights are important to our business. If our patents are declared invalid or our trade secrets become known to our competitors, our ability to compete may be adversely affected.**

Proprietary protection of our processes, apparatuses and other technology is important to our business, particularly in our PC business. Consequently, we may have to rely on judicial enforcement of our patents and other proprietary rights, which is generally a time consuming and expensive process. While a presumption of validity exists with respect to patents issued to us in the United States, there can be no assurance that any of our patents will not be challenged, invalidated, circumvented or rendered unenforceable. Furthermore, if any pending patent application filed by us does not result in an issued patent, or if patents are issued to us, but such patents do not provide meaningful protection of our intellectual property, or if patents issued to us expire, then our ability to compete may be adversely affected. Additionally, our competitors or other third parties may obtain patents that restrict or preclude our ability to lawfully produce or sell our products in a competitive manner, which could have a material adverse effect on our business, cash flow and financial condition. The growth of our business also depends on our ability to develop new intellectual property rights, including patents, and the successful implementation of innovation initiatives. There can be no assurance that our efforts to do so will be successful and the failure to do so could negatively impact our results of operations.

We also rely upon unpatented proprietary know-how and continuing technological innovation and other trade secrets to develop and maintain our competitive position, particularly in our PC business. While it is our practice to enter into confidentiality agreements with our employees and third parties to protect our intellectual property, these confidentiality agreements may be breached or may not provide meaningful protection for our trade secrets or proprietary know-how, and adequate remedies may not be available in the event of an unauthorized use or disclosure of our trade secrets and know-how. In addition, others could obtain knowledge of our trade secrets through independent development or other access by legal means. The failure of our patents or confidentiality agreements to protect our processes, apparatuses, technology, trade secrets or proprietary know-how could have a material adverse effect on our business, cash flow and financial condition.

**We may be required to recognize impairment charges for our long-lived assets.**

At December 31, 2019, the net carrying value of long-lived assets (property, plant and equipment, operating lease right-of-use assets, goodwill and other intangible assets) totaled \$993.4 million. In accordance with generally accepted accounting principles, we periodically assess these assets to determine if they are impaired. Significant negative industry or economic trends, disruptions to our business, unexpected significant changes or planned changes in use of the assets, divestitures and market capitalization declines may result in impairments to goodwill and other long-lived assets. Future impairment charges could significantly affect our results of operations in the periods recognized. Impairment charges would also reduce our shareholders' equity and could affect compliance with the covenants in our debt agreements.

**We may not be able to compete successfully in any or all of the industry segments in which we operate.**

The markets in which we operate are highly competitive, and this competition could harm our business, results of operations, cash flow and financial condition. If we are unable to respond successfully to changing competitive conditions, the demand for our products could be affected. We believe that the most significant competitive factor for our products is selling price.

**Demand for our products is cyclical and we may experience prolonged depressed market conditions for our products.**

Our products are sold primarily into markets which historically have been cyclical, such as wood preservation, aluminum and specialty chemicals.

- The principal use of our wood preservation chemicals is in the manufacture of treated lumber, which is used mainly for residential applications, such as wood decking, and also industrial applications, such as the treating of railroad crossties and utility poles. Therefore, a decline in remodeling and construction could reduce demand for wood preservation chemicals for residential applications and a decline in the capital spending requirements for railroads and utility companies could reduce demand for wood preservation chemicals for industrial applications.
- The principal consumers of our carbon pitch are primary aluminum smelters. Although the global aluminum industry has experienced growth on a long-term basis, the aluminum industry has experienced a shift in primary aluminum production from the mature geographies where we have historically enjoyed high market shares into emerging economies.
- The principal use of our phthalic anhydride is in the manufacture of plasticizers and flexible vinyl, which are used mainly in the housing and automobile industries. Therefore, a decline in remodeling and construction or global automobile production could reduce the demand for phthalic anhydride.

**We are dependent on major customers for a significant portion of our net sales, and the loss of one or more of our major customers could result in a significant reduction in our profitability as a whole or the profitability of a particular product.**

Although no one customer accounted for more than six percent of our net sales for the year ended December 31, 2019, our top ten customers accounted for approximately 37 percent of our net sales. The loss of a significant customer could have a material adverse effect on our business, cash flow and financial condition.

**Our products may be rendered obsolete or less attractive by changes in regulatory, legislative or industry requirements.**

Changes in regulatory, legislative or industry requirements may render certain of our products obsolete or less attractive. Our ability to anticipate changes in these requirements, especially changes in regulatory standards, will be a significant factor in our ability to remain competitive. We may not be able to comply in the future with new regulatory, legislative and/or industrial standards that may be necessary for us to remain competitive and certain of our products may, as a result, become obsolete or less attractive to our customers.

**The development of new technologies or changes in our customers' products could reduce the demand for our products.**

Our products are used for a variety of applications by our customers. Changes in our customers' products or processes may enable our customers to reduce consumption of the products we produce or make our products unnecessary. Customers may also find alternative materials or processes that no longer require our products.

**As a producer of wood preservatives, we may incur additional costs under our warranties or otherwise for claims related to treated-wood products.**

We provide limited warranties on certain treated-wood products. These limited warranties cover treated-wood products that are produced by certain of our customers who use wood preservatives supplied by us. The limited warranties generally provide for replacement of properly treated-wood (treated-wood only) or refund of the purchase price for the treated-wood product that prematurely fails due to fungal decay or termite attack. From time to time, we (or our customers) receive claims under these warranties or other claims relating to alleged failures of treated-wood products. Our profitability could be adversely affected if the amount of warranty claims against us or our customers significantly increase.

**Hazards associated with chemical manufacturing may cause suspensions or interruptions of our operations.**

Due to the nature of our business, we are exposed to the hazards associated with chemical manufacturing and the related use, storage and transportation of raw materials, products and wastes in our manufacturing facilities and our distribution centers, such as fires, explosions and accidents that could lead to a suspension or interruption of operations. Any disruption could reduce the productivity and profitability of a particular manufacturing facility or of our company as a whole. Other hazards include the following:

- piping and storage tank leaks and ruptures;
- mechanical failure;

- exposure to hazardous substances; and
- chemical spills and other discharges or releases of toxic or hazardous wastes, substances or gases.

These hazards, among others, may cause personal injury and loss of life, damage to property and contamination of the environment, which could lead to government fines or work stoppage injunctions, cleanup costs and lawsuits by injured persons. While we are unable to predict the outcome of such matters, if determined adversely to us, we may not have adequate insurance to cover related costs or liabilities and, if not, we may not have sufficient cash flow to pay for such costs or liabilities. Such outcomes could harm our customer goodwill and reduce our profitability and could have a material adverse effect on our business, financial condition, cash flow and results from operations.

**We are subject to extensive environmental laws and regulations and may incur significant costs as a result of continued compliance with, violations of or liabilities under environmental laws and regulations.**

Like other companies involved in environmentally sensitive businesses, our operations and properties are subject to extensive federal, state, local and foreign environmental laws and regulations, including those concerning the following, among other things:

- the treatment, storage and disposal of wastes;
- the investigation and remediation of contaminated soil and groundwater;
- the discharge of effluents into waterways;
- the emission of substances into the air;
- the marketing, sale, use and registration of our chemical products, such as creosote and MicroPro<sup>®</sup>;
- the European Union's regulation under the Registration Evaluation Authorization and Restriction of Chemicals, which requires manufacturers or importers of substances manufactured or imported into the European Union in quantities of one ton per year or more to register with a central European Chemicals Agency;
- the European Union's regulation under the Biocidal Products Regulation, which requires a biocidal product to be authorized by the European Chemicals Agency before it can be marketed or used in the European Union; and
- other matters relating to environmental protection and various health and safety matters.

We have incurred, and expect to continue to incur, significant costs to comply with environmental laws and regulations as a result of remedial obligations. We could incur significant costs, including cleanup costs, fines, civil and criminal sanctions and claims by third parties for property damage and personal injury, as a result of violations of or liabilities under environmental laws and regulations. We accrue for environmental liabilities when a determination can be made that they are probable and reasonably estimable. Total environmental reserves at December 31, 2019 were \$9.5 million, which include provisions primarily for environmental remediation. In addition, we incur significant annual operating expenses related to environmental matters and significant capital expenditures related to environmental control facilities. Capital expenditures related to environmental control facilities in 2020 are expected to total approximately \$12.1 million and are expected to be funded by operations. Contamination has been identified and is being investigated and remediated at many of our sites by us or other parties. We believe that we will have continuing significant expenditures associated with compliance with environmental laws and regulations and, to the extent not covered by insurance or available recoveries under third-party indemnification arrangements, for present and future remediation efforts at plant sites and third-party waste sites and other liabilities associated with environmental matters. There can be no assurance that these expenditures will not exceed current estimates and will not have a material adverse effect on our business, financial condition, cash flow and results of operations.

Actual costs and liabilities to us may exceed forecasted amounts. Moreover, currently unknown environmental issues, such as the discovery of additional contamination or the imposition of additional sampling or cleanup obligations with respect to our sites or third-party sites, may result in significant additional costs, and potentially significant expenditures could be required in order to comply with future changes to environmental laws and regulations or the interpretation or enforcement thereof. We also are involved in various litigation and proceedings relating to environmental matters and toxic tort claims.

### **Changes in applicable tax regulations and resolutions of tax disputes could negatively affect our financial results.**

We are subject to income tax laws and regulations in the United States and various foreign jurisdictions. Significant judgment is required in evaluating and estimating our provision and accruals for these taxes. Our income tax liabilities are dependent upon the location of earnings among these different jurisdictions. Our income tax provision and income tax liabilities could be adversely affected by the jurisdictional mix of earnings, changes in valuation of deferred tax assets and liabilities and changes in tax laws and regulations. In the ordinary course of our business, we are also subject to continuous examinations of our income tax returns by tax authorities. Although we believe our tax estimates are reasonable, the final results of any tax examination or related litigation could be materially different from our related historical income tax provisions and accruals. Adverse developments in an audit, examination or litigation related to previously filed tax returns, or in the relevant jurisdiction's tax laws, regulations, administrative practices, principles and interpretations could have a material effect on our results of operations and cash flows in the period or periods for which that development occurs, as well as for prior and subsequent periods.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act of 2017 (the "Tax Act"). Since the passing of the Tax Act, additional guidance in the form of notices, proposed regulations and final regulations which interpret various aspects of the Tax Act have been issued. Changes could be made to the proposed regulations as they become finalized, future legislation could be enacted, more regulations and notices could be issued, all of which may have a material adverse effect on our cash flow and results of operations.

### **Future climate change regulation could result in increased operating costs and reduced demand for our products.**

Although the United States has not ratified the Kyoto Protocol, a number of federal laws related to "greenhouse gas," or "GHG," emissions have been considered by Congress. Additionally, various federal, state and regional regulations and initiatives have been enacted or are being considered.

Member States of the European Union each have an overall cap on emissions which are approved by the European Commission and implement the European Union Emissions Trading Directive as a commitment to the Kyoto Protocol. Under this Directive, organizations apply to the Member State for an allowance of GHG emissions. These allowances are tradable so as to enable companies that manage to reduce their GHG emissions to sell their excess allowances to companies that are not reaching their emissions objectives. Failure to purchase sufficient allowances will require the purchase of allowances at a current market price.

Any laws or regulations that may be adopted to restrict or reduce emissions of GHGs could cause an increase to our raw material costs, could require us to incur increased operating costs and could have an adverse effect on demand for our products.

### **Beazer East and Beazer Limited may not continue to meet their obligations to indemnify us.**

Under the terms of the asset purchase agreement between us and Koppers Company, Inc. (now known as Beazer East, Inc.) upon the formation of Koppers Inc. in 1988, subject to certain limitations, Beazer East and Beazer Limited assumed the liability for and indemnified us against, among other things, certain clean-up liabilities for contamination occurring prior to the purchase date at sites acquired from Beazer East and certain third-party claims arising from such contamination (the "Indemnity"). Beazer East and Beazer Limited (which are indirect subsidiaries of Heidelberg Cement AG) may not continue to meet their obligations. Beazer East could in the future choose to challenge its obligations under the Indemnity or our satisfaction of the conditions to indemnification imposed on us thereunder. The government and other third parties may have the right under applicable environmental laws to seek relief directly from us for any and all such costs and liabilities.

In July 2004, we entered into an agreement with Beazer East to amend the December 29, 1988 asset purchase agreement to provide, among other things, for the continued tender of pre-closing environmental liabilities to Beazer East under the Indemnity through July 2019. To the extent that such third party claims were not tendered by July 2019, Beazer East is not required to pay the costs arising from such claims under the Indemnity and furthermore, Beazer East may now tender certain of such claims to Koppers Inc. However, with respect to any such claims which were made by July 2019, Beazer East will continue to be responsible for such claims under the Indemnity beyond July 2019. The July 2004 amendment did not change the provisions of the Indemnity with respect to indemnification for non-environmental claims, such as product liability claims, which claims may continue to be asserted after July 2019. Qualified expenditures under the Indemnity are not subject to a monetary limit.

The Indemnity provides for the resolution of issues between Koppers Inc. and Beazer East by an arbitrator on an expedited basis upon the request of either party. The arbitrator could be asked, among other things, to make a determination regarding the allocation of environmental responsibilities between Koppers Inc. and Beazer East. Arbitration decisions under the Indemnity are final and binding on the parties.

Without reimbursement under the Indemnity, the obligation to pay the costs and assume the liabilities relating to these matters would have a significant impact on our net income. Furthermore, without reimbursement, we could be required to record a contingent liability on our balance sheet with respect to environmental matters covered by the Indemnity, which could result in our having significant negative net worth. Finally, the Indemnity does not afford us indemnification against environmental costs and liabilities attributable to acts or omissions occurring after the closing of the acquisition of assets from Beazer East under the asset purchase agreement, nor is the Indemnity applicable to liabilities arising in connection with other acquisitions by us after that closing.

**The insurance that we maintain may not fully cover all potential exposures.**

We maintain property, casualty, general liability, workers' compensation, pollution legal liability and other insurance, but such insurance may not cover all risks associated with the hazards of our business and is subject to limitations, including deductibles and maximum limits. We may incur losses beyond the limits, or outside the coverage, of our insurance policies, including liabilities for environmental compliance and remediation. In addition, from time to time, various types of insurance for companies in our industry have not been available on commercially acceptable terms or, in some cases, have not been available at all. In the future, we may not be able to obtain coverage at current levels, and our premiums may increase significantly on coverage that we maintain.

**Adverse weather conditions or natural disasters may reduce our operating results.**

Our quarterly operating results fluctuate due to a variety of factors that are outside our control, including inclement weather conditions, which in the past have caused a decline in our operating results. For example, adverse weather conditions have at times negatively impacted our supply chain as wet conditions impacted logging operations, reducing our ability to procure crossties. In addition, adverse weather conditions have had a negative impact on our customers in our pavement sealer and wood preservation businesses, resulting in a negative impact on our sales of these products. Moreover, demand for many of our products declines during periods of inclement weather. Finally, natural disasters, including wildfires, hurricanes and earthquakes could affect our revenue and operating results. It is impossible to predict the timing, magnitude or location of such natural disasters or their impacts on the local economy and on our operations. If a major wildfire, hurricane or other natural disaster were to disrupt the supply of our raw materials or damage or destroy our facilities or manufacturing equipment, we may experience potential impacts ranging from production and shipping delays to lost profits and revenues.

**We are subject to risks inherent in foreign operations, including additional legal regulation, changes in social, political and economic conditions.**

We have operations in the United States, Australia, Denmark, the United Kingdom, New Zealand, China and Canada, among others, and sell our products in many foreign countries. For the year ended December 31, 2019, net sales from products sold by our foreign subsidiaries accounted for approximately 33 percent of our total net sales.

Doing business on a global basis requires us to comply with the laws and regulations of the U.S. government and various international jurisdictions. These regulations place restrictions on our operations, trade practices and partners and investment decisions. In particular, our international operations are subject to U.S. and foreign anti-corruption laws and regulations, such as the Foreign Corrupt Practices Act, and economic sanction programs administered by the U.S. Treasury Department's Office of Foreign Assets Control. Violations of these laws and regulations may result in civil or criminal penalties, including fines.

For example, some of our operations are subject to the European Union's General Data Protection Regulation ("GDPR"), which became effective in May 2018. The GDPR creates a range of new compliance obligations for companies that process personal data of European Union residents and increases financial penalties for non-compliance. We process personal data of our employees who are European Union residents and will continue dedicating financial resources and management time to GDPR compliance. We bear the cost of compliance with the GDPR and are subject to fines and penalties in the event of a breach of the GDPR, which could have an adverse impact on our business, financial condition or results of operations.

Political and financial instability can lead to economic uncertainty and may adversely impact our business. For example, the announcement of the Referendum of the United Kingdom's (the "U.K.") Membership of the European Union ("E.U.") (referred to as "Brexit"), advising for the exit of the U.K. from the E.U., resulted in significant volatility in global stock markets and currency exchange rate fluctuations. If customers' buying patterns, decision-making processes, timing of expected deliveries and timing of new projects unfavorably change due to economic or political conditions, there would be a material adverse effect on our business, financial condition and operating results.



In addition, as a global business, we are also exposed to market risks relating to fluctuations in interest rates and foreign currency exchange rates. Our international revenues could be reduced by currency fluctuations or devaluations. Changes in currency exchange rates could lower our reported revenues and could require us to reduce our prices to remain competitive in foreign markets, which could also reduce our profitability. We have not historically hedged our financial statement exposure and, as a result, we could incur unanticipated losses. We are also subject to potentially increasing transportation and shipping costs associated with international operations. Furthermore, we are also exposed to risks associated with changes in the laws and policies governing foreign investments in countries where we have operations as well as changes in U.S. laws and regulations relating to foreign trade and investment.

**Our strategy to selectively pursue complementary acquisitions may present unforeseen integration obstacles or costs.**

Our business strategy includes the potential acquisition of businesses and entering into joint ventures and other business combinations that we expect would complement and expand our existing products and the markets where we sell our products. We may not be able to successfully identify suitable acquisition or joint venture opportunities or complete any particular acquisition, combination, joint venture or other transaction on acceptable terms. We cannot predict the timing and success of our efforts to acquire any particular business. Also, efforts to acquire other businesses or the implementation of other elements of this business strategy may divert managerial resources away from our business operations. In addition, our ability to engage in strategic acquisitions may depend on our ability to raise substantial capital and we may not be able to raise the funds necessary to implement our acquisition strategy on terms satisfactory to us, if at all. Our failure to identify suitable acquisition or joint venture opportunities may restrict our ability to grow our business. In addition, we may not be able to successfully integrate businesses that we acquire in the future or have recently acquired, which could lead to increased operating costs, a failure to realize anticipated operating synergies, or both.

**Litigation against us could be costly and time-consuming to defend, and due to the nature of our business and products, we may be liable for damages arising out of our acts or omissions, which may have a material adverse effect on us.**

We are and have been a defendant in a significant number of lawsuits in which the plaintiffs claim they have suffered a variety of illnesses (including cancer) and/or property damage as a result of exposure to coal tar pitch, pavement sealer, benzene, wood treatment chemicals and other chemicals. In addition, we are regularly subject to legal proceedings and claims that arise in the ordinary course of business, such as workers' compensation claims, governmental investigations, employment disputes, and customer and supplier disputes arising out of the conduct of our business. We also are involved in various litigation and proceedings relating to environmental matters. Litigation could result in substantial costs and may divert management's attention and resources away from the day-to-day operation of our business.

We are indemnified for certain product liability exposures under the Indemnity with Beazer East related to products sold prior to the closing of the acquisition of assets from Beazer East. Beazer East and Beazer Limited may not continue to meet their indemnification obligations. In addition, Beazer East could choose to challenge its indemnification obligations or our satisfaction of the conditions to indemnification imposed on us thereunder. If for any reason (including disputed coverage or financial incapability) one or more of such parties fail to perform their obligations and we are held liable for or otherwise required to pay all or part of such liabilities without reimbursement, the imposition of such liabilities on us could have a material adverse effect on our business, financial condition, cash flows and results of operations. Furthermore, we could be required to record a contingent liability on our balance sheet with respect to such matters, which could result in us having significant negative net worth.

**Labor disputes could disrupt our operations and divert the attention of our management and may cause a decline in our production and a reduction in our profitability.**

Many of our employees are represented by a number of different labor unions and are covered under numerous labor agreements. Typically, a number of our labor agreements are scheduled to expire each year. We may not be able to reach new agreements without union action or on terms satisfactory to us. Any future labor disputes with any such unions could result in strikes or other labor protests, which could disrupt our operations and divert the attention of our management from operating our business. If we were to experience a strike or work stoppage, it may be difficult for us to find a sufficient number of employees with the necessary skills to replace these employees. Any such labor disputes could cause a decline in our production and a reduction in our profitability.

**Our post-retirement obligations are currently underfunded. We may be required to make significant cash payments to our pension and other post-retirement plans, which will reduce the cash available for our business.**

As of December 31, 2019, our benefit obligation under our defined benefit pension plans exceeded the fair value of plan assets by \$28.3 million. Our pension asset funding to total pension obligation ratio was 87 percent as of December 31, 2019. The underfunding was caused, in large part, by fluctuations in the financial markets that have caused the value of the assets in our defined benefit pension plans to be significantly lower than anticipated and by fluctuations in interest rates which increased the discounted pension liabilities. In addition, our obligations for other post-retirement benefit obligations are unfunded and total \$9.2 million at December 31, 2019.

During the years ended December 31, 2019 and December 31, 2018, we contributed \$4.5 million and \$4.7 million, respectively, to our post-retirement benefit plans. Management expects that any future obligations under our post-retirement benefit plans that are not currently funded will be funded from our future cash flow from operations. If our contributions to our post-retirement benefit plans are insufficient to fund the post-retirement benefit plans adequately to cover our future obligations, the performance of the assets in our pension plans does not meet our expectations or other actuarial assumptions or mandatory funding laws are modified, our contributions to our post-retirement benefit plans could be materially higher than we expect, thus reducing the cash available for our business.

**We may incur significant charges in the event we close all or part of a manufacturing plant or facility.**

We periodically assess our manufacturing operations in order to manufacture and distribute our products in the most efficient manner. Based on our assessments, we may make capital improvements to modernize certain units, move manufacturing or distribution capabilities from one plant or facility to another plant or facility, discontinue manufacturing or distributing certain products or close all or part of a manufacturing plant or facility, any of which could cause us to incur significant charges. The actual costs to close a manufacturing facility may exceed our original cost estimate and may have a material adverse effect on our financial condition, cash flow from operations and results from operations.

**We depend on our senior management team and other key employees and the loss of these employees could adversely affect our business.**

Our success is dependent on the management, experience and leadership skills of our senior management team and key employees. The loss of any of these individuals or an inability to attract, retain and maintain additional personnel with similar industry experience could prevent us from implementing our business strategy. We cannot assure you that we will be able to retain our existing senior management and key personnel or to attract additional qualified personnel when needed. Senior management or key personnel may retire from time to time, and our employment agreements with these individuals may expire from time to time.

**We may be subject to information technology systems failures, network disruptions and breaches of data security, which could harm our relationships with our customers and third-party business partners, subject us to negative publicity and litigation and cause substantial harm to our business.**

We depend on integrated information systems to conduct our business. Information technology systems failures could disrupt our operations by impeding our processing of transactions, our ability to protect customer or company information and our financial reporting. System failures include risks associated with upgrading our systems, integrating information technology and other systems in connection with the integration of businesses we acquire, network disruptions and breaches of data security. Our computer systems, including our back-up systems, could be damaged or interrupted by power outages, computer and telecommunications failures, computer viruses, internal or external security breaches, events such as fires, earthquakes, floods, tornadoes and hurricanes, and/or errors by our employees.

We have been subject to cyberattacks in the past, including phishing and malware incidents, and although no such attack has had a material adverse effect on our business, this may not be the case with future attacks. As the prevalence of cyberattacks continues to increase, our information technology systems may be subject to increased security threats and we may incur additional costs to upgrade and maintain our security measures in place to prevent and detect such threats. The security and privacy measures that our vendors and customers implement may not be sufficient to prevent and detect cyberattacks that could have a material adverse effect on our financial condition, results of operations and cash flows. While our vendor agreements typically contain provisions that seek to eliminate or limit our exposure to liability for damages from a cyberattack, we cannot assure that such provisions will withstand legal challenges or cover all or any such damages.

In addition, outside parties may attempt to fraudulently induce employees or customers to disclose access credentials or other sensitive information in order to gain access to our systems and networks. We also may be subject to additional vulnerabilities as we integrate the systems, computers, software and data of acquired businesses and third-party business partners into our networks and separate the systems, computers, software and data of disposed businesses from our networks.

There are no assurances that our security measures, our business continuity and disaster recovery plans or actions or our investments to improve the maturity of our systems, processes and risk management framework to remediate vulnerabilities will be sufficient or completed quickly enough to prevent or detect or limit the impact of critical adverse events such as cyberattacks or security breaches. Potential consequences include, but are not limited to, transactional errors, business disruptions, loss of or damage to intellectual property, loss of customers and business opportunities, unauthorized access to or disclosure of confidential or personal information, regulatory fines, penalties or litigation, reputational damage, reimbursement or other compensatory costs and additional compliance costs. Any of these could have a material adverse effect on our financial condition, results of operations and cash flows.

#### Risks Related to Our Common Stock

##### **Our stock price may be extremely volatile.**

There has been significant volatility in the market price and trading volume of equity securities, which is unrelated to the financial performance of the companies issuing the securities. These types of broad market fluctuations may negatively affect the market price of our common stock.

Some specific factors that may have a significant effect on our common stock market price include the following:

- actual or anticipated fluctuations in our operating results or future prospects;
- the public's reaction to our press releases, our other public announcements and our filings with the Securities and Exchange Commission;
- strategic actions by us or our competitors, such as acquisitions or restructurings;
- new laws or regulations or new interpretations of existing laws or regulations applicable to our business;
- changes in accounting standards, policies, guidance, interpretations or principles;
- adverse conditions in the financial markets or general economic conditions, including those resulting from war, incidents of terrorism and responses to such events;
- sales of common stock by us, members of our management team or a significant shareholder;
- changes in stock market analyst recommendations or earnings estimates regarding our common stock or other comparable companies; and
- changes in our current dividend policy.

We cannot predict the extent to which investor interest in our company will continue to support an active trading market for our common stock on the New York Stock Exchange (the "NYSE") or otherwise or how liquid that market will continue to be. If there does not continue to be an active trading market for our common stock, you may have difficulty selling any of our common stock that you buy.

##### **If securities analysts or industry analysts publish negative research or reports, or do not publish reports about our business, our share price and trading volume could decline.**

The trading market for our common stock is influenced by the research and reports that industry or securities analysts publish about us, our business and our industry. If one or more analysts adversely change their recommendation regarding our shares or our competitors' stock, our share price would likely decline. If one or more analysts cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause our share price or trading volume to decline.

##### **Future sales, or the perception of future sales, of a substantial amount of our common stock may depress the price of the shares of our common stock.**

Future sales, or the perception or the availability for sale in the public market, of substantial amounts of our common stock could adversely affect the prevailing market price of our common stock and could impair our ability to raise capital through future sales of equity securities at a time and price that we deem appropriate.

We may issue shares of our common stock, or other securities, from time to time as consideration for future acquisitions and investments. We may also issue shares of our common stock, or other securities, in connection with employee stock compensation programs, employee stock purchase programs and board of directors' compensation. In addition, we may issue shares of our common stock or other securities in public or private offerings as part of our efforts to raise additional capital. In the event any such acquisition, investment, issuance under stock compensation programs or offering is significant, the number of shares of our common stock or the number or aggregate principal amount, as the case may be, of other securities that we may issue may in turn be significant. We may also grant registration rights covering those shares or other securities in connection with any such acquisitions and investments. Any additional capital raised through the sale of our equity securities may dilute your percentage ownership in us.

**Our ability to raise capital in the future may be limited.**

Our ability to raise capital in the future may be limited. Our business and operations may consume resources faster than we anticipate. In the future, we may need to raise additional funds through the issuance of new equity securities, debt or a combination of both. Additional financing may not be available on favorable terms, or at all. If adequate funds are not available on acceptable terms, we may be unable to fund our capital requirements. If we issue new debt securities, the debt holders would have rights senior to common shareholders to make claims on our assets, and the terms of any debt could restrict our operations, including our ability to pay dividends on our common stock. If we issue additional equity securities, existing shareholders will experience dilution, and the new equity securities could have rights senior to those of our common stock. Because our decision to issue securities in any future offering will depend on market conditions and other factors beyond our control, we cannot predict or estimate the amount, timing or nature of our future offerings. Thus, our shareholders bear the risk of our future securities offerings diluting their interest and reducing the market price of our common stock.

**We have not declared a dividend since November 2014.**

We are not required to pay dividends, and our shareholders are not guaranteed, and do not have contractual rights, to receive dividends. Our board of directors may decide at any time, in its discretion, to change or revoke our dividend policy. We currently intend to use the annual cash savings from such dividend suspension to preserve financial flexibility while funding our strategic growth initiatives and debt repayments. Any determination to pay dividends in the future will be at the discretion of our board of directors and will depend upon results of operations, financial condition, contractual restrictions, restrictions imposed by applicable law and other factors our board of directors deems relevant.

The ability of Koppers Inc. and its subsidiaries to pay dividends or make other payments or distributions to us will depend on our operating results and may be restricted by, among other things, the covenants in Koppers Inc.'s Credit Facility. Our ability to pay dividends is also limited by the indenture governing the 2025 Notes as well as Pennsylvania law and may in the future be limited by the covenants of any future outstanding indebtedness we or our subsidiaries incur. If a dividend is paid in violation of Pennsylvania law, each director approving the dividend could be liable to the corporation if the director did not act with such care as a person of ordinary prudence would use under similar circumstances. Directors are entitled to rely in good faith on information provided by employees of the corporation and experts retained by the corporation. Directors who are held liable would be entitled to contribution from any shareholders who received an unlawful dividend knowing it to be unlawful. Furthermore, we are a holding company with no operations, and unless we receive dividends, distributions, advances, transfers of funds or other payments from our subsidiaries, we will be unable to pay dividends on our common stock.

**Provisions of our charter documents may inhibit a takeover, which could negatively affect our stock price.**

Provisions of our charter documents and the Business Corporation Law of Pennsylvania, the state in which we are incorporated, could discourage potential acquisition proposals or make it more difficult for a third party to acquire control of our company, even if doing so might be beneficial to our shareholders. Our Amended and Restated Articles of Incorporation (our "Articles of Incorporation") and our Second Amended and Restated Bylaws (our "Bylaws") provide for various procedural and other requirements that could make it more difficult for shareholders to effect certain corporate actions. For example, our Articles of Incorporation authorize our board of directors to determine the rights, preferences, privileges and restrictions of unissued series of preferred stock without any vote or action by our shareholders. Our board of directors can therefore authorize and issue shares of preferred stock with voting or conversion rights that could adversely affect the voting or other rights of holders of our common stock. The following additional provisions could make it more difficult for shareholders to effect certain corporate actions:

- Our shareholders will be able to remove directors only for cause by the affirmative vote of the holders of a majority of the outstanding shares of our capital stock entitled to vote in the election of directors. Vacancies on our board of directors may be filled only by our board of directors.
- Under Pennsylvania law, cumulative voting rights are available to the holders of our common stock if our Articles of Incorporation have not negated cumulative voting. Our Articles of Incorporation provide that our shareholders do not have the right to cumulative votes in the election of directors.
- Our Articles of Incorporation do not permit shareholder action without a meeting by consent except for the unanimous consent of all holders of our common stock. The Articles of Incorporation also provide that special meetings of our shareholders may be called only by the board of directors or the chairman of the board of directors.
- Our Bylaws provide that shareholders seeking to nominate candidates for election as directors or to bring business before an annual meeting of shareholders must provide timely notice of their proposal in writing to the corporate secretary.

These provisions may discourage acquisition proposals and may make it more difficult or expensive for a third party to acquire a majority of our outstanding voting stock or may delay, prevent or deter a merger, acquisition, tender offer or proxy contest, which may negatively affect our stock price.

## ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

## ITEM 2. PROPERTIES

The following chart sets forth information regarding our production facilities. Generally, our production and port facilities are suitable and adequate for the purposes for which they are intended and overall have sufficient capacity to conduct business in the upcoming year.

<i>Primary Product Line</i>	<i>Location</i>	<i>Description of Property Interest</i>
<b>Railroad and Utility Products and Services</b>		
Railroad crossties	Ashcroft, British Columbia, Canada	Owned
Utility poles	Bunbury, Western Australia, Australia	Owned/Leased
Railroad crossties	Denver, Colorado	Owned
Utility poles	Eutawville, South Carolina	Owned
Railroad crossties	Florence, South Carolina	Owned
Railroad crossties	Galesburg, Illinois	Leased
Utility poles	Grafton, New South Wales, Australia	Owned
Railroad crossties	Guthrie, Kentucky	Owned
Rail joint bars	Huntington, West Virginia	Leased
Utility poles	Jasper, Texas	Leased
Railroad crosstie materials recovery	L'Anse, Michigan	Leased
Utility poles	Leland, North Carolina	Owned
Utility poles	Longford, Tasmania, Australia	Owned
Railroad structures	Madison, Wisconsin	Owned
Railroad crossties	Muncy, Pennsylvania	Owned
Utility poles	Newsoms, Virginia	Owned
Utility poles	North, South Carolina	Owned
Railroad crossties	North Little Rock, Arkansas	Owned
Railroad crosstie materials recovery	Queen City, Texas	Leased
Railroad crossties	Roanoke, Virginia	Owned
Railroad crossties	Somerville, Texas	Owned
Utility poles	Sweetwater, Tennessee	Owned
Utility poles	Takura, Queensland, Australia	Leased
Utility poles	Vance, Alabama	Leased
Utility poles	Vidalia, Georgia	Owned
<b>Performance Chemicals</b>		
Wood preservation chemicals	Auckland, New Zealand	Owned
Wood preservation chemicals	Christchurch, New Zealand	Owned
Wood preservation chemicals	Darlington, United Kingdom	Owned
Wood preservation chemicals	Geelong, Victoria, Australia	Owned
Intermediate copper products	Hubbell, Michigan	Leased
Wood preservation chemicals	Millington, Tennessee	Owned
Wood preservation chemicals	Mt. Gambier, South Australia, Australia	Owned
Wood preservation chemicals	Rock Hill, South Carolina	Owned
<b>Carbon Materials and Chemicals</b>		
Carbon products	Mayfield, New South Wales, Australia	Owned
Carbon products	Nyborg, Denmark	Owned/Leased
Carbon products	Pizhou, Jiangsu Province, China	Leased
Carbon products, phthalic anhydride	Stickney, Illinois	Owned

Our corporate offices are located in leased office space in Pittsburgh, Pennsylvania. The lease term expires on December 31, 2028. We also own office space in Griffin, Georgia.

### ITEM 3. LEGAL PROCEEDINGS

We are involved in litigation and other proceedings relating to environmental laws and regulations, toxic tort, product liability and other matters. An adverse outcome for certain of these cases could result in a material adverse effect on our business, cash flows and results of operations. The information related to legal matters set forth in Note 20 to the Consolidated Financial Statements of Koppers Holdings Inc. is hereby incorporated by reference.

### ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

### EXECUTIVE OFFICERS OF THE REGISTRANT

The following table sets forth the names, ages and positions of our and Koppers Inc.'s executive officers as of February 27, 2020. Our executive officers hold their positions until the annual meeting of the board of directors or until their respective successors are elected and qualified.

<i>Name</i>	<i>Age</i>	<i>Position</i>
Leroy M. Ball	51	President, Chief Executive Officer, and Director of Koppers Holdings Inc. and Koppers Inc.
Joseph P. Dowd	59	Global Vice President, Zero Harm, Koppers Inc.
Daniel R. Groves	53	Vice President, Culture and Engagement, Koppers Inc.
Leslie S. Hyde	59	Senior Vice President and Chief Sustainability Officer, Koppers Inc.
Steven R. Lacy	64	Chief Administrative Officer, General Counsel and Secretary, Koppers Holdings Inc. and Koppers Inc., and Director of Koppers Inc.
Bradley A. Pearce	53	Chief Accounting Officer, Koppers Holdings Inc. and Koppers Inc.
James A. Sullivan	56	Executive Vice President and Chief Operating Officer, Koppers Inc.
Michael J. Zugay	68	Chief Financial Officer, Koppers Holdings Inc. and Koppers Inc., and Director of Koppers Inc.

*Mr. Ball* has served as President and Chief Executive Officer of Koppers Holdings Inc. and Koppers Inc. since January 2015. From May 2014 through December 2014, Mr. Ball served as Chief Operating Officer of Koppers Holdings Inc. and Koppers Inc. From May 2014 until August 2014, Mr. Ball served as both Chief Operating Officer and Chief Financial Officer of Koppers Holdings Inc. and Koppers Inc. He served as Vice President and Chief Financial Officer of Koppers Holdings Inc. and Koppers Inc. from September 2010 to May 2014. Mr. Ball has served as a Director of Koppers Holdings Inc. since February 2015 and as a Director of Koppers Inc. since May 2013.

*Mr. Dowd* has served as Vice President, Zero Harm, Koppers Inc. since January 2020. From January 2016 to December 2019, Mr. Dowd served as Global Vice President, Safety, Health, Environmental, and Process Excellence, Koppers Inc. From July 2012 to December 2015, Mr. Dowd served as Vice President, North American Carbon Materials and Chemicals, Koppers Inc.

*Mr. Groves* has served as Vice President, Culture and Engagement, Koppers Inc. since January 2020. From May 2011 to December 2019, Mr. Groves served as Vice President, Human Resources, Koppers Inc.

*Ms. Hyde* has served as Senior Vice President and Chief Sustainability Officer, Koppers Inc. since January 2020. From November 2017 to December 2019, Ms. Hyde served as Vice President, Corporate Strategy and Risk Management. From January 2016 to October 2017, Ms. Hyde served as Vice President, Risk Management and Deputy General Counsel of Koppers Inc. From January 2005 to December 2015, Ms. Hyde served as Vice President, Safety and Environmental Affairs of Koppers Inc.

*Mr. Lacy* has served as Chief Administrative Officer, General Counsel and Secretary of Koppers Holdings Inc. and Koppers Inc. since January 2018. Effective March 1, 2020, Mr. Lacy will assume the role of Assistant to the President, Koppers Inc. Mr. Lacy had previously served as Senior Vice President, Administration, General Counsel and Secretary of Koppers Holdings Inc. since November 2004 and served as Senior Vice President, Administration, General Counsel and Secretary of Koppers Inc. since January 2004. Mr. Lacy has served as a Director of Koppers Inc. since May 2013.

*Mr. Pearce* has served as Chief Accounting Officer, Koppers Holdings Inc. and Koppers Inc. since May 2019. From April 2008 to April 2019, Mr. Pearce served as Director, Corporate Control and Taxes, Koppers Inc.

*Mr. Sullivan* has served as Executive Vice President and Chief Operating Officer, Koppers Inc. since January 2020. From May 2018 to December 2019, Mr. Sullivan served as Senior Vice President, Railroad Products and Services and Global Carbon Materials and Chemicals, Koppers Inc. Prior to that, Mr. Sullivan served as Senior Vice President, Global Carbon Materials and Chemicals of Koppers Inc. from April 2014 to May 2018. Mr. Sullivan served as Vice President of Business Development, Koppers Inc. from June 2013 to April 2014.

*Mr. Zugay* has served as Chief Financial Officer of Koppers Holdings Inc. and Koppers Inc. since August 2014. Mr. Zugay also served as Treasurer of Koppers Holdings Inc. and Koppers Inc. from August 2018 to February 12, 2020. Prior to joining Koppers, Mr. Zugay was Co-Chief Executive Officer for Michael Baker Corporation (engineering and other consulting services) from December 2012 to October 2013. Mr. Zugay served as Chief Financial Officer of Michael Baker Corporation from February 2009 to January 2014. Mr. Zugay has served as a Director of Koppers Inc. since May 2015.

## **PART II**

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

Our shares of common stock are listed and traded on the NYSE under the symbol "KOP".

The number of registered holders of Koppers common stock at January 31, 2020 was 132.

#### **Dividend Policy**

In 2006, our board of directors adopted a dividend policy that provided for quarterly dividends, payable at the discretion of our board of directors. Dividends will be considered if cash generated by our business is in excess of our expected cash needs. Our expected cash needs include operating expenses and working capital requirements, interest and principal payments on our indebtedness, capital expenditures, incremental costs associated with being a public company, acquisitions, taxes and certain other costs. On an annual basis we expect to pay dividends, if declared, with cash flow from operations, but, due to seasonal or other temporary fluctuations in cash flow, we may from time to time use temporary short-term borrowings to pay quarterly dividends.

We are not required to pay dividends, and our shareholders will not be guaranteed, or have contractual or other rights, to receive dividends. Nevertheless, our board of directors may decide, in its discretion, at any time, to otherwise modify or repeal the dividend policy. We have not declared a dividend since November 2014. Any future determination to declare and pay dividends will be made at the discretion of our board of directors, after taking into account our financial results, capital requirements and other factors it may deem relevant.

Because we are a holding company, substantially all the assets shown on our consolidated balance sheet are held by our subsidiaries. Accordingly, our earnings and cash flow and our ability to pay dividends are dependent upon the earnings and cash flows of our subsidiaries and the distribution or other payment of such earnings to us in the form of dividends. Our ability to pay dividends is restricted by limitations on the ability of our only direct subsidiary, Koppers Inc., to pay dividends, as a result of limitations imposed by the Credit Facility, the indenture governing the 2025 Notes and by Pennsylvania law. See "Management's Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources – Restrictions on Dividends to Koppers Holdings."

#### **Issuer Purchases of Equity Securities**

No shares were repurchased in the three months ended December 31, 2019 under the current \$75 million share repurchase program approved in November 2011. The approximate dollar value of common shares that may yet be purchased under this program is \$24.8 million. The repurchase program has no expiration date.

**ITEM 6. SELECTED FINANCIAL DATA**

The following table contains our selected historical consolidated financial data for the five years ended December 31, 2019. The selected historical consolidated financial data for each of the years ended December 31, 2019, 2018, 2017, 2016 and 2015 have been derived from our audited consolidated financial statements. This selected financial data should be read in conjunction with Koppers' Consolidated Financial Statements and related notes included elsewhere in this Annual Report on Form 10-K as well as Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations.

	Year Ended December 31,				
	2019	2018	2017	2016	2015
<i>(Dollars in millions, except share and per share amounts)</i>					
<b>Statement of Operations Data:</b>					
Net sales	\$ 1,772.8	\$ 1,710.2	\$ 1,475.5	\$ 1,416.2	\$ 1,626.9
Depreciation and amortization	55.1	50.8	49.8	52.9	59.0
Impairment and restructuring charges (1)	6.0	4.0	16.2	20.1	42.2
Goodwill impairment (2)	0.0	0.0	0.0	0.0	67.2
Operating profit (loss)	130.8	110.4	123.6	93.4	(29.6)
Interest expense	62.5	56.3	42.5	50.8	50.7
Income (loss) from continuing operations	67.5	28.8	31.3	27.1	(75.9)
(Loss) income from discontinued operations	(0.1)	0.4	(0.8)	0.6	(0.1)
Net income (loss) (3)	67.4	29.2	30.5	27.7	(76.0)
Net income (loss) attributable to Koppers	66.6	23.4	29.1	29.3	(72.0)
<b>Earnings (loss) from Continuing Operations Per Common Share Data:</b>					
Basic – continuing operations	\$ 3.23	\$ 1.10	\$ 1.44	\$ 1.39	\$ (3.50)
Diluted – continuing operations	3.16	1.08	1.36	1.36	(3.50)
<b>Weighted average common shares outstanding (in thousands):</b>					
Basic	20,665	20,871	20,754	20,636	20,541
Diluted	21,068	21,326	22,000	21,055	20,541
<b>Balance Sheet Data:</b>					
Cash and cash equivalents	\$ 33.0	\$ 40.6	\$ 60.3	\$ 20.8	\$ 21.8
Total assets (4)	1,564.6	1,479.9	1,200.2	1,087.5	1,137.9
Total debt (4)	901.2	990.4	677.0	662.4	722.3
<b>Other Data:</b>					
Capital expenditures	\$ 37.2	\$ 109.7	\$ 67.5	\$ 49.9	\$ 40.7

(1) Includes plant closure and severance costs totaling \$6.0 million, \$3.9 million, \$14.6 million, \$13.2 million and \$36.5 million related to the decision to discontinue coal tar distillation activities at CMC plants located in the United States and the United Kingdom for the years ended December 31, 2019, 2018, 2017, 2016 and 2015, respectively. Includes plant closure and severance costs totaling \$0.1 million, \$1.6 million, \$6.9 million and \$5.7 million related to the restructuring of RUPS wood treating plants in the United States for the years ended December 31, 2018, 2017, 2016 and 2015, respectively.

(2) In 2015, we recorded a \$67.2 million impairment charge related to goodwill for the CMC business segment.

(3) Income tax expense for 2019 was favorably impacted by \$14.9 million related to a one-time deferred tax benefit due to an intra-entity transfer of intangible assets. Income tax expense for 2018 and 2017 was impacted by \$4.8 million and \$20.5 million, respectively, related to the Tax Act. Income tax benefit for 2015 was impacted by \$16.1 million related to CMC goodwill impairment.

(4) The acquisition of UIP and KRR materially affect the comparability of these amounts for years prior to December 31, 2018.



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

We are a leading integrated global provider of treated wood products, wood preservation chemicals, and carbon compounds. Our products and services are used in a variety of niche applications in a diverse range of end-markets, including the railroad, specialty chemical, utility, residential lumber, agriculture, aluminum, steel, rubber, and construction industries. We serve our customers through a comprehensive global manufacturing and distribution network, with manufacturing facilities located in North America, South America, Australasia, China and Europe.

We operate three principal businesses: Railroad and Utility Products and Services ("RUPS"), Performance Chemicals ("PC") and Carbon Materials and Chemicals ("CMC").

Through our RUPS business, we believe that we are the largest supplier of wood crossties to the Class I railroads in North America. Our other treated wood products include utility poles for the electric and telephone utility industries in the United States and Australia. We also provide rail joint bar products as well as various services to the railroad industry. In April 2018, we re-entered the North American utility pole market with the acquisition of Koppers Utility and Industrial Products Inc. ("UIP"). UIP manufactures and sells utility poles and certain construction pilings through a network of eight manufacturing facilities and 19 distribution yards located throughout the United States. In February 2018, Koppers Inc. acquired Koppers Recovery Resources LLC ("KRR") a business related to the recovery of used crossties.

Through our PC business, we believe that we are the global leader in developing, manufacturing and marketing wood preservation chemicals and wood treatment technologies for use in the pressure treating of lumber for residential, industrial and agricultural applications.

Our CMC business processes coal tar into a variety of products, including creosote, carbon pitch, carbon black feedstock, naphthalene and phthalic anhydride, which are intermediate materials necessary in the pressure treatment of wood, the production of aluminum, the production of carbon black, the production of high-strength concrete, and the production of plasticizers and specialty chemicals, respectively.

**Outlook***Trend Overview*

Our businesses and results of operations are affected by various competitive and other factors including (i) the impact of global economic conditions on demand for our products, including the impact of imported products from competitors in certain regions where we operate; (ii) raw material pricing and availability, in particular the cost and availability of hardwood lumber for railroad crossties and softwood lumber for utility poles, scrap copper prices, and the cost and amount of coal tar available in global markets, which is negatively affected by reductions in blast furnace steel production; (iii) volatility in oil prices, which impacts the cost of coal tar and certain other raw materials, as well as selling prices and margins for certain of our products including carbon black feedstock, phthalic anhydride, and naphthalene; (iv) competitive conditions in global carbon pitch markets; and (v) changes in foreign exchange rates.

*Railroad and Utility Products and Services*

We provide our customers with treated and untreated wood products, rail joint bars and services primarily for the railroad markets in the United States and Canada. We also operate a railroad services business that conducts engineering, design, repair and inspection services primarily for railroad bridges in the U.S. and Canada. In addition, we supply treated utility poles for the utility sector in the United States and Australia. The primary end-markets for RUPS is the North American railroad industry, which has an installed base of approximately 700 million wood crossties, and the investor-owned utility industry which utilizes wooden distribution and transmission poles. Both crossties and utility poles require periodic replacement.

Historically, North American demand for crossties had been in the range of 22-25 million crossties annually. However, the crosstie replacement market has been significantly lower in recent years. According to the Railway Tie Association ("RTA"), the estimated total crosstie installations in 2018 were approximately 21 million, of which 16 million were for Class I railroads. The RTA initially forecasted demand in 2019 to be at 22 million to 23 million crossties; however, that has recently been revised to 20.7 million crossties for 2019 and 20.8 million crossties for 2020. The key drivers for the lower projected crosstie demand levels include reduced heavy-haul loads because of the continuing secular shift from coal to natural gas, lower agricultural shipments due to lower crop yields, manufacturing constraints related to a less optimistic economic outlook, and uncertainties from ongoing trade tensions.

For distribution poles, nearly half of the installed base is over 40 years old and the demand has historically been in the range of two to three million poles annually. On an overall basis, we believe that the rate at which utilities purchase utility poles will grow as they continue replacement programs within their service territories. Given that backdrop, we anticipate that 2020 will be a relatively stable year from a demand standpoint. Longer term, we are evaluating opportunities to potentially expand our market presence in the United States as well as certain overseas markets.

The supply of untreated crossties can vary at times based upon weather conditions in addition to other factors. We have a nationwide wood procurement team that maintains close working relationships with a network of sawmills. We procure untreated crossties, either on behalf of our customers, or for our own inventory for future treating. We also procure switch ties and various other types of lumber used for railroad bridges and crossings. Untreated crossties go through a six- to nine-month air seasoning process before they are ready to be pressure treated. After the air seasoning process is complete, the crossties are pressure treated using creosote-only treatment or a combined creosote and borate treatment. During any given year, there is a seasonal effect in the winter and spring months on our crosstie business depending on weather conditions for harvesting lumber and crosstie installation.

For the past several years, the major companies in the rail industry substantially reduced both operating and capital spending from peak spending levels, which had a negative impact on sales of various products and services that we provide to that industry. Current year revenues and profitability reflect an increase year-over-year due to a slight rise in demand as capital budgets have now stabilized for most North American Class I railroads. We currently supply all seven of the North American Class I railroads and have long-standing relationships with these customers. Approximately 72 percent of our North American sales are under long-term contracts and we believe that we are positioned to maintain or grow our current market position.

According to the Association of American Railroads ("AAR"), railroads are facing multiple challenges that include fundamental long-term structural changes as a result of the continued decline of coal markets, growth in the domestic intermodal and chemical sectors, evolution of consumer purchasing practices, and disruptions stemming from trade uncertainty. In the recent past, the Class I railroads were highly dependent on the oil and gas and coal mining industries. Currently, the railroads are more correlated to commodity prices, interest rates and trade relations. The AAR reported that rail traffic trended down for much of 2019. For the twelve months ended December 31, 2019, total U.S. carload traffic decreased 4.9 percent from the prior year while intermodal units were lower by 5.1 percent from the prior year, and on a combined basis, U.S. traffic for carloads and intermodal units was 5.0 percent lower than the prior year. The decline can be attributed to continuing demand weakness in coal markets as well as trade disputes and related uncertainties, which had more of a dampening effect on rail-served industries than the overall economy.

Although year-over-year rail traffic had been relatively positive during the past several years prior to 2019, the amount of heavy-haul loads such as coal and fracking sands have declined significantly from historical levels. As a result, this translates into lighter-weight loads having less wear on tracks and ties. The AAR reports that coal was by far the biggest source of U.S. rail carload decline in 2019, falling by 9.2 percent compared with the prior year. In 2019, the coal carloads were at the lowest level in decades and were 45 percent lower than the previous peak in 2006. Additionally, the current demand for rail service has been softening due to lower U.S. manufacturing output, decelerating market trends in housing and tensions with trading partners overseas. Over an economic cycle, the long-term prognosis for the railroad industry and the products and services that we provide to it are generally favorable. However, in the near-term, railroad customers have scaled back and are focusing on reducing their operating costs and working capital. In general, demand has shown improvements in 2019 and we anticipate that to continue, contingent on the availability of lumber for untreated crosstie production.

In terms of raw material, in 2018, there was less available inventory of untreated crossties from the sawmills and lumber prices increased dramatically due to unfavorable weather conditions affecting production. During 2019, lumber prices declined and remained relatively stable; however, the weather challenges in the first half of the year negatively affected the availability of logs for production at sawmill operators. The RTA indicates that the industry continues to experience a shortage of lumber availability and consequently, the sawmills are reducing their tie production, which has resulted in a tightness in the supply of untreated crossties which constrains our ability to procure needed inventory. In addition, the potential effects from the current or future tariffs on trade between China and the U.S. may negatively impact the hardwood industry and the availability of lumber. The conditions for log availability improved somewhat late in the second quarter of 2019 and continued throughout the remainder of the year. To the extent that we can build our untreated tie inventory, we anticipate having higher levels of dry crosstie inventory ready for future treatment.

From a long-term perspective, we believe there remains a need for sustained investment in infrastructure and capacity expansion. We believe that with our vertical integration capabilities in wood treatment and strong customer relationships, we will ultimately benefit from increased demand.

### *Strategic Initiatives and Integration Synergies*

As part of optimizing our business, we continue to evaluate a number of opportunities to improve efficiencies in our operational processes, people and facilities. With 17 North American RUPS treating facilities operating at less than full utilization, our goal is to either capture more volume through the existing facilities or consolidate our operating footprint. We are pursuing actions to achieve both goals as demonstrated by the sale of our Blackstone, Virginia utility pole treating facility in 2019.

### *Performance Chemicals*

The largest geographic market for wood treating chemicals sold by our PC business is in North America, and the largest application for our products is the residential remodeling market. We also have a market presence in Europe, South America, Australia, New Zealand and Africa. We believe that PC is the largest global manufacturer and supplier of water-based wood preservatives and wood specialty additives to treaters that supply pressure treated wood products to large retailers and independent lumber dealers. These retailers and dealers, in turn, serve the residential, agricultural and industrial pressure-treated wood market. Our primary products are copper-based wood preservatives, including micronized copper azole (“MicroPro®”) and micronized pigments (“MicroShades®”). Applications for these products include decking, fencing, utility poles, construction lumber and other outdoor structures.

In North America, we are vertically integrated due to our manufacturing capabilities for copper compounds for our copper-based wood preservatives. We believe our vertical integration is part of our proprietary processes and reflects an important competitive advantage.

As most of the products sold by PC are copper-based products, changes in the price and availability of copper can have a significant impact on product pricing and margins. We attempt to moderate the variability in copper pricing over time by entering into hedging transactions for the majority of our copper needs, which primarily range from six months up to 36 months. These hedges typically match expected customer purchases and receive hedge accounting treatment. From time to time, we enter into forward transactions based upon long-term forecasted needs of copper. These forward positions are typically marked to market.

Product demand for our PC business has historically been closely associated with consumer spending on home repair and remodeling projects, and therefore, trends in existing home sales serve as a leading indicator. Overall, the market for existing homes continues to show mixed signals. According to the National Association of Realtors® (“NAR”), total existing-home sales in December increased 3.6 percent from November. Although the Midwest saw sales decline, the other three major U.S. regions reported meaningful growth from the previous month. Compared with prior year, overall sales grew significantly, up 10.8 percent from a year ago. On a full-year basis, total existing-home sales were neutral as sales were at the same level as in 2018. Even with historically low mortgage rates, sales have not commensurately increased, in part due to a low level of new housing options. Given the housing shortage, home prices are rising too rapidly, and this lack of inventory is preventing a potentially higher growth rate in existing-home sales.

According to the Leading Indicator of Remodeling Activity (“LIRA”) reported by the Joint Center for Housing Studies of Harvard University, national spending for improvements and repairs on owner-occupied homes is expected to rise only modestly in 2020. The LIRA projects that home remodeling expenditures will increase by just 1.5 percent in 2020 compared with annual gains of five percent to seven percent in recent years. While homebuilding and sales activity are projected to show modest growth, slowing demand in 2019 will likely continue to pull on remodeling spending growth through mid-2020 and then is expected to moderate in the second half of the year. Even with a lackluster growth projection, homeowner improvement and repair expenditures are still set to expand to more than \$330 billion in 2020. However, the current environment of low interest rates may help to counter some of these headwinds, which could boost home improvement expenditures over the next six to twelve months.

The Conference Board Consumer Confidence Index® decreased marginally in December, following a slight increase in November. The Index now stands at 126.5, slightly down from 126.8 in November. Consumers’ assessment of current conditions improved; however, their expectations declined, primarily due to a softening in their short-term outlook regarding jobs and financial prospects. Although the economy is not showing signs of further weakening, consumer spending in 2020 is not expected to gain momentum in the next several months.

From a margin perspective, our profitability was unfavorably impacted for the past two years by rising raw material costs, primarily due to copper prices which began to trend higher in 2017, continued into 2018 and then pulled back from highs reached in the first half of 2018. Overall, copper prices in 2018 were higher, and given that we make purchasing commitments approximately 12 to 18 months in advance of the following 12-month period, we experienced higher year-over-year raw material costs throughout 2019. The market prices for copper were lower in 2019, therefore, we anticipate lower year-over-year raw material costs throughout 2020. Our strategy is to hedge a majority of our requirements over a one-to-three year time frame in order to provide short-term certainty and visibility of our cost structure by lessening the volatility that may arise in commodity markets. In a rising copper price environment, as has been the case for much of the past twenty-four months, our average hedged prices have increased from prior year. We have and will continue to implement pricing actions, where possible, to partially offset the impact of higher input costs.

#### *Carbon Materials and Chemicals*

The primary products produced by CMC are creosote, which is a registered pesticide in the United States and used primarily in the pressure treatment of railroad crossties, and carbon pitch, which is sold primarily to the aluminum industry for the production of carbon anodes used in the smelting of aluminum. We have reduced capacity in our CMC plants in North America and Europe over the past several years to levels required to meet creosote demand in North America for the treatment of railroad crossties. Most recently, in June 2019, we announced the cessation of remaining production activities at our Follansbee, West Virginia facility in the third quarter of 2019 and, as such, we recorded charges of \$3.3 million in the second quarter of 2019 related to asset retirement obligations and inventory and fixed asset write-offs. As a result of these initiatives, we expect additional restructuring and related charges to earnings of approximately \$3 million to \$5 million through 2021. The overall expected future cash requirements for the CMC plant closures are estimated to be approximately \$14 million through 2021.

We currently supply our North American RUPS business with the majority of its creosote requirements. As discussed in the RUPS outlook, there has been a decrease starting in 2017 with respect to spending for railroad infrastructure. This results in a shift in excess distillate production to the commodity carbon black feedstock market until demand stabilizes for creosote.

While the sale of carbon pitch remains a significant portion of our sales volume, the reduction of aluminum smelting capacity in the United States, Australia and Western Europe has led to sharply lower demand for carbon pitch over the past several years. Accordingly, we have experienced significantly lower sales volumes due to the reduction in aluminum production in parts of the world where the majority of our production facilities are located. However, beginning in 2018, aluminum production in the United States increased to some extent as tariffs have been imposed on certain imported steel and aluminum products that has stimulated restarts of previously idled capacity. This development has resulted in additional demand for carbon pitch in the United States that can likely only be sustained through a continuation of current trade policy.

The availability of coal tar, the primary raw material for our CMC business, is linked to levels of metallurgical coke production. As the global steel industry, excluding Asia, has reduced the production of steel using metallurgical coke, the volumes of coal tar have also been reduced. For the past decade, the coal tar distillation industry has operated in an excess capacity mode, which further increased the competition for a limited amount of coal tar in North America. Over the past three years we have consolidated our operating footprint and significantly lowered production levels at the same time that we added distribution assets to move finished products from Europe to the United States more efficiently. In addition, we entered into several new long-term supply agreements in 2017 to further lower our exposure to coal tar availability risk and volatile end markets. As a result, our raw material needs in North America have been significantly less than historically required.

For the external markets served by our CMC business, we expect that North America and Europe will benefit from relatively favorable demand levels for carbon pitch. However, phthalic anhydride markets have begun to soften and end market pricing for some products has been under pressure in certain regions as competitors are trying to increase market share. Globally, coal tar raw material supply remains constrained due to reductions in blast furnace steel capacity. That said, our continued focus on streamlining CMC's cost structure has been key to maximizing its profitability.

*Subsequent Event*

On February 18, 2020, we entered into a definitive agreement to sell Koppers (Jiangsu) Carbon Chemical Company Limited ("KJCC") to Fangda Carbon New Material Co., Ltd and C-Chem Co., Ltd., a subsidiary of Nippon Steel Chemical & Material Co., Ltd. KJCC is a 75 percent-owned coal tar distillation company which is part of our CMC segment. In 2019, KJCC's sales totaled \$127.4 million and its operating profit totaled \$5.9 million. The sales price is \$107.0 million, subject to adjustment for cash, debt and working capital at closing, which is expected to occur in four to six months due to required regulatory approvals in China and achievement of other closing conditions. At closing, we estimate the gain on the sale of KJCC will be approximately \$45 million and net cash proceeds to Koppers will be approximately \$65 million, after noncontrolling interest, taxes and expenses.

*Seasonality and Effects of Weather on Operations*

Our quarterly operating results fluctuate due to a variety of factors that are outside of our control, including inclement weather conditions, which in the past have affected operating results. Operations at some of our facilities have at times been reduced during the winter months. Moreover, demand for some of our products declines during periods of inclement weather. As a result of the foregoing, we anticipate that we may experience material fluctuations in quarterly operating results. Historically, our operating results have been significantly lower in the first and fourth calendar quarters as compared to the second and third calendar quarters.

**Results of Operations – Comparison of Years Ended December 31, 2019 and December 31, 2018***Consolidated Results*

**Net sales** for the years ended December 31, 2019 and 2018 are summarized by segment in the following table:

	<i>Year Ended December 31,</i>		<i>Net Change</i>
	<i>2019</i>	<i>2018</i>	
<i>(Dollars in millions)</i>			
Railroad and Utility Products and Services	\$ 733.5	\$ 634.8	16%
Performance Chemicals	448.3	420.0	7%
Carbon Materials and Chemicals	591.0	655.4	-10%
	\$ 1,772.8	\$ 1,710.2	4%

**RUPS net sales** for the year ended December 31, 2019 increased by \$98.7 million, or 16 percent, compared to the prior year. The sales increase was primarily due to volume increases in the Class I and commercial crosstie markets, as well as a full year of results from UIP which was acquired in the second quarter of the prior year, along with price increases across the segment in the current year period. Sales of crossties increased by \$61.1 million in the current year period. These increases were offset, in part, by volume decreases in the rail joints market and an unfavorable impact from foreign currency translation in the current year period of \$2.5 million from our Australian pole business.

**PC net sales** for the year ended December 31, 2019 increased by \$28.3 million, or seven percent, compared to the prior year. The sales increase was due primarily to new customer wins, new product sales, higher organic volumes and price increases for copper-based preservatives in North America. Sales of non-copper based preservatives in Europe realized a more favorable pricing mix in the current year period as well. These increases were partially offset by an unfavorable impact from foreign currency translation in the current year period of \$3.0 million.

**CMC net sales** for the year ended December 31, 2019 decreased by \$64.4 million, or ten percent, compared to the prior year due mainly to lower sales prices for carbon pitch in China and Europe and naphthalene in Europe, along with lower sales volumes of carbon pitch in Australia and carbon black feedstock globally. Foreign currency translation also had an unfavorable impact on sales in the current year period of \$21.7 million. These decreases were partially offset by increased volumes for carbon pitch in China and North America and naphthalene in China. In Australia, higher sales prices for carbon pitch were driven primarily by higher raw material cost and increases in global oil pricing.

**Cost of sales** as a percentage of net sales was 81 percent for the year ended December 31, 2019, compared to 80 percent in the prior year. Lower gross margins for CMC in the current year period were a result of favorable margins in the first quarter of 2018 in China due to higher pricing along with lower gross margins for PC due to higher year-over-year raw material costs. These were offset by higher gross margins for RUPS due to increased sales volumes of crossties coupled with commercial crosstie market price increases.

**Depreciation and amortization charges** for the year ended December 31, 2019 were \$4.3 million higher when compared to the prior year period due mainly to assets placed in service over the past year related to our new naphthalene unit at our CMC plant in Stickney, Illinois along with a full year of depreciation and amortization from our acquisition of UIP which occurred in the second quarter of 2018.

**Loss on sale of assets** of \$8.3 million for the year ended December 31, 2018 reflects sales of our coal tar distillation facility in Clairton, Pennsylvania and our specialty chemicals business in the United Kingdom within our CMC segment and the sale of assets in the United Kingdom within our PC segment.

**Impairment and restructuring charges** were \$2.0 million higher when compared to the prior year period. In the third quarter of 2019, we discontinued remaining production activities at our Follansbee, West Virginia facility and, as such, we recorded associated charges of approximately \$3 million for asset retirement obligations and inventory and fixed asset write-offs in the current year. Prior year charges consisted of storage tank decommissioning costs and accelerated depreciation for the remaining fixed assets at our coal tar distillation facilities in Clairton, Pennsylvania and Follansbee, West Virginia.

**Selling, general and administrative expenses** for the year ended December 31, 2019 were \$10.7 million lower when compared to the prior year period due primarily to a decrease of \$9.4 million for travel, consulting and professional service expenses mostly related to our prior year acquisitions. This decrease was partially offset by an increase in legal costs.

**Interest expense** for the year ended December 31, 2019 was \$6.2 million higher when compared to the prior year period primarily due to the higher average debt level related to our acquisitions of UIP and KRR in 2018 as well as cash used to fund our stock buybacks and capital expenditures in the second half of 2018.

**Income taxes** for the year ended December 31, 2019 were \$24.6 million lower when compared to the prior year period. In December 2019, we completed a Dutch legal entity restructuring project, which resulted in an intra-entity transfer of certain intangible assets and intellectual property. This transaction resulted in the recognition of a deferred tax asset of \$14.9 million. We also recorded a favorable tax benefit of \$4.3 million in 2019 for the reversal of various unrecognized tax benefits due to the closure of a U.S. tax audit. Additionally, we recorded a favorable tax benefit of \$2.6 million for provision-to-return adjustments as a result of filing our 2018 U.S. tax return during 2019, predominately due to various tax return elections made at the date of filing which enabled us to increase our U.S. taxable income and therefore decrease the limitation on our interest expense deduction as originally estimated. These favorable items are partially offset by additional income taxes due to an increase in pre-tax profit of \$14.1 million when compared to the prior period. In the year ended December 31, 2018, income taxes included a tax cost of \$4.8 million related to the completion of the analysis of the final impact of the Tax Cuts and Jobs Act of 2017 (the "Tax Act").

Income tax expense as a percentage of pre-tax profit for the year ended December 31, 2019 and 2018 was 2.0 percent and 47.4 percent, respectively. The decrease in this percentage is largely due to the factors that are described in the above paragraph. Additionally, the annual effective income tax rate is lower when compared to the prior period due to a decrease in unfavorable U.S. tax adjustments for the limitation on our interest expense deduction and the global intangible low taxed income ("GILTI") inclusion.

### Segment Results

**Segment operating profit** for the years ended December 31, 2019 and 2018 is summarized in the following table:

	<i>Year Ended December 31,</i>		<i>% Change</i>
	<i>2019</i>	<i>2018</i>	
<i>(Dollars in millions)</i>			
<b>Operating profit (loss):</b>			
Railroad and Utility Products and Services	\$ 35.8	\$ 5.9	507%
Performance Chemicals	52.1	36.2	44%
Carbon Materials and Chemicals	45.0	70.7	-36%
Corporate	(2.1)	(2.4)	13%
	<b>\$ 130.8</b>	<b>\$ 110.4</b>	<b>18%</b>
<b>Operating profit as a percentage of net sales:</b>			
Railroad and Utility Products and Services	4.9%	0.9%	4.0%
Performance Chemicals	11.6%	8.6%	3.0%
Carbon Materials and Chemicals	7.6%	10.8%	-3.2%
	<b>7.4%</b>	<b>6.5%</b>	<b>0.9%</b>

**RUPS operating profit** increased by \$29.9 million compared to the prior year period. Operating profit as a percentage of net sales increased to 4.9 percent in the current year period. Operating profit as a percentage of net sales for the year ended December 31, 2019 was impacted by increased sales volumes of crossties to Class I customers coupled with commercial crosstie market price increases and higher overall demand along with benefits in the current year period from our 2018 acquisition of UIP. The prior year period also included acquisition-related costs not present in the current year period.

**PC operating profit** increased by \$15.9 million compared to the prior year period. Operating profit as a percentage of net sales increased to 11.6 percent from 8.6 percent in the prior year period. The current year period was favorably impacted by a net amount of \$11.0 million due to changes in unrealized gains and losses from our copper swap contracts as well as the receipt of insurance proceeds. Higher year-over-year raw material prices partially offset our increase in sales for the year ended December 31, 2019.

**CMC operating profit** decreased by \$25.7 million compared to the prior year period. Operating profit as a percentage of net sales decreased to 7.6 percent from 10.8 percent in the prior year period. Operating profit for the year ended December 31, 2019 was negatively affected primarily by lower sales prices for carbon pitch in China and Europe and naphthalene in Europe, along with lower sales volumes of carbon pitch in Australia and carbon black feedstock globally and an unfavorable impact from foreign currency translation. Additionally, we recognized restructuring and related charges to earnings of approximately \$3 million in the current year resulting from our cessation of remaining production activities at our Follansbee, West Virginia facility in the third quarter of 2019. These unfavorable drivers were partially offset by increased volumes for carbon pitch in China and North America and naphthalene in China coupled with a more streamlined and efficient cost structure across the entire segment.

Results of Operations – Comparison of Years Ended December 31, 2018 and December 31, 2017

#### Consolidated Results

**Net sales** for the years ended December 31, 2018 and 2017 are summarized by segment in the following table:

	Year Ended December 31,		Net Change
	2018	2017	
<i>(Dollars in millions)</i>			
Railroad and Utility Products and Services	\$ 634.8	\$ 512.6	24%
Performance Chemicals	420.0	411.2	2%
Carbon Materials and Chemicals	655.4	551.7	19%
	\$ 1,710.2	\$ 1,475.5	16%

**RUPS net sales** for the year ended December 31, 2018 increased by \$122.2 million or 24 percent compared to the prior year. The sales increase was primarily due to the acquisitions of UIP and KRR in the current year as well as volume increases in the commercial tie and rail joint markets in the current year. These increases were offset by lower treating volumes of Class I crossties. Sales of Class I crossties declined by \$61.7 million. This was primarily due to decreased spending in the rail industry, particularly the Class I market as certain Class I railroads have shifted from a treatment-service only model to having suppliers hold untreated inventory until the crossties have been treated. A lack of dry crosstie inventory also contributed to reduced treating volumes.

**PC net sales** for the year ended December 31, 2018 increased by \$8.8 million or two percent compared to the prior year. The slightly higher sales were due primarily to higher volumes in Australasia for light organic solvent preservatives as well as a favorable mix of pricing and demand in North America. During the year, price volatility in the lumber market limited customer inventory and reduced customer demand for copper-based wood preservatives.

**CMC net sales** for the year ended December 31, 2018 increased by \$103.7 million or 19 percent compared to the prior year due mainly to higher sales prices for carbon pitch, carbon black feedstock and naphthalene partially offset by reduced volumes in North America and Europe. In Australia and Europe, higher sales prices for carbon pitch and carbon black feedstock were driven primarily by higher raw material cost and increases in global benchmark oil pricing.

**Cost of sales** as a percentage of net sales was 80 percent for the year ended December 31, 2018, compared to 78 percent in the prior year. Higher gross margins for CMC were driven by higher sales prices for carbon pitch, carbon black feedstock and naphthalene. These were offset by lower gross margins for PC driven by higher raw material costs and lower gross margins for RUPS due to reduced sales volumes of crossties in the Class I market combined with reduced margins as a result of higher raw material supply costs.

**Depreciation and amortization charges** for the year ended December 31, 2018 were \$1.0 million higher when compared to the prior year period due mainly to assets placed in service over the past year related to our new naphthalene unit at our CMC plant in Stickney, Illinois along with depreciation and amortization from our acquisitions in the current year period.

**Loss on sale of assets** of \$8.3 million for the year ended December 31, 2018 reflects sales of our coal tar distillation facility in Clairton, Pennsylvania and our specialty chemicals business in the United Kingdom within our CMC segment as well as a sale of assets in the United Kingdom within our PC segment.

**Impairment and restructuring charges** were \$12.2 million lower for the year ended December 31, 2018 due mainly to prior year charges for restructuring-related storage tank decommissioning costs and accelerated depreciation for the remaining fixed assets at our coal tar distillation facilities in Clairton, Pennsylvania and Follansbee, West Virginia. Current year charges consist primarily of remaining restructuring-related costs and depreciation at our Follansbee, West Virginia facility.

**Selling, general and administrative expenses** for the year ended December 31, 2018 were \$29.1 million higher when compared to the prior year period due primarily to \$18.5 million of incremental costs within KRR and UIP, \$6.5 million of acquisition-related expenses and \$3.3 million from higher compensation expense.

**Interest expense** for the year ended December 31, 2018 was \$13.8 million higher than the prior year period primarily due to the higher average debt level to fund our acquisitions of UIP and KRR.

**Loss on pension settlement** was \$10.0 million in 2017. In the fourth quarter of 2017, we offered a cash lump sum or annuity buyout to the terminated deferred vested participants in our U.S. defined benefit pension plan. Approximately 100 participants elected either a lump sum payout or annuity from a third-party provider. The total dollar amount paid out of our defined benefit plan assets was \$3.1 million and we recorded a pension settlement charge of \$1.2 million related to this transaction.

In the third quarter of 2017, we completed an irrevocable transaction with an insurance company to annuitize approximately \$31 million of retiree pension obligations in our U.S. qualified defined benefit pension plan for a selected group of retirees. The transaction was funded by transferring a similar amount of assets from the pension plan to the insurance company. Subsequent to this transfer, the insurance company has assumed all remaining pension obligations associated with these retirees. We recorded a pension settlement loss of \$8.8 million in the third quarter of 2017.

**Loss on extinguishment of debt** for the year ended December 31, 2017 was \$13.3 million. In 2017, all of our senior notes due 2019 were repurchased at a premium to carrying value and accordingly, we realized a loss on extinguishment of debt totaling \$10.0 million consisting of \$7.3 million for bond premium and bond tender expenses and \$2.7 million for the write-off of unamortized debt issuance costs. In addition, we repaid our term loan in full and entered into a new Credit Facility and recorded a loss of \$3.3 million for the write-off of unamortized debt issuance costs.

**Income taxes** for the year ended December 31, 2018 were \$3.0 million lower when compared to the prior year period.

On December 22, 2017, the Tax Act was signed into law. The Tax Act significantly revised the U.S. corporate income tax system by, among other things, lowering the corporate income tax rate to 21 percent from 35 percent and imposing a one-time transition tax on certain unrepatriated earnings of foreign subsidiaries. Beginning in 2018, the Tax Act also required an income inclusion of foreign corporations' global intangible low-taxed income or GILTI and also introduced a limitation on the amount of interest expense that is deductible.

In the year ended December 31, 2017, we recorded an estimate of this one-time transition tax and recorded a charge to income tax expense of \$13.1 million. As a result of the corporate rate reduction to 21 percent, we recorded a charge of \$7.4 million to adjust the carrying value of our net deferred tax assets in the United States.

In the year ended December 31, 2018, we completed an analysis of the impact of the one-time transition tax and the adjustment to our net deferred tax assets in the United States and recorded an additional \$4.8 million of income tax expense.

We included the impact of the GILTI inclusion and the limitation on deductible interest expense in our 2018 tax provision. Although the interest expense deduction that is disallowed in the current year can be carried forward to future years, we have concluded that, in the foreseeable future, we will not be able to benefit from the disallowed interest expense deduction. Therefore, a valuation allowance has been recorded against this deferred tax asset. We have recorded income tax expense of \$15.6 million for the impact of the GILTI inclusion and the limitation on deductible interest expense.

Income tax expense as a percentage of pre-tax profit for the year ended December 31, 2018 and 2017 was 47.4 percent and 48.1 percent, respectively. The change from the prior year period was not material as the factors that are described in the above paragraph offset one another. The year ended December 31, 2018 also included the reversal of a valuation allowance for a subsidiary in China that will be able to realize its net operating losses.



## Segment Results

**Segment operating profit** for the years ended December 31, 2018 and 2017 is summarized by segment in the following table:

	Year Ended December 31,		% Change
	2018	2017	
<i>(Dollars in millions)</i>			
<b>Operating profit (loss):</b>			
Railroad and Utility Products and Services	\$ 5.9	\$ 26.2	-77%
Performance Chemicals	36.2	71.4	-49%
Carbon Materials and Chemicals	70.7	28.0	153%
Corporate	(2.4)	(2.0)	-20%
	\$ 110.4	\$ 123.6	-11%
<b>Operating profit as a percentage of net sales:</b>			
Railroad and Utility Products and Services	0.9%	5.1%	-4.2%
Performance Chemicals	8.6%	17.4%	-8.7%
Carbon Materials and Chemicals	10.8%	5.1%	5.7%
	6.5%	8.4%	-1.9%

**RUPS operating profit** for the year ended December 31, 2018 decreased by \$20.3 million, or 77 percent, compared to the prior year.

Operating profit as a percentage of sales decreased to 0.9 percent from 5.1 percent. Operating profit as a percentage of net sales for the year ended December 31, 2018 was impacted by reduced treating volumes of crossties to Class I customers. Additionally, we experienced margin pressure from higher costs of raw materials from saw mills due to increased demand. The segment was also negatively impacted by \$6.0 million in 2018 due to inventory purchase price fair value adjustments from the UIP acquisition.

**PC operating profit** decreased by \$35.2 million, or 49 percent, compared to the prior year. Operating profit as a percentage of net sales for PC decreased to 8.6 percent from 17.4 percent in the prior year. Higher raw material prices, selling, general and administrative expenses, and transportation costs along with short-term supply disruptions more than offset our slight increase in sales for the year ended December 31, 2018. In addition, 2018 was unfavorably impacted by a net amount of \$16.0 million due to changes in unrealized gains and losses from our copper swap contracts as compared to the prior year period.

**CMC operating profit** for the year ended December 31, 2018 increased by \$42.7 million, or 153 percent, compared to the prior year. Operating profit as a percentage of net sales for CMC increased to 10.8 percent from 5.1 percent in the prior year period. Operating profit for the year ended December 31, 2018 was positively affected by higher sales prices for most products and regions within the segment, primarily attributed to carbon pitch, and a more streamlined and efficient cost structure. These positive results were partially offset by lower sales volumes in North America, Australasia and Europe and higher raw material costs in Australasia and Europe.

## Cash Flow

**Net cash provided by operating activities** was \$115.3 million for the year ended December 31, 2019 as compared to net cash provided by operating activities of \$78.3 million for the year ended December 31, 2018. The net increase of \$37.0 million in cash provided by operations was due primarily to lower working capital usage of \$30.7 million compared to the prior year period, mainly due to favorable timing of accounts receivable collections in the current year period and prior period payment of amounts owed to a Chinese customer under the operation of a long-term sales contract. In addition, the change in income and certain operating activities of \$6.3 million from the prior year period had a favorable result on cash provided by operations in the current year period. These positive impacts were partially offset by a net unfavorable impact on cash from a reduction in outstanding payables in the current year period relative to the prior year end.

Net cash provided by operating activities was \$78.3 million for the year ended December 31, 2018 as compared to net cash provided by operating activities of \$101.8 million for the year ended December 31, 2017. The net decrease of \$23.5 million in cash provided by operations was due primarily to higher working capital usage of \$20.3 million compared to the prior year period principally as a result of an increase in inventory of \$18.3 million as one of our Class I railroad customers within RUPS shifted from a treatment-service only model to having suppliers hold untreated inventory until the crossties have been treated. An additional increase in inventory from CMC was due to higher raw material prices.

**Net cash used in investing activities** was \$33.8 million for the year ended December 31, 2019 as compared to net cash used in investing activities of \$376.4 million for the year ended December 31, 2018. The decrease in cash used for investing activities of \$342.6 million is primarily due to \$264.0 million of net cash used for acquisitions in the prior year period as well as prior year capital expenditures used mainly to expand production capacity at PC in the United States and continued spending on the new naphthalene unit at our CMC plant in Stickney, Illinois. Both of these projects were substantially completed by the end of 2018. The net decrease in cash used for capital expenditures in the current year period from the prior year period was \$72.5 million.

Net cash used in investing activities was \$376.4 million for the year ended December 31, 2018 as compared to net cash used in investing activities of \$56.5 million for the year ended December 31, 2017. The increase in cash used for investing activities of \$319.9 million is primarily due to \$264.0 million of net cash used for acquisitions as well as incremental current year capital expenditures to expand production capacity at PC in the United States and continued spending on the new naphthalene unit at our CMC plant in Stickney, Illinois. Both of these projects were substantially completed by the end of 2018.

**Net cash used in financing activities** was \$88.7 million for the year ended December 31, 2019 as compared to net cash provided by financing activities of \$282.8 million for the year ended December 31, 2018. The cash used in financing activities in the current period reflected net repayments of debt of \$90.8 million partially offset by issuances of common stock of \$4.0 million. The cash provided by financing activities in the prior year period reflected net borrowings of \$314.6 million to primarily fund acquisitions and capital expenditures and repurchases of common stock of \$31.8 million.

Net cash provided by financing activities was \$282.8 million for the year ended December 31, 2018 as compared to net cash used in financing activities of \$5.9 million for the year ended December 31, 2017. The cash provided by financing activities in the current period reflected net borrowings of \$314.6 million to primarily fund acquisitions and capital expenditures and repurchases of common stock of \$31.8 million. The cash provided by financing activities in the prior year period reflected net borrowings of revolving credit of \$54.3 million and net repayments of long-term debt of \$46.7 million, payment of debt issuance costs of \$11.0 million from the issuance of new debt and repurchases of common stock of \$5.2 million.

### *Liquidity and Capital Resources*

We have a \$600.0 million senior secured revolving credit facility and a \$100.0 million secured term loan facility (collectively, the "Credit Facility") with a maturity date of May 2024. The interest rate on the Credit Facility is variable and is based on LIBOR. On February 26, 2020, we entered into the Fourth Amendment and amended the Credit Facility to, among other things: (1) revise the LIBOR replacement language in the Credit Facility, (2) revise certain provisions regarding mandatory prepayments of the term loan facility with proceeds of equity issuances and associated definitions, (3) remove the step downs in the maximum total secured leverage ratio and maximum total leverage ratio which would otherwise occur at the time of a first equity issuance, and (4) revise certain provisions regarding disposition of assets by certain subsidiaries of Koppers Inc.

### *Restrictions on Dividends to Koppers Holdings*

Koppers Holdings depends on the dividends from the earnings of Koppers Inc. and its subsidiaries to generate the funds necessary to meet its financial obligations, including the payment of any declared dividend of Koppers Holdings. The Credit Facility prohibits Koppers Inc. from making dividend payments to Koppers Holdings unless (1) such dividend payments are permitted by the indenture governing Koppers Inc.'s \$500 million Senior Notes due 2025 (the "2025 Notes"), (2) no event of default or potential default has occurred or is continuing under our Credit Facility, and (3) we are in pro forma compliance with our fixed charge coverage ratio covenant after giving effect to such dividend. The indenture governing the 2025 Notes restricts Koppers Inc.'s ability to finance our payment of dividends if (1) a default has occurred or would result from such financing, (2) Koppers Inc., or a restricted subsidiary of Koppers Inc. which is not a guarantor under the indenture, is not able to incur additional indebtedness (as defined in the indenture), and (3) the sum of all restricted payments (as defined in the indenture) have exceeded the permitted amount (which we refer to as the "basket") at such point in time.

The basket is governed by a formula based on the sum of a beginning amount, plus or minus a percentage of Koppers Inc.'s consolidated net income (as defined in the indenture), plus the net proceeds of Koppers Inc.'s qualified stock issuance or conversions of debt to qualified stock, plus the net proceeds from the sale of or a reduction in an investment (as defined in the indenture) or the value of the assets of an unrestricted subsidiary which is designated a restricted subsidiary. At December 31, 2019, the basket totaled \$163.7 million. Notwithstanding such restrictions, the indenture governing the 2025 Notes permits an additional aggregate amount of \$0.30 per share each fiscal quarter to finance dividends on the capital stock of Koppers Holdings, whether or not there is any basket availability, provided that at the time of such payment, no default in the indenture has occurred or would result from financing the dividends.

In addition, certain required coverage ratios in Koppers Inc.'s Credit Facility may restrict the ability of Koppers Inc. to pay dividends. Koppers Holdings last declared a dividend in November 2014 and does not expect to declare any dividends for the foreseeable future.

### Liquidity

Borrowings under the Credit Facility are secured by a first priority lien on substantially all of the assets of Koppers Inc., Koppers Holdings and their material domestic subsidiaries.

The Credit Facility contains certain covenants for Koppers Inc. and its restricted subsidiaries that limit capital expenditures, additional indebtedness, liens, dividends and investments or acquisitions. In addition, such covenants give rise to events of default upon the failure by Koppers Inc. and its restricted subsidiaries to meet certain financial ratios.

As of December 31, 2019, we had \$221.6 million of unused revolving credit availability for working capital purposes after restrictions by various debt covenants and certain letter of credit commitments. As of December 31, 2019, \$7.3 million of commitments were utilized by outstanding letters of credit.

The following table summarizes our estimated liquidity as of December 31, 2019 (*dollars in millions*):

Cash and cash equivalents <sup>(1)</sup>	\$	33.0
Amount available under credit facility		221.6
<b>Total estimated liquidity</b>	<b>\$</b>	<b>254.6</b>

(1) Cash includes approximately \$31.5 million held by foreign subsidiaries.

Our estimated liquidity was \$219.6 million at December 31, 2018.

Our remaining need for cash in the next twelve months relates primarily to contractual obligations which include debt service, pension plan funding, purchase commitments and operating leases, as well as working capital, capital maintenance programs and the funding of plant consolidation and rationalizations. We may also use cash to pursue other potential strategic acquisitions or voluntary pension plan contributions. Capital expenditures in 2020, excluding acquisitions, if any, are expected to total approximately \$65 million and are expected to be funded by cash from operations.

### Schedule of Certain Contractual Obligations

The following table details our projected payments for our significant contractual obligations as of December 31, 2019. The table is based upon available information and certain assumptions we believe to be reasonable.

	<i>Payments Due by Period</i>				
	2020	2021-2022	2023-2024	Later years	Total
<i>(in millions)</i>					
Long-term debt (1)	\$ 10.2	\$ 20.2	\$ 381.5	\$ 500.0	\$ 911.9
Interest on debt	50.2	99.0	84.5	2.1	235.8
Operating leases	30.2	47.1	29.7	43.9	150.9
Federal tax payments (2)	0.8	1.2	2.3	0.0	4.3
Purchase commitments (3)	163.1	200.6	181.1	112.6	657.4
<b>Total contractual cash obligations</b>	<b>\$ 254.5</b>	<b>\$ 368.1</b>	<b>\$ 679.1</b>	<b>\$ 658.6</b>	<b>\$ 1,960.4</b>

(1) Consists primarily of the maturity of the 2025 Notes and the Credit Facility that will mature in 2024.

(2) Relates to the transition tax in accordance with the Tax Act.

(3) Consists primarily of raw materials purchase contracts. These are typically not fixed price arrangements; the prices are based on the prevailing market prices. As a result, we generally expect to be able to hedge the purchases with sales at those future prices.

Pension and other employee benefit plan funding obligations (for defined benefit plans) are not included in the table above. We expect defined benefit plan contributions to total approximately \$4.8 million in 2020. Estimated funding obligations are determined by asset performance, workforce and retiree demographics, tax and employment laws and other actuarial assumptions which may change the annual funding obligations in addition to decisions to fund in excess of statutorily required amounts. The funded status of our defined benefit plans is disclosed in Note 15 in our consolidated financial statements.

As of December 31, 2019, there was \$2.1 million of tax liabilities related to unrecognized tax benefits. Because of the high degree of uncertainty regarding the timing of future cash outflows associated with these liabilities, we are unable to estimate the years in which settlement will occur with the respective taxing authorities. See Note 10 in our consolidated financial statements for further information.

### Schedule of Certain Other Commercial Commitments

The following table details our projected payments for other significant commercial commitments as of December 31, 2019. The table is based upon available information and certain assumptions we believe to be reasonable.

	Amount of Commitment Expiration Per Period					Total Amounts Committed
	2020	2021-2022	2023-2024	Later years		
<i>(in millions)</i>						
Lines of credit (unused)	\$ 0.0	\$ 0.0	\$ 329.0	\$ 0.0	\$ 329.0	
Term Loan	10.0	20.0	52.5	0.0	82.5	
Standby letters of credit	0.0	0.0	7.3	0.0	7.3	
Total other commercial commitments	\$ 10.0	\$ 20.0	\$ 388.8	\$ 0.0	\$ 418.8	

### Debt Covenants at December 31, 2019

The covenants that affect availability of the Credit Facility and which may restrict the ability of Koppers Inc. to pay dividends include the following financial ratios:

- The fixed charge coverage ratio, calculated as of the end of each fiscal quarter for the four fiscal quarters then ended, is not permitted to be less than 1.10. The fixed charge coverage ratio at December 31, 2019 was 2.27.
- The total secured leverage ratio, calculated as of the end of each fiscal quarter for the four fiscal quarters then ended, is not permitted to exceed 3.00. The leverage ratio at December 31, 2019 was 1.97.
- The total leverage ratio, calculated as of the end of each fiscal quarter for the four fiscal quarters then ended, is not permitted to exceed 5.25. The leverage ratio at December 31, 2019 was 4.31.

We are currently in compliance with all covenants governing the Credit Facility. Our continued ability to meet those financial ratios can be affected by events beyond our control, however, excluding possible acquisitions, we currently expect that our net cash flows from operating activities and funds available from our Credit Facility will be sufficient to provide for our working capital needs and capital spending requirements over the next twelve months.

### Other Matters

#### Foreign Operations and Foreign Currency Transactions

We are subject to foreign currency translation fluctuations due to our foreign operations. For the years ended December 31, 2019, 2018 and 2017, exchange rate fluctuations resulted in a decrease to comprehensive income of \$1.3 million, a decrease of \$25.6 million and an increase of \$17.0 million, respectively. Foreign currency transaction gains and losses result from transactions denominated in a currency which is different from the currency used by the entity to prepare its financial statements. Foreign currency transaction gains (losses) were \$1.0 million, \$0.6 million and \$(2.3) million for the years ended December 31, 2019, 2018 and 2017, respectively.

### Recently Issued Accounting Guidance

Information regarding recently issued accounting guidance is contained in Note 3 "New Accounting Pronouncements" of the Notes to Consolidated Financial Statements.

### Critical Accounting Policies

The preparation of financial statements in conformity with generally accepted accounting principles in the United States requires management to use judgment in making estimates and assumptions that affect the reported amounts of revenues and expenses, assets and liabilities, and the disclosure of contingent liabilities. The following accounting policies are based on, among other things, judgments and assumptions made by management that include inherent risks and uncertainties. Our management's estimates are based on the relevant information available at the end of each period.

**Revenue Recognition.** We recognize revenue upon the completion of performance obligations under contracts with our customers and when control of a good or service is transferred to the customer. Substantially all of our contracts with our customers are ship and invoice arrangements where revenue is recognized when we complete our performance obligations and transfer control to the customer. We also have certain arrangements where revenue is recognized under the contract where control of the goods or services had been transferred to the customer prior to shipment. Revenue recognition generally occurs at the point of shipment; however in certain circumstances as shipping terms dictate, we transfer control and revenue is recognized at the point of destination. Shipping and handling costs are included as a component of cost of sales.

We also recognize revenue related to the procurement of certain untreated railroad cross ties upon delivery to our plant and acceptance by the customer. Service revenue, consisting primarily of wood treating services, is recognized at the time the service is provided and the performance obligation is satisfied.

**Goodwill and Intangible Assets.** Goodwill is not amortized but is assessed for impairment at least on an annual basis in the fourth quarter and whenever events or circumstances indicate the carrying value may not be recoverable. In making this assessment, management may first consider qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. Examples of qualitative factors include macroeconomic conditions, industry and market considerations, cost factors, overall financial performance, entity-specific events, events affecting reporting units, and sustained changes in our stock price. If results of the qualitative assessment indicate a more likely than not determination or if a qualitative assessment is not performed, a quantitative test is performed by comparing the estimated fair value using discounted cash flow calculations of each reporting unit with its estimated book value. The discounted cash flow calculations are dependent on several subjective factors including the timing of future cash flows, future growth rates and the discount rate. Because management's judgment is involved in performing goodwill impairment analyses, there is risk that the carrying value of goodwill is overstated. If our assumptions or estimates in our fair value calculations change or if future cash flows or future growth rates vary from what was planned, this may impact our impairment analysis.

We have three reporting units for purposes of goodwill evaluation. These units consist of our PC operating segment, our Railroad Products and Services reporting unit and our Utility Products reporting unit. Railroad Products and Services and Utility Products are one level below our RUPS operating segment. The Railroad Products and Services reporting unit primarily serves the rail industry in the United States and the Utility Products reporting unit serves the utility industries in the United States and Australia.

Goodwill remaining on our consolidated balance sheet at December 31, 2019 was \$296.1 million. During the fourth quarter of fiscal 2019, we performed an impairment test for goodwill for each of our reporting units using the quantitative approach. Based on our evaluation performed, we determined that it was more likely than not that the fair value of each of the reporting units exceeded its respective carrying amount, and therefore, we determined that goodwill was not impaired at any of our reporting units as of December 31, 2019.

Identifiable intangible assets are valued at fair value upon the acquisition of a business. Identifiable intangible assets are amortized on a straight-line basis over their estimated useful lives. We have identifiable intangible assets of \$168.4 million as of December 31, 2019. We annually evaluate the remaining useful life of the intangible asset being amortized to determine whether events or circumstances warrant a revision to the remaining period of amortization. If the estimate of an intangible asset's remaining useful life is changed, the remaining carrying amount of the intangible asset will be amortized prospectively over that revised remaining useful life. Identifiable intangible assets are also subject to testing for recoverability whenever events or changes indicate that its carrying value may not be recoverable.

Changes in economic and operating conditions impacting these assumptions could result in goodwill and intangible asset impairments in future periods. Additionally, disruptions to our business such as prolonged recessionary periods or unexpected significant declines in operating results of the relevant reporting units could result in charges for goodwill and other asset impairments in future periods.

**Deferred Tax Assets.** At December 31, 2019, our balance sheet included \$23.7 million of deferred tax assets, which is net of a \$58.0 million valuation allowance. We also had \$7.4 million of deferred tax liabilities resulting in net deferred tax assets of \$16.3 million, substantially all related to our domestic entities. In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will be realized. In evaluating the need for a valuation allowance, management considers various factors, including the expected level of future taxable income, available tax planning strategies and reversals of existing taxable temporary differences.

The realization of a majority of our deferred tax assets is not subject to any expiration and is dependent upon the reversal of the underlying temporary differences. To the extent future taxable income projections are not achieved, we could be required to record a valuation allowance against certain deferred tax assets. Item 8. Financial Statements and Supplementary Data – Note 10 includes information on deferred tax activity during the past two years.

**Asset Retirement Obligations.** We measure asset retirement obligations based upon the applicable accounting guidance, using certain assumptions including estimates regarding the recovery of residues in storage tanks. In the event that operational or regulatory issues vary from our estimates, we could incur additional significant charges to income and increases in cash expenditures related to the disposal of those residues. Certain conditional asset retirement obligations related to facilities have not been recorded in the consolidated financial statements due to uncertainties surrounding the ultimate settlement date and estimate of fair value related to a legal obligation to perform an asset retirement activity. At the date a reasonable estimate of the ultimate settlement can be made, we will record an asset retirement obligation and such amounts may be material to the consolidated financial statements in the period in which they are recorded. In 2019, we recorded additional asset retirement obligations of \$4.7 million principally related to storage tank and railcar cleaning costs within our CMC segment in the United States. Item 8. Financial Statements and Supplementary Data – Note 2 includes information on expense recognized during the past two years.

**Pension and Postretirement Benefits.** Accounting for pension and other postretirement benefit obligations involves numerous assumptions, the most significant of which relate to the following:

- the discount rate for measuring the present value of future plan obligations; and
- the expected long-term return on plan assets.

We develop our demographics and utilize the work of third-party actuaries to assist in the measurement of these obligations. We have selected different discount rates for our pension plans and our other post-retirement benefit plans due to the different projected benefit payment patterns. In determining the assumed discount rates at December 31, 2019, we use our third-party actuary's discount rate model. This model calculates an equivalent single discount rate for the projected benefit plan cash flows using a hypothetical bond portfolio to match expected cash flows under our benefit plans. The bonds used are rated AA or higher by a recognized rating agency and only non-callable bonds are included with the exception of those with a "make-whole call" feature. The actuary limited the selection to those bonds with a minimum of 100,000 outstanding issues. Outlier bonds whose yields exceeded two standard deviations from the yield curve derived from similar quality bonds were excluded.

Of the assumptions used to measure the year-end obligations and estimated annual net periodic benefit cost, the discount rate has the most significant effect on the periodic benefit cost reported for the plans. Decreasing the discount rates by 0.25 percent for our pension plans and 0.25 percent for our other postretirement benefit plans would increase pension obligations and other postretirement benefit plan obligations by \$5.0 million and would increase defined benefit pension expense and other postretirement benefit plan expense by \$0.3 million.

The asset rate of return assumption considers the asset mix of the plans (currently targeted at approximately 30 to 40 percent equity securities and 60 to 70 percent fixed income securities for the funded pension plans), past performance and other factors, including expected re-allocations of asset mix occurring within a reasonable period of time. Our asset rate of return assumption is 4.30 percent for 2019 defined benefit pension expense. Decreasing the asset rate of return assumption by 0.25 percent would increase our defined benefit pension expense by \$0.5 million.

Item 8. Financial Statements and Supplementary Data – Note 15 includes detailed information about the assumptions used to calculate the components of our annual defined benefit pension and other postretirement plan expense, as well as the obligations and accumulated other comprehensive loss reported on the year-end balance sheets.

**Environmental Liabilities.** We are subject to federal, state, local and foreign laws and regulations and potential liabilities relating to the protection of the environment and human health and safety, including, among other things, the cleanup of contaminated sites, the treatment, storage and disposal of wastes, the discharge of effluent into waterways, the emission of substances into the air and various health and safety matters. We expect to incur substantial costs for ongoing compliance with such laws and regulations. We may also incur costs as a result of governmental or third-party claims, or otherwise incur costs, relating to cleanup of, or for injuries resulting from, contamination at sites associated with past and present operations. We accrue for environmental liabilities when a determination can be made that they are probable and reasonably estimable. Item 8. Financial Statements and Supplementary Data – Note 20 includes information about environmental liabilities.

**ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK**

Like other global companies, we are exposed to market risks relating to fluctuations in commodity prices, interest rates and foreign currency exchange rates. The objective of our financial risk management is to minimize the negative impact of commodity price, interest rate and foreign exchange rate fluctuations on our earnings, cash flows and equity.

To manage commodity price risk, we enter into swap contracts for future forecasted purchases of copper. This reduces the impact of commodity price volatility on gross profit. To manage the interest rate risks, we use a combination of fixed and variable rate debt. This reduces the impact of short-term fluctuations in interest rates. To manage foreign currency exchange rate risks, we use forward exchange contracts to hedge firm commitments up to twelve months and all such contracts are marked to market with the recognition of a gain or loss at each reporting period.

The following analyses present the sensitivity of the market value, earnings and cash flows of our financial instruments and foreign operations to hypothetical changes in interest and exchange rates and market prices for copper as if these changes occurred at December 31, 2019. The range of changes chosen for these analyses reflects our view of changes which are reasonably possible over a one-year period. Market values are the present values of projected future cash flows based on the interest rate, exchange rate and copper price assumptions. These forward-looking statements are selective in nature and only address the potential impacts from financial instruments and foreign operations. They do not include other potential effects that could impact our business as a result of these changes.

**Commodity Price Sensitivity Analysis.** Our exposure to market risk for changes in copper prices relates primarily to the purchase price of the raw material and the fixed price sales agreements we have with customers of our PC segment. We utilize swap contracts to manage this price risk. As of December 31, 2019, we had outstanding copper swap contracts totaling 73.1 million pounds and the fair value of these contracts resulted in a gain of \$6.2 million. A portion of the gain totaling \$4.5 million, before tax, is recognized in other comprehensive income and a portion of the gain totaling \$1.7 million is recognized in income, before tax. Holding other variables constant, if there were a 10 percent reduction in the December 31, 2019 market price of copper, the fair value of these contracts would be a loss of \$14.2 million. This hypothetical loss would be allocated \$11.3 million to other comprehensive income and \$2.9 million would be recognized in income, before tax.

**Interest Rate and Debt Sensitivity Analysis.** Our exposure to market risk for changes in interest rates relates primarily to our debt obligations. We have fixed and variable rate debt and the ability to incur variable rate debt under the Koppers Inc. Credit Facility.

At December 31, 2019, we had \$500.0 million of fixed rate debt and \$401.2 million of variable rate debt. Our ratio of fixed rate debt to variable rate debt at December 31, 2019 was approximately 125 percent. For fixed rate debt, interest rate changes affect the fair market value but do not impact earnings or cash flows. For variable rate debt, interest rate changes generally do not affect the fair market value but do impact future earnings and cash flows, assuming other factors are held constant.

Holding other variables constant (such as debt levels and foreign exchange rates), a one percentage point decrease in interest rates at December 31, 2019 would have increased the unrealized fair market value of the fixed rate debt by approximately \$5.1 million. The earnings and cash flows for the year ending December 31, 2019, assuming a one percentage point increase in interest rates, would have decreased approximately \$4.0 million, holding other variables constant for variable rate debt.

**Exchange Rate Sensitivity Analysis.** Our exchange rate exposures result primarily from our investment and ongoing operations in Australia, Canada, China, Denmark, the Netherlands, New Zealand, and the United Kingdom. Holding other variables constant, if there were a ten percent reduction in all relevant exchange rates, the effect on our earnings, based on actual earnings from foreign operations for the year ended December 31, 2019, would be a reduction of approximately \$5.4 million.

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

Koppers Holdings Inc.

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## MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Koppers Holdings Inc. is responsible for establishing and maintaining adequate internal control over financial reporting. 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 reporting purposes in accordance with accounting principles generally accepted in the United States of America.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Management has assessed the effectiveness of Koppers Holdings Inc.'s internal control over financial reporting as of December 31, 2019. In making this assessment, management has utilized the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control – Integrated Framework* (2013 Framework). Management concluded that based on its assessment, Koppers Holdings Inc.'s internal control over financial reporting was effective as of December 31, 2019.

The effectiveness of Koppers Holdings Inc.'s internal control over financial reporting as of December 31, 2019, has been audited by KPMG LLP, the independent registered public accounting firm that also audited the consolidated financial statements included in this annual report, as stated in their attestation report which appears on page 44.

February 27, 2020

/s/ LEROY M. BALL

Leroy M. Ball

President and Chief Executive Officer

/s/ MICHAEL J. ZUGAY

Michael J. Zugay

Chief Financial Officer

To the Shareholders and Board of Directors  
Koppers Holdings Inc.:

*Opinion on Internal Control Over Financial Reporting*

We have audited Koppers Holdings Inc. and subsidiaries' (the Company) 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. 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 Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), cash flows, and shareholders' equity for each of the years in the three-year period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15(a)2 (collectively, the consolidated financial statements), and our report dated February 27, 2020 expressed an unqualified opinion on those consolidated financial statements.

*Basis for Opinion*

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit 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 audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

*Definition and Limitations of Internal Control Over Financial Reporting*

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

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

/s/ KPMG LLP

Pittsburgh, Pennsylvania  
February 27, 2020

## Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors  
Koppers Holdings Inc.:

### *Opinion on the Consolidated Financial Statements*

We have audited the accompanying consolidated balance sheets of Koppers Holdings Inc. and subsidiaries (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), cash flows, and shareholders' equity for each of the years in the three-year period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15(a)2 (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements 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 years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated February 27, 2020 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

### *Change in Accounting Principle*

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for leases as of January 1, 2019 due to the adoption of Accounting Standards Update (ASU) No. 2016-02, *Leases (Topic 842)* and ASU No. 2018-10, *Codification Improvements to Topic 842, Leases*.

### *Basis for Opinion*

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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. We believe that our audits provide a reasonable basis for our opinion.

*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: (1) relates to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective, or complex judgment. The communication of a critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

*Assessment of the carrying value of goodwill in the Utility Products reporting unit*

As described in Notes 2 and 14 to the consolidated financial statements, the Company's goodwill balance as of December 31, 2019 was \$296.1 million, of which \$79.7 million related to the Utility Products reporting unit. The Company performs goodwill impairment testing at the reporting unit level annually and whenever events or circumstances indicate that the carrying value may not be recoverable. The Company evaluates the recoverability of goodwill for each of its reporting units by comparing the fair value of each reporting unit to its carrying value.

We identified the assessment of the carrying value of goodwill for the Utility Products reporting unit as a critical audit matter. Significant auditor judgment was required to evaluate the Company's estimate of fair value of the Utility Products reporting unit, which was developed using a discounted cash flow model. Specifically, auditor judgment was required to assess certain assumptions, including forecasted revenue growth rates, forecasted gross margins, and the discount rate.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's goodwill impairment assessment process, including controls related to the development of the forecasted revenue growth rates, forecasted gross margins and discount rate assumptions. We evaluated the Company's forecasted revenue growth rates and gross margins assumptions by comparing them to external market and industry data. We compared the Company's historical revenue and gross margin forecasts to actual results to assess the Company's ability to accurately forecast. In addition, we involved a valuation professional with specialized skill and knowledge, who assisted in:

- Evaluating the Company's discount rate, by comparing it against a discount rate that was independently developed using publicly available third-party market data for comparable entities; and
- Developing an independent estimate of the Utility Products reporting unit's fair value using the reporting unit's cash flow forecast and an independently developed discount rate and compared the results of our estimate of fair value to the Company's fair value estimate.

/s/ KPMG LLP

We have served as the Company's auditor since 2016.

Pittsburgh, Pennsylvania  
February 27, 2020

KOPPERS HOLDINGS INC.  
CONSOLIDATED STATEMENT OF OPERATIONS

	Year Ended December 31,		
	2019	2018	2017
<i>(Dollars in millions, except per share amounts)</i>			
Net sales	\$ 1,772.8	\$ 1,710.2	\$ 1,475.5
Cost of sales	1,430.0	1,375.1	1,153.4
Depreciation and amortization	55.1	50.8	49.8
Loss on sale of assets	0.0	8.3	0.0
Impairment and restructuring charges	6.0	4.0	16.2
Selling, general and administrative expenses	150.9	161.6	132.5
Operating profit	130.8	110.4	123.6
Other income, net	0.6	0.7	2.5
Interest expense	62.5	56.3	42.5
Loss on pension settlements	0.0	0.0	10.0
Loss on extinguishment of debt	0.0	0.0	13.3
Income before income taxes	68.9	54.8	60.3
Income tax provision	1.4	26.0	29.0
Income from continuing operations	67.5	28.8	31.3
(Loss) income from discontinued operations, net of tax benefit (expense) of \$0.0, \$(0.4) and \$0.2	(0.1)	0.4	(0.8)
Net income	67.4	29.2	30.5
Net income attributable to noncontrolling interests	0.8	5.8	1.4
Net income attributable to Koppers	\$ 66.6	\$ 23.4	\$ 29.1
Earnings (loss) per common share attributable to Koppers common shareholders:			
Basic -			
Continuing operations	\$ 3.23	\$ 1.10	\$ 1.44
Discontinued operations	0.00	0.02	(0.04)
Earnings per basic common share	\$ 3.23	\$ 1.12	\$ 1.40
Diluted -			
Continuing operations	\$ 3.16	\$ 1.08	\$ 1.36
Discontinued operations	0.00	0.02	(0.04)
Earnings per diluted common share	\$ 3.16	\$ 1.10	\$ 1.32
Weighted average shares outstanding (in thousands):			
Basic	20,665	20,871	20,754
Diluted	21,068	21,326	22,000

KOPPERS HOLDINGS INC.  
CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME (LOSS)

	Year Ended December 31,		
	2019	2018	2017
<i>(Dollars in millions)</i>			
Net income	\$ 67.4	\$ 29.2	\$ 30.5
Changes in other comprehensive income:			
Currency translation adjustment	(1.3)	(25.6)	17.0
Unrealized gain (loss) on cash flow hedges, net of tax (expense) benefit of \$(4.1), \$10.0 and \$(3.5)	8.7	(25.2)	6.1
Change in accounting standard	0.0	0.3	0.0
Unrecognized pension prior service benefit, net of tax benefit of \$0.0, \$0.1 and \$0.0	(0.1)	(0.6)	0.0
Unrecognized pension net gain (loss), net of tax (expense) benefit of \$(0.8), \$0.2 and \$(2.8)	2.1	(0.5)	8.8
Total comprehensive income (loss)	76.8	(22.4)	62.4
Comprehensive income attributable to noncontrolling interests	0.6	5.0	1.7
Comprehensive income (loss) attributable to Koppers	\$ 76.2	\$ (27.4)	\$ 60.7

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

KOPPERS HOLDINGS INC.  
CONSOLIDATED BALANCE SHEET

	December 31,	
	2019	2018
<i>(Dollars in millions, except per share amounts)</i>		
<b>Assets</b>		
Cash and cash equivalents	\$ 33.0	\$ 40.6
Accounts receivable, net of allowance of \$2.6 and \$2.5	163.9	189.7
Income tax receivable	1.9	2.8
Inventories, net	299.1	284.7
Other current assets	21.6	22.5
Total current assets	519.5	540.3
Property, plant and equipment, net	415.4	417.9
Operating lease right-of-use assets	113.5	0.0
Goodwill	296.1	296.5
Intangible assets, net	168.4	188.0
Deferred tax assets	23.7	15.5
Other assets	28.0	21.7
Total assets	\$ 1,564.6	\$ 1,479.9
<b>Liabilities</b>		
Accounts payable	\$ 169.9	\$ 177.2
Accrued liabilities	94.0	109.9
Current operating lease liabilities	22.1	0.0
Current maturities of long-term debt	10.2	11.6
Total current liabilities	296.2	298.7
Long-term debt	891.0	978.8
Accrued postretirement benefits	46.6	48.2
Deferred tax liabilities	7.4	6.8
Operating lease liabilities	92.6	0.0
Other long-term liabilities	72.1	80.4
Total liabilities	1,405.9	1,412.9
Commitments and contingent liabilities (Note 20)		
<b>Equity</b>		
Senior Convertible Preferred Stock, \$0.01 par value per share; 10,000,000 shares authorized; no shares issued	0.0	0.0
Common Stock, \$0.01 par value per share; 80,000,000 shares authorized; 23,321,087 and 23,028,957 shares issued	0.2	0.2
Additional paid-in capital	221.9	206.0
Retained earnings	93.8	27.2
Accumulated other comprehensive loss	(77.7)	(87.2)
Treasury stock, at cost, 2,515,925 and 2,480,213 shares	(90.9)	(90.0)
Total Koppers shareholders' equity	147.3	56.2
Noncontrolling interests	11.4	10.8
Total equity	158.7	67.0
Total liabilities and equity	\$ 1,564.6	\$ 1,479.9

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

KOPPERS HOLDINGS INC.  
CONSOLIDATED STATEMENT OF CASH FLOWS

	Year Ended December 31,		
	2019	2018	2017
<i>(Dollars in millions)</i>			
<b>Cash provided by (used in) operating activities:</b>			
Net income	\$ 67.4	\$ 29.2	\$ 30.5
<b>Adjustments to reconcile net cash provided by (used in) operating activities:</b>			
Depreciation and amortization	55.1	50.8	49.8
Impairment of long-lived assets	0.0	0.0	3.7
Loss on extinguishment of debt	0.0	0.0	13.3
Loss (gain) on disposal of investments	0.8	0.7	(1.5)
Insurance proceeds	(3.0)	(1.5)	0.0
Loss on sale of assets	0.0	8.3	0.0
Deferred income taxes	(10.9)	9.1	1.6
Change in other liabilities	(24.0)	(22.6)	(21.1)
Non-cash interest expense	2.6	2.4	2.1
Stock-based compensation	12.1	12.5	10.6
Loss on pension settlement	0.0	0.0	10.0
Other - net	1.2	6.1	(0.8)
<b>Changes in working capital:</b>			
Accounts receivable	25.4	(7.7)	(16.0)
Inventories	(14.8)	(18.3)	0.7
Accounts payable	(3.1)	30.8	(13.6)
Accrued liabilities	3.9	(27.0)	31.2
Other working capital	2.6	5.5	1.3
Net cash provided by operating activities	115.3	78.3	101.8
<b>Cash (used in) provided by investing activities:</b>			
Capital expenditures	(37.2)	(109.7)	(67.5)
Acquisitions, net of cash acquired	0.0	(264.0)	0.0
Insurance proceeds	3.0	1.5	0.0
Repayments received on loan	0.0	0.0	9.5
Net cash provided by (used in) divestitures and asset sales	0.4	(4.2)	1.5
Net cash used in investing activities	(33.8)	(376.4)	(56.5)
<b>Cash (used in) provided by financing activities:</b>			
Net (decrease) increase in credit facility borrowings	(61.1)	234.9	54.3
Borrowings of long-term debt	0.0	100.0	500.0
Repayments of long-term debt	(29.7)	(20.3)	(546.7)
Issuances of Common Stock	4.0	2.9	2.7
Repurchases of Common Stock	(0.9)	(31.8)	(5.2)
Payment of debt issuance costs	(1.0)	(2.9)	(11.0)
Net cash (used in) provided by financing activities	(88.7)	282.8	(5.9)
Effect of exchange rate changes on cash	(0.4)	(4.4)	0.1
Net (decrease) increase in cash and cash equivalents	(7.6)	(19.7)	39.5
Cash and cash equivalents at beginning of period	40.6	60.3	20.8
Cash and cash equivalents at end of period	\$ 33.0	\$ 40.6	\$ 60.3
<b>Cash paid for amounts included in the measurement of lease liabilities:</b>			
Operating cash outflow from operating leases	\$ 31.1		
<b>Supplemental disclosure of non-cash investing and financing activities:</b>			
Right-of-use assets obtained in exchange for new operating lease liabilities	\$ 29.9		
<b>Supplemental disclosure of cash flow information:</b>			
<b>Cash paid during the year for:</b>			
Interest	\$ 60.9	\$ 49.8	\$ 37.6
Income taxes	16.8	25.9	16.6
<b>Noncash investing activities:</b>			
Accrued capital expenditures	0.4	3.7	7.8

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



KOPPERS HOLDINGS INC.  
CONSOLIDATED STATEMENT OF SHAREHOLDERS' EQUITY

	Year Ended December 31,		
	2019	2018	2017
<i>(Dollars in millions)</i>			
Senior Convertible Preferred Stock			
Balance at beginning and end of year	\$ 0.0	\$ 0.0	\$ 0.0
Common Stock			
Balance at beginning and end of year	0.2	0.2	0.2
Additional paid-in capital			
Balance at beginning of year	206.0	190.6	176.5
Employee stock plans	12.1	12.5	11.4
Issuance of common stock	3.8	2.9	2.7
Balance at end of year	221.9	206.0	190.6
Retained earnings (accumulated deficit)			
Balance at beginning of year	27.2	7.4	(24.7)
Net income attributable to Koppers	66.6	23.4	29.1
Tax reform rate change reclassification	0.0	0.0	3.2
Change in accounting standards	0.0	(3.6)	(0.2)
Balance at end of year	93.8	27.2	7.4
Accumulated other comprehensive (loss) income			
Currency translation adjustment:			
Balance at beginning of year	(38.5)	(13.8)	(30.6)
Change in currency translation adjustment	(1.3)	(24.7)	16.8
Balance at end of year	(39.8)	(38.5)	(13.8)
Unrecognized gains (losses) on cash flow hedges:			
Balance at beginning of year	(5.5)	15.8	6.9
Tax reform rate change reclassification	0.0	0.0	2.8
Change in accounting standard, net of tax expense of \$0.0, \$1.3 and \$0.0	0.0	3.9	0.0
Reclassification of unrealized losses (gains) on cash flow hedges to expense, net of tax (expense) benefit of \$(1.5), \$2.5 and \$5.0	4.6	(7.4)	(7.1)
Change in cash flow hedges, net of tax (expense) benefit of \$(2.6), \$7.5 and \$(8.5)	4.1	(17.8)	13.2
Balance at end of year	3.2	(5.5)	15.8
Unrecognized pension prior service cost (benefit):			
Balance at beginning of year	(0.6)	0.0	0.0
Revaluation of unrecognized prior service benefit, net of tax benefit of \$0.0, \$0.1 and \$0.0	0.0	(0.6)	0.0
Balance at end of year	(0.6)	(0.6)	0.0
Unrecognized pension net loss:			
Balance at beginning of year	(42.6)	(42.1)	(44.9)
Tax reform rate change reclassification	0.0	0.0	(6.0)
Reclassification of unrecognized pension net loss to expense, net of tax benefit of \$0.3, \$0.4 and \$4.4	1.1	1.1	7.3
Revaluation of unrecognized pension net loss, net of tax benefit of \$0.4, \$0.5 and \$0.2	1.0	(1.6)	1.5
Balance at end of year	(40.5)	(42.6)	(42.1)
Total balance at end of year	(77.7)	(87.2)	(40.1)
Treasury stock			
Balance at beginning of year	(90.0)	(58.2)	(53.0)
Purchases	(0.9)	(31.8)	(5.2)
Balance at end of year	(90.9)	(90.0)	(58.2)
Total Koppers shareholders' equity – end of year	147.3	56.2	99.9
Noncontrolling interests			
Balance at beginning of year	10.8	5.9	4.2
Net income attributable to noncontrolling interests	0.8	5.8	1.4
Currency translation adjustment	(0.2)	(0.9)	0.3
Balance at end of year	11.4	10.8	5.9
Total equity – end of year	\$ 158.7	\$ 67.0	\$ 105.8

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

## 1. Description of Business

*Parent company of Koppers Inc.* – In these financial statements, unless otherwise indicated or the context requires otherwise, when the terms “Koppers,” the “Company,” “we,” “our” or “us,” are used, they mean Koppers Holdings Inc. (“Koppers Holdings”) and its subsidiaries on a consolidated basis. The use of these terms is not intended to imply that Koppers Holdings and Koppers Inc. are not separate and distinct legal entities from each other and from their respective subsidiaries. Koppers Holdings has no direct operations and no significant assets other than the stock of Koppers Inc. It depends on the dividends from the earnings of Koppers Inc. and its subsidiaries to generate the funds necessary to meet its financial obligations. The terms of Koppers Inc.’s Credit Facility prohibit Koppers Inc. from paying dividends and otherwise transferring assets except for certain limited dividends. Further, the terms of the indenture governing Koppers Inc.’s Senior Notes due 2025 significantly restrict Koppers Inc. from paying dividends and otherwise transferring assets to Koppers Holdings.

*Business description* – We are a global integrated provider of treated wood products, wood treatment chemicals and carbon compounds for use in a variety of markets including the railroad, specialty chemical, utility, residential lumber, agriculture, aluminum, steel, rubber and construction industries. Our business is operated through three business segments, Railroad and Utility Products and Services (“RUPS”), Performance Chemicals (“PC”) and Carbon Materials and Chemicals (“CMC”).

Our RUPS segment sells treated and untreated wood products, rail joint bars and services primarily to the railroad industry and treated wood products to the utility industry. Railroad products include procuring and treating items such as crossties, switch ties and various types of lumber used for railroad bridges and crossings and the manufacture of rail joint bars. Utility products include transmission and distribution poles and pilings. The segment also operates a railroad services business that conducts engineering, design, repair and inspection services for railroad bridges and a business related to the recovery of used crossties and utility poles.

Our PC segment develops, manufactures, and markets wood preservation chemicals and wood treatment technologies and services a diverse range of end-markets including infrastructure, residential and commercial construction and agriculture.

Our CMC segment is primarily a manufacturer of creosote, carbon pitch, naphthalene, phthalic anhydride and carbon black feedstock. Creosote is used in the treatment of wood and carbon black feedstock is used in the production of carbon black. Carbon pitch is a critical raw material used in the production of aluminum and for the production of steel in electric arc furnaces. Naphthalene is used for the production of phthalic anhydride and as a surfactant in the production of concrete. Phthalic anhydride is used in the production of plasticizers, polyester resins and alkyl paints.

## 2. Summary of Significant Accounting Policies

*Basis of presentation* – The consolidated financial statements include our accounts and all majority-owned subsidiaries for which we are deemed to exercise control over its operations. All significant intercompany transactions have been eliminated in consolidation. Certain prior period amounts in the Notes to Consolidated Financial Statements have been reclassified to conform to the current period’s presentation.

*Use of estimates* – Accounting principles generally accepted in the U.S. require management to make estimates and judgments that affect the reported amounts of assets and liabilities and the disclosure of contingencies on the date of the financial statements as well as the reported amounts of revenues and expenses during the reporting period. Estimates have been prepared on the basis of the most current and best available information and actual results could differ materially from these estimates.

*Revenue recognition* – Effective January 1, 2018, we adopted Accounting Standards Codification (“ASC”) 606, Revenue from Contracts with Customers, using the modified retrospective method. We recognized the cumulative effect of initially applying the new revenue standard as an adjustment to the opening balance of retained earnings. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods.

Revenue is recognized upon the completion of performance obligations under our contracts with customers and when control of a good or service is transferred to the customer. Substantially all of our contracts with customers are ship and invoice arrangements where revenue is recognized when we complete our performance obligations and transfer control to the customer. Revenue recognition generally occurs at the point of shipment; however in certain circumstances as shipping terms dictate, we transfer control and revenue is recognized at the point of destination. Payment terms on ship and invoice arrangements are typically within 45 days. Shipping and handling costs are included as a component of cost of sales.

We recognize revenue related to the procurement of certain untreated railroad crossties upon delivery to our plant and acceptance by the customer. Service revenue, consisting primarily of wood treating services, is recognized at the time the service is provided and the performance obligation is satisfied. Payment on sales of untreated railroad crossties and wood treating services are generally due within 30 days of the invoice date.

For periods prior to January 1, 2018, we recognized revenue when the risks and rewards of ownership and title to the product have transferred to the customer. Revenue recognition generally occurred at the point of shipment; however, in certain circumstances as shipping terms dictate, we recognized revenue at the point of destination.

*Cash and cash equivalents* – Cash and cash equivalents include cash on hand and on deposit and investments in highly liquid investments with an original maturity of 90 days or less.

*Accounts receivable* – We maintain allowances for doubtful accounts for estimated losses resulting from the inability of customers to make required payments. In circumstances where we become aware of a specific customer's inability to meet its financial obligations to Koppers, a specific reserve for bad debts is recorded against amounts due. If the financial condition of our customers were to deteriorate, resulting in an inability to make payments, additional allowances may be required.

*Inventories* – In the United States, CMC and RUPS inventories are valued at the lower of cost, utilizing the last-in, first-out (“LIFO”) basis, or net realizable value. UIP inventories are valued at the lower of cost, utilizing the moving average cost basis, or net realizable value. PC inventories and all other inventories outside of the United States are valued at the lower of cost, utilizing the first-in, first-out (“FIFO”) basis, and net realizable value. Net realizable value is the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. LIFO inventories constituted approximately 51 percent and 53 percent of the FIFO inventory value at December 31, 2019 and 2018, respectively. In 2019, 2018 and 2017, we recorded inventory write-downs of \$1.0 million, \$1.0 million and \$0.4 million, respectively, related to lower of cost and net realizable value for our subsidiaries that value inventory on the FIFO basis.

*Property, plant and equipment* – Property, plant and equipment are recorded at purchased cost and include improvements which significantly increase capacities or extend useful lives of existing plant and equipment. Depreciation expense is calculated by applying the straight-line method over estimated useful lives. Estimated useful lives for buildings generally range from 10 to 20 years and depreciable lives for machinery and equipment generally range from 3 to 15 years. Net gains and losses related to asset disposals are recognized in earnings in the period in which the disposal occurs. Routine repairs, replacements and maintenance are expensed as incurred.

We periodically evaluate whether current facts and circumstances indicate that the carrying value of depreciable long-lived assets may not be recoverable. If an asset, or logical grouping of assets, is determined to be impaired, the asset is written down to its fair value using discounted future cash flows and, if available, quoted market prices. Refer to Note 4 “Plant Closures and Discontinued Operations” for additional information.

*Goodwill and other intangible assets* – Goodwill and other purchased intangible assets are included in the identifiable assets of the business segment to which they have been assigned. Goodwill is not amortized and is subject to an impairment test that we conduct annually or more frequently if a change in circumstances or the occurrence of events *indicates that potential impairment exists, using discounted cash flows. We perform an assessment of goodwill at the reporting unit level, using a quantitative assessment by comparing the estimated fair value using discounted cash flow calculations of each reporting unit with its estimated net book value. The discounted cash flow calculations are dependent on several subjective factors including the timing of future cash flows, future growth rates, and the discount rate. If assumptions or estimates in the fair value calculations change or if future cash flows or future growth rates vary from what was planned, this may impact the impairment analysis. We performed an impairment test for goodwill for each of the reporting units using a quantitative testing approach. Based on the evaluations performed, we determined it was more likely than not that the fair value of each of the reporting units exceeded its carrying amount, and therefore, we determined that goodwill was not impaired.*

Identifiable intangible assets, other than goodwill, are recorded at fair value. Identifiable intangible assets are amortized on a straight-line basis over their estimated useful lives.

*Deferred income taxes* – Deferred tax assets and liabilities are recognized for future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. The effect on deferred tax assets and liabilities of a change in tax laws is recognized in earnings in the period the new laws are enacted. A valuation allowance is recorded to reduce the carrying amounts of deferred tax assets unless it is more likely than not that such assets will be realized.

**Leases** – Effective January 1, 2019, we changed our method of accounting for leases due to the adoption of Accounting Standards Update (ASU) No. 2016-02, “Leases (Topic 842)” and ASU No. 2018-10, “Codification Improvements to Topic 842, Leases”, using the modified retrospective method with no restatement of comparative periods presented. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods.

Lease arrangements are determined whether or not to be a lease at inception. Right-of-use (“ROU”) assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments. ROU lease liabilities are recognized based on the present value of the future minimum lease payments over the term of the lease as of the start date and may include consideration of certain adjustments including non-lease components. ROU assets are determined based on the determined ROU lease liability and may include the consideration of certain adjustments including initial direct costs, prepaid lease payments, lease incentives received, and non-lease components. The option to extend or terminate a lease is included in the determination of the ROU asset and lease liability only when it is certain that we will exercise that option.

**Asset retirement obligations** – Asset retirement obligations are initially recorded at present value and are capitalized as part of the cost of the related long-lived asset when sufficient information is available to estimate present value. The capitalized costs are subsequently charged to depreciation expense over the estimated useful life of the related long-lived asset. The present value of the obligation is determined by calculating the discounted value of expected future cash flows and accretion expense is recorded each month to ultimately increase this obligation to fair value.

We recognize asset retirement obligations for the removal and disposal of residues; dismantling of certain tanks required by governmental authorities; cleaning and dismantling costs for owned rail cars; cleaning costs for leased rail cars and barges; and site demolition, when required by governmental authorities or by contract.

The following table describes changes to our asset retirement obligation liabilities:

	<i>December 31,</i>	
	<i>2019</i>	<i>2018</i>
<i>(Dollars in millions)</i>		
Asset retirement obligation at beginning of year	\$ 27.0	\$ 37.1
Accretion expense	1.5	1.7
Revision in estimated cash flows (a)	4.7	0.8
Cash expenditures	(12.5)	(12.5)
Currency translation	0.0	(0.1)
Balance at end of period	\$ 20.7	\$ 27.0

(a) Revision in estimated cash flows for 2019 and 2018 includes \$3.4 and \$1.8 million of charges related to restructuring activities, respectively. See Note 4. “Plant Closures and Discontinued Operations” for additional information.

**Litigation and contingencies** – Amounts associated with litigation and contingencies are accrued when management, after taking into consideration the facts and circumstances of each matter including any settlement offers, has determined that it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. Legal costs for litigation are expensed as incurred with the exception of legal fees relating to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (“CERCLA”), sites.

**Environmental liabilities** – We accrue for remediation costs and penalties when the responsibility to remediate is probable and the amount of related cost is reasonably estimable. If only a range of potential liability can be estimated and no amount within the range is more probable than another, the accrual is recorded at the low end of that range. Remediation liabilities are discounted if the amount and timing of the cash disbursements are readily determinable.

### 3. New Accounting Pronouncements

We adopted ASU No. 2018-02, “Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income” effective October 1, 2017. ASU 2018-02 requires a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the newly enacted federal corporate income tax rate. The amount of the reclassification is the difference between the tax-effected items that are included in accumulated other comprehensive income and were recorded at the historical 35 percent corporate income tax rate and those same items that are now recorded at the newly enacted 21 percent corporate income tax rate. This difference was \$3.2 million for the year ended December 31, 2017.

In August 2017, the Financial Accounting Standards Board (“FASB”) issued ASU No. 2017-12, “Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities.” This ASU amends and simplifies existing guidance in order to allow companies to more accurately present the economic effects of risk management activities in the financial statements. We adopted this ASU effective January 1, 2018 and we reclassified a \$3.9 million unrealized gain, net of tax, from retained earnings to accumulated other comprehensive loss upon adoption.

In March 2017, the FASB issued ASU No. 2017-07, "Compensation – Retirement Benefits (Topic 715)", in order to improve the presentation of net periodic pension and postretirement costs. The amendment requires that components of net benefit cost other than service cost are presented in the income statement outside a subtotal of income from operations. As a practical expedient, we have used the amounts disclosed in our pension and post-retirement benefits footnote as the estimation basis for applying the retrospective presentation requirements.

In January 2017, the FASB issued ASU No. 2017-04, "Simplifying the Test for Goodwill Impairment (Topic 350)." The update is intended to simplify how an entity is required to test goodwill for impairment by comparing the implied fair value of a reporting unit's goodwill with the carrying amount of that goodwill. We adopted this ASU effective January 1, 2018.

In June 2016, the FASB issued ASU No. 2016-13, "Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments." ASU 2016-13 replaces the incurred loss impairment methodology with a methodology that reflects expected credit losses. The update is intended to provide financial statement users with more decision-useful information about the expected credit losses on financial instruments and other commitments to extend credit held by a reporting entity at each reporting date. The new standard is effective for fiscal years beginning after December 15, 2019. We are evaluating the effect the guidance will have on our consolidated financial statements, which is not expected to be material.

In February 2016, the FASB issued ASU No. 2016-02, "Leases (Topic 842)" and ASU No. 2018-10, "Codification Improvements to Topic 842, Leases". ASU 2016-02 requires an entity to recognize a right-of-use asset and lease liability for all leases. The standard was effective January 1, 2019 and measurement and presentation of expenses depends on classification as a finance or operating lease. We adopted ASU 2016-02 effective January 1, 2019 using the modified retrospective approach with no restatement of comparative periods presented. The adoption is accounted for as a change in accounting principle in conformity with FASB Accounting Standards Codification 250, "Accounting Changes and Error Corrections".

We elected a suite of practical expedients, including retaining our current classification of existing leases upon adoption, separating lease and non-lease components for certain asset classes and excluding leases expiring within twelve months. The initial impact of adopting this new standard on our consolidated statement of operations and consolidated statement of cash flows was not material. Approximately \$119 million of right-to-use assets and lease liabilities were recognized in the consolidated balance sheet upon adoption. Refer to "Note 17- Leases" for more details regarding leases as of December 31, 2019.

#### 4. Plant Closures and Discontinued Operations

Over the past five years, we have been restructuring our Carbon Materials and Chemicals ("CMC") segment in order to concentrate our facilities in regions where we believe we hold key competitive advantages to better serve our global customers. These closure activities include:

- The cessation of naphthalene refining activities at our Follansbee, West Virginia coal tar distillation facility in the fourth quarter of 2018 subsequent to the commissioning of a new naphthalene refining plant in Stickney, Illinois. In August 2019, we ceased remaining production activities at the Follansbee plant.
- In September 2018, we sold our U.K.-based specialty chemicals business.
- In November 2016, we sold our 30-percent interest in Tangshan Kailuan Koppers Carbon Chemical Company Limited ("TKK") located in the Hebei Province in China.
- In July 2016, we discontinued coal tar distillation activities at our CMC plant located in Clairton, Pennsylvania. In October 2018, we sold the facility and as part of the transaction, we transferred cash to the buyer and the buyer assumed decommissioning, demolition and site restoration responsibilities.
- In March 2016, we discontinued production at our 60-percent owned CMC plant located in Tangshan, China.
- In February 2016, we ceased coal tar distillation and specialty pitch operations at both of our United Kingdom CMC facilities. In July 2016, we sold substantially all of our CMC tar distillation properties and assets in the United Kingdom.
- In April 2014, we ceased coal tar distillation activities at our CMC facility located in Uithoorn, the Netherlands.

Other closure and divestiture activity relates to our RUPS segment. These activities include:

- In August 2019, we sold our utility pole treatment plant located in Blackstone, Virginia.
- In August 2015, we closed a crosstie treating plant located in Green Spring, West Virginia.
- In July 2015, we sold the assets of our 50-percent interest in KSA Limited Partnership, a concrete crosstie manufacturer.

In addition, in 2011, we ceased carbon black production at our CMC facility located in Kurnell, Australia. Costs associated with this closure are included in (loss) income from discontinued operations on the consolidated statement of operations and comprehensive income (loss).

Details of the restructuring activities and related reserves are as follows:

	Severance and employee benefits	Environmental remediation	Asset retirement	Other	Total
<i>(Dollars in millions)</i>					
Reserve at December 31, 2017	\$ 1.7	\$ 2.7	\$ 10.6	\$ 3.3	\$ 18.3
Accrual	0.0	0.9	1.8	2.2	4.9
Costs charged against assets	0.0	0.0	0.0	(2.1)	(2.1)
Reversal of accrued charges	0.0	0.0	(0.9)	0.0	(0.9)
Cash paid	0.0	(3.4)	(7.9)	(0.5)	(11.8)
Currency translation	0.0	(0.2)	0.0	(0.1)	(0.3)
Reserve at December 31, 2018	\$ 1.7	\$ 0.0	\$ 3.6	\$ 2.8	\$ 8.1
Accrual	0.0	0.0	3.4	3.0	6.4
Costs charged against assets	0.0	0.0	0.0	(3.0)	(3.0)
Reversal of accrued charges	(0.3)	0.0	(0.1)	0.0	(0.4)
Cash paid	(0.5)	0.0	(6.2)	(0.3)	(7.0)
Currency translation	0.0	0.0	0.0	(0.1)	(0.1)
Reserve at December 31, 2019	\$ 0.9	\$ 0.0	\$ 0.7	\$ 2.4	\$ 4.0

#### *Subsequent Event*

On February 18, 2020, we entered into a definitive agreement to sell Koppers (Jiangsu) Carbon Chemical Company Limited ("KJCC") to Fangda Carbon New Material Co., Ltd and C-Chem Co., Ltd., a subsidiary of Nippon Steel Chemical & Material Co., Ltd. KJCC is a 75 percent-owned coal tar distillation company which is part of our CMC segment. In 2019, KJCC's sales totaled \$127.4 million and its operating profit totaled \$5.9 million. The sales price is \$107.0 million, subject to adjustment for cash, debt and working capital at closing, which is expected to occur in four to six months due to required regulatory approvals in China and achievement of other closing conditions. At closing, we estimate the gain on the sale of KJCC will be approximately \$45 million and net cash proceeds to Koppers will be approximately \$65 million, after noncontrolling interest, taxes and expenses.

#### 5. Acquisitions

On April 10, 2018, Koppers Inc. acquired Cox Industries, Inc. ("Cox") for net cash consideration of \$201.3 million. The transaction was funded by borrowings on Koppers Inc.'s Credit Facility discussed in "Note 16 - Debt." Cox was renamed Koppers Utility and Industrial Products Inc. ("UIP") subsequent to the acquisition. UIP is a manufacturer of treated wood transmission and distribution poles for utility and cooperative utility companies. It is also a manufacturer of treated wood pilings used for construction applications. UIP manufactures and sells its treated wood poles and pilings through a network of eight manufacturing facilities and 19 distribution yards located throughout the United States. UIP treats its products with a variety of wood protection chemicals, including chromated copper arsenate and creosote, which are produced by our PC and CMC segments, respectively.

On February 28, 2018, Koppers Inc. acquired M.A. Energy Resources, LLC ("MAER") for net cash consideration of \$62.8 million. The purchase price was funded by borrowings on Koppers Inc.'s Credit Facility. MAER was renamed Koppers Recovery Resources LLC ("KRR") subsequent to the acquisition. KRR is a vertically-integrated company that provides material recovery services for crossties that have been taken out of service and other biomass material.

KRR converts this recovered material into alternative fuels, such as crosstie-derived fuel or biomass-derived fuel, that are used as a substitute for conventional higher-cost carbon-based fuel. KRR currently operates two processing facilities, each of which is located to serve its Class I railroad customer base.

Combined acquisition costs related to these two transactions were \$6.5 million for year ended December 31, 2018 and are recorded within selling, general and administrative expenses in the consolidated statement of operations for the year ended December 31, 2018.

The following unaudited pro forma information presents a summary of our revenues and income from continuing operations as if the UIP acquisition occurred on January 1, 2017 (the first day of the most recently completed fiscal year). The unaudited pro forma information is not necessarily indicative of operating results that would have been achieved had the acquisition been completed as of January 1, 2017 and is not intended to project our future financial results after the acquisition. The unaudited pro forma information is based on certain assumptions, which management believes are reasonable, and does not reflect the cost of any integration activities or the benefits from the acquisition and synergies that may be derived from any integration activities.

	Year Ended December 31,	
	2018	2017
<i>(Dollars in millions)</i>		
Pro forma revenue	\$ 1,760.9	\$ 1,622.5
Pro forma income from continuing operations attributable to Koppers	29.0	26.6
Pro forma income per share - continuing operations:		
Basic -	\$ 1.39	\$ 1.28
Diluted -	\$ 1.36	\$ 1.21

## 6. Revenue Recognition

Effective January 1, 2018 we adopted ASC 606, Revenue from Contracts with Customers, using the modified retrospective method. The cumulative effect to the opening balance of retained earnings recognized at January 1, 2018 was an increase of \$0.3 million, consisting of \$5.3 million in revenue and \$5.0 million in cost of goods sold not previously recognized during the year ended December 31, 2017. ASC 606 impacted the timing of revenue recognized related to certain services to untreated crossties within our RUPS segment where those specific performance obligations were fulfilled prior to shipment and were historically not recognized as revenue until shipped. Refer to "Note 9 – Segment Information" for relevant disclosures regarding the disaggregation of revenue.

### Contract Balances

The timing of revenue recognition in accordance with ASC 606 results in both billed accounts receivable and unbilled receivables, both classified as accounts receivable, net of allowance within the consolidated balance sheet. Contract assets of \$5.1 million and \$10.5 million are recorded within accounts receivable, net of allowance within the consolidated balance sheet as of December 31, 2019 and December 31, 2018, respectively.

## 7. Earnings per Common Share

The computation of basic earnings per common share for the periods presented is based upon the weighted average number of common shares outstanding during the periods. The computation of diluted earnings per common share includes the effect of non-vested nonqualified stock options and restricted stock units assuming such options and stock units were outstanding common shares at the beginning of the period. The effect of antidilutive securities is excluded from the computation of diluted loss per common share, if any.

The following table sets forth the computation of basic and diluted earnings per common share:

	Year Ended December 31,		
	2019	2018	2017
<i>(Dollars in millions, except share amounts, in thousands, and per share amounts)</i>			
Net income attributable to Koppers	\$ 66.6	\$ 23.4	\$ 29.1
(Loss) income from discontinued operations	(0.1)	0.4	(0.8)
Income from continuing operations attributable to Koppers	\$ 66.7	\$ 23.0	\$ 29.9
Weighted average common shares outstanding:			
Basic	20,665	20,871	20,754
Effect of dilutive securities	403	455	1,246
Diluted	21,068	21,326	22,000
Earnings per common share – continuing operations:			
Basic earnings per common share	\$ 3.23	\$ 1.10	\$ 1.44
Diluted earnings per common share	3.16	1.08	1.36
Other data:			
Antidilutive securities excluded from computation of diluted earnings per common share	764	401	156

## 8. Stock-based Compensation

We have outstanding stock-based compensation awards that were granted under the amended and restated 2005 Long-Term Incentive Plan (the "2005 LTIP") and the 2018 Long-Term Incentive Plan (the "2018 LTIP"). Both the 2005 LTIP and the 2018 LTIP are collectively referred to as the "LTIP". On May 3, 2018, the 2018 LTIP was approved by our shareholders and the 2005 LTIP was frozen. Similar to the 2005 LTIP, the 2018 LTIP provides for the grant to eligible persons of stock options, stock appreciation rights, restricted stock, restricted stock units, performance shares, performance awards, dividend equivalents and other stock-based awards, which are collectively referred to as the "awards".

### Restricted Stock Units and Performance Stock Units

Under the LTIP, the board of directors grants restricted stock units and performance stock units to certain employee participants (collectively, the "stock units"). Compensation expense for non-vested stock units is recorded over the vesting period based on the fair value at the date of grant. The fair value of restricted stock units is the market price of the underlying common stock on the date of grant and the fair value of performance stock units is determined using a Monte Carlo valuation model. For grants to most employees, the restricted stock units vest in four equal annual installments. Restricted stock units that have one-year vesting periods are also issued under the LTIP to members of the board of directors in connection with annual director compensation and, from time to time, are issued to employees in connection with employee compensation with vesting periods of two years or less.

Performance stock units have vesting based upon a market condition. These performance stock units have multi-year performance objectives and a three-year period for vesting (if the applicable performance objective is achieved). The applicable performance objective is based on our total shareholder return relative to the Standard & Poor's SmallCap 600 Materials Index. The number of performance stock units granted represents the target award and participants have the ability to earn between zero and 200 percent of the target award based upon actual performance. If minimum performance criteria are not achieved, no performance stock units will vest. We have the discretion to settle the award in cash rather than shares, although we currently expect that all awards will be settled by the issuance of shares.

We calculated the fair value of the performance stock unit awards on the date of the grant using assumptions listed below:

	March 2019 Grant	May 2018 Grant	March 2018 Grant	March 2017 Grant	March 2016 Grant
Grant date price per share of performance award	\$ 26.63	\$ 39.10	\$ 41.60	\$ 44.10	\$ 18.11
Expected dividend yield per share	0.00%	0.00%	0.00%	0.00%	0.00%
Expected volatility	39.00%	39.40%	39.40%	43.50%	40.86%
Risk-free interest rate	2.50%	2.35%	2.38%	1.54%	0.96%
Look-back period in years	2.82	2.84	2.84	2.83	2.84
Grant date fair value per share of performance award	\$ 40.30	\$ 44.29	\$ 47.12	\$ 64.02	\$ 23.70

Dividends declared, if any, on our common stock during the period prior to vesting of the stock units are credited at equivalent value as additional stock units and become payable as additional common shares upon vesting. In the event of termination of employment, other than retirement, death or disability, any non-vested stock units are forfeited, including additional stock units credited from dividends. In the event of termination of employment due to retirement, death or disability, pro-rata vesting of the stock units over the service period will result. There are special vesting provisions for the stock units related to a change in control.

The following table shows a summary of the performance stock units as of December 31, 2019:

Performance Period	Minimum Shares	Target Shares	Maximum Shares
2017 – 2019	0	110,262	220,524
2018 – 2020	0	128,093	256,186
2019 – 2021	0	208,359	312,574



Performance stock units for the 2017 – 2019 performance period will vest in March 2020 at 100 percent of the target share amount of 110,262.

The following table shows a summary of the status and activity of non-vested stock awards for the year ended December 31, 2019:

	Restricted Stock Units	Performance Stock Units	Total Stock Units	Weighted Average Grant Date Fair Value per Unit
Non-vested at January 1, 2019	223,561	271,123	494,684	\$ 45.65
Granted	233,781	156,287	390,068	\$ 32.25
Performance share adjustment	0	52,072	52,072	\$ 40.30
Vested	(108,351)	(32,768)	(141,119)	\$ 29.13
Forfeited	(5,979)	(1,528)	(7,507)	\$ 32.57
Non-vested at December 31, 2019	343,012	445,186	788,198	\$ 40.18

### Stock Options

Stock options to most executive officers vest and become exercisable in four equal annual installments. The stock options have a term of ten years. In the event of termination of employment, other than retirement, death or disability, any non-vested options are forfeited. In the event of termination of employment due to retirement, death or disability, pro-rata vesting of the options over the service period will result. There are special vesting provisions for the stock options related to a change in control.

Compensation expense for non-vested stock options is recorded over the vesting period based on the fair value at the date of grant. We calculated the fair value of stock options on the date of grant using the Black-Scholes-Merton model and the assumptions listed below:

	March 2019 Grant	May 2018 Grant	March 2018 Grant	March 2017 Grant	March 2016 Grant
Grant date price per share of stock option award	\$ 26.63	\$ 39.10	\$ 41.60	\$ 44.10	\$ 18.11
Expected dividend yield per share	0.00%	0.00%	0.00%	0.00%	0.00%
Expected life in years	6.14	5.73	5.73	5.77	5.96
Expected volatility	39.44%	37.05%	37.05%	39.70%	40.86%
Risk-free interest rate	2.53%	2.82%	2.67%	2.13%	1.45%
Grant date fair value per share of option awards	\$ 11.29	\$ 15.48	\$ 16.38	\$ 17.90	\$ 7.41

We have not declared a dividend since 2014 and do not expect to declare any dividends for the foreseeable future. The expected life in years is based on historical exercise data of options previously granted by us. Expected volatility is based on the historical volatility of our common stock and the historical volatility of certain other similar public companies. The risk-free interest rate is based on U.S. Treasury bill rates for the expected life of the option.

The following table shows a summary of the status and activity of stock options for the year ended December 31, 2019:

	Options	Weighted Average Exercise Price per Option	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding at December 31, 2018	981,940	\$ 29.63		
Granted	145,301	\$ 26.63		
Exercised	(97,751)	\$ 29.31		
Expired	(62,641)	\$ 41.26		
Outstanding at December 31, 2019	966,849	\$ 28.45	6.15	\$ 10.7
Exercisable at December 31, 2019	646,714	\$ 26.86	4.91	\$ 8.0

## Stock Compensation Expense

Total stock-based compensation expense recognized under our LTIP and employee stock purchase plan for the three years ended December 31, 2019 are as follows:

	Year Ended December 31,		
	2019	2018	2017
<i>(Dollars in millions)</i>			
<b>Stock-based compensation expense recognized:</b>			
Selling, general and administrative expenses	\$ 12.1	\$ 12.5	\$ 10.6
Less related income tax benefit	0.2	3.1	4.1
Decrease in net income attributable to Koppers	\$ 11.9	\$ 9.4	\$ 6.5
Intrinsic value of exercised stock options	\$ 1.1	\$ 1.1	\$ 1.3
Cash received from the exercise of stock options	\$ 2.9	\$ 2.9	\$ 2.7

As of December 31, 2019, total future compensation expense related to non-vested stock-based compensation arrangements totaled \$16.8 million and the weighted-average period over which this expense is expected to be recognized is approximately 25 months.

## 9. Segment Information

We have three reportable segments: Railroad and Utility Products and Services, Performance Chemicals and Carbon Materials and Chemicals. Our reportable segments contain multiple aggregated business units since management believes the long-term financial performance of these business units is affected by similar economic conditions. The reportable segments are each managed separately because they manufacture and distribute distinct products with different production processes.

Our RUPS segment sells treated and untreated wood products, manufactured products and services primarily to the railroad and public utility markets. Railroad products and services include procuring and treating items such as crossties, switch ties and various types of lumber used for railroad bridges and crossings and the manufacture of rail joint bars. The segment also operates a railroad services business that conducts engineering, design, repair and inspection services for railroad bridges and a business related to the recovery of used crossties. In April 2018, we acquired UIP, a manufacturer of treated wood utility transmission and distribution poles for utility and cooperative utility companies. It is also a manufacturer of treated wood pilings used for construction applications. In February 2018, we acquired KRR, a vertically-integrated provider of crosstie recovery and disposal services. KRR converts recovered material into alternative fuels, such as crosstie-derived or biomass-derived fuel, that is used as a substitute for conventional higher-cost carbon-based fuel.

Our PC segment develops, manufactures, and markets wood preservation chemicals and wood treatment technologies and services a diverse range of end-markets including infrastructure, residential and commercial construction, and agriculture.

Our CMC segment is primarily a manufacturer of creosote, carbon pitch, naphthalene, phthalic anhydride and carbon black feedstock. Creosote is used in the treatment of wood and carbon black feedstock is used in the production of carbon black. Carbon pitch is used in the production of aluminum and steel in electric arc furnaces. Naphthalene is used for the production of phthalic anhydride and as a surfactant in the production of concrete. Phthalic anhydride is used in the production of plasticizers, polyester resins and alkyd paints.

We evaluate performance and determine resource allocations based on a number of factors, including earnings before interest, taxes, depreciation and amortization ("EBITDA") and operating profit or loss from operations. Operating profit does not include other loss, interest expense, income taxes or operating costs of Koppers Holdings Inc.

The accounting policies of the reportable segments are the same as those described in the summary of significant accounting policies. Intersegment transactions are eliminated in consolidation.

The following table sets forth certain sales and operating data, net of all intersegment transactions, for our segments for the periods indicated:

	Year Ended December 31,		
	2019	2018	2017
<i>(Dollars in millions)</i>			
<b>Revenues from external customers:</b>			
Railroad and Utility Products and Services	\$ 733.5	\$ 634.8	\$ 512.6
Performance Chemicals	448.3	420.0	411.2
Carbon Materials and Chemicals	591.0	655.4	551.7
<b>Total</b>	<b>\$ 1,772.8</b>	<b>\$ 1,710.2</b>	<b>\$ 1,475.5</b>
<b>Intersegment revenues:</b>			
Performance Chemicals	\$ 12.6	\$ 10.8	\$ 6.7
Carbon Materials and Chemicals	75.2	77.3	79.6
<b>Total</b>	<b>\$ 87.8</b>	<b>\$ 88.1</b>	<b>\$ 86.3</b>
<b>Depreciation and amortization expense:</b>			
Railroad and Utility Products and Services	\$ 19.4	\$ 17.7	\$ 11.8
Performance Chemicals	18.3	17.8	17.9
Carbon Materials and Chemicals <sup>(a)</sup>	17.4	15.3	20.1
<b>Total</b>	<b>\$ 55.1</b>	<b>\$ 50.8</b>	<b>\$ 49.8</b>
<b>Operating profit (loss):</b>			
Railroad and Utility Products and Services <sup>(b)</sup>	\$ 35.8	\$ 5.9	\$ 26.2
Performance Chemicals	52.1	36.2	71.4
Carbon Materials and Chemicals <sup>(c)</sup>	45.0	70.7	28.0
Corporate <sup>(d)</sup>	(2.1)	(2.4)	(2.0)
<b>Total</b>	<b>\$ 130.8</b>	<b>\$ 110.4</b>	<b>\$ 123.6</b>
<b>Capital expenditures (excluding acquisitions):</b>			
Railroad and Utility Products and Services	\$ 11.6	\$ 19.2	\$ 10.6
Performance Chemicals	9.7	15.1	15.4
Carbon Materials and Chemicals	15.5	73.5	39.7
Corporate	0.4	1.9	1.8
<b>Total</b>	<b>\$ 37.2</b>	<b>\$ 109.7</b>	<b>\$ 67.5</b>

(a) Excludes impairment charges of \$3.7 million in 2017 for CMC.

(b) Includes \$6.0 million of inventory fair value purchase price accounting adjustments from our acquisition of UIP in 2018. Includes asset retirement obligation and other restructuring costs of \$1.6 million for the restructuring of two facilities in the United States in 2017.

(c) Includes plant closure costs of \$6.0 million, \$3.9 million and \$14.6 million in 2019, 2018 and 2017, respectively, for CMC.

(d) Operating loss for Corporate includes costs for Koppers Holdings Inc., the parent company of Koppers Inc., and acquisition-related costs.

The following table sets forth tangible and intangible assets allocated to each of our segments as of the dates indicated:

	December 31,	
	2019	2018
<i>(Dollars in millions)</i>		
<b>Segment assets:</b>		
Railroad and Utility Products and Services	\$ 562.2	\$ 538.0
Performance Chemicals	457.7	446.9
Carbon Materials and Chemicals	502.1	457.1
<b>Segment assets</b>	<b>1,522.0</b>	<b>1,442.0</b>
Cash and cash equivalents	0.0	2.1
Income tax receivable	1.9	2.8
Deferred taxes	17.0	20.5
Property, plant and equipment, net	5.3	6.0
Operating lease right-of-use assets	13.2	0.0
Prepaid insurance and other assets	5.2	6.5
<b>Total</b>	<b>\$ 1,564.6</b>	<b>\$ 1,479.9</b>
<b>Goodwill:</b>		
Railroad and Utility Products and Services	\$ 120.7	\$ 121.1
Performance Chemicals	175.4	175.4
<b>Total</b>	<b>\$ 296.1</b>	<b>\$ 296.5</b>

Revenues and Long-lived Assets by Geographic Area

(Dollars in millions)	Year	Revenue		Long-lived assets
United States	2019	\$	1,141.2	\$ 796.0
	2018		993.5	732.1
	2017		852.2	479.5
Australasia	2019		335.4	135.9
	2018		365.4	128.8
	2017		312.8	131.4
Europe	2019		177.5	70.2
	2018		214.6	44.8
	2017		173.1	44.8
Other countries	2019		118.7	19.3
	2018		136.7	18.3
	2017		137.4	19.4
Total	2019	\$	1,772.8	\$ 1,021.4
	2018	\$	1,710.2	\$ 924.1
	2017	\$	1,475.5	\$ 675.1

Revenues by geographic area in the above table are attributed by the destination country of the sale. Revenues from non-U.S. countries totaled \$631.6 million in 2019, \$716.6 million in 2018 and \$623.3 million in 2017.

Segment Revenues for Significant Product Lines

(Dollars in millions)	Year Ended December 31,		
	2019	2018	2017
<b>Railroad and Utility Products and Services:</b>			
Railroad treated products	\$ 419.6	\$ 341.7	\$ 380.4
Utility poles	222.0	184.7	46.0
Rail joints	26.8	33.5	28.2
Railroad infrastructure services	36.5	36.9	34.8
Other products	28.6	38.0	23.2
	733.5	634.8	512.6
<b>Performance Chemicals:</b>			
Wood preservative products	418.8	389.1	383.8
Other products	29.5	30.9	27.4
	448.3	420.0	411.2
<b>Carbon Materials and Chemicals:</b>			
Pitch and related products	365.3	403.1	275.8
Creosote and distillates	46.3	84.1	83.7
Phthalic anhydride and other chemicals	77.9	84.6	89.8
Naphthalene	42.2	40.8	38.9
Other products	59.3	42.8	63.5
	591.0	655.4	551.7
<b>Total</b>	<b>\$ 1,772.8</b>	<b>\$ 1,710.2</b>	<b>\$ 1,475.5</b>

## 10. Income Taxes

*Income Tax Provision*

Components of our income tax provision are as follows:

(Dollars in millions)	Year Ended December 31,		
	2019	2018	2017
<b>Current:</b>			
Federal	\$ (3.5)	\$ (1.2)	\$ 11.1
State	0.5	0.1	0.6
Foreign	15.3	18.0	15.7
Total current tax provision	12.3	16.9	27.4
<b>Deferred:</b>			
Federal	3.1	9.6	2.6
State	0.4	(0.2)	(1.2)
Foreign	(14.4)	(0.3)	0.2
Total deferred tax (benefit) provision	(10.9)	9.1	1.6
Total income tax provision	\$ 1.4	\$ 26.0	\$ 29.0

Income before income taxes for 2019, 2018 and 2017 included \$75.0 million, \$106.1 million and \$81.6 million, respectively, from foreign operations.

In December 2019, we completed a Dutch legal entity restructuring project, which resulted in an intra-entity transfer of certain intangible assets and intellectual property. The transactions that were a result of this restructuring were not taxable or deductible in the jurisdictions of the entities that were part of the restructuring. While any pre-tax income effects from this transaction are eliminated in consolidation, the transaction did require a step-up of the tax value of these intangible assets and created a temporary difference between the book basis and the tax basis of these assets. Under Dutch tax law, these intangible assets will be amortized between nine and fourteen years. As a result, we recognized a one-time deferred tax benefit of \$14.9 million.

On December 22, 2017, the Tax Cut and Jobs Act of 2017 ("Tax Act") was signed into law. The Tax Act significantly revised the U.S. corporate income tax system with changes that were effective in 2017 and 2018. The Tax Act lowered the U.S. corporate income tax rate to 21 percent from 35 percent and imposed a one-time transition tax on certain unrepatriated earnings of foreign subsidiaries. Changes in tax rates and tax laws and their impact on deferred taxes are accounted for in the period of legislative enactment. The Tax Act introduced other new provisions that were effective for 2018 and changed how certain provisions were calculated beginning in that year.

In its December 31, 2017 income tax provision, the Company provisionally recorded income tax expense relating to the one time transition tax of \$13.1 million. In 2018, the Company revised its original estimate and recorded additional income tax expense of \$8.6 million as a result of additional guidance issued by the Internal Revenue Service. Due to the availability of net operating losses, the Company's cash payment for this one-time transition tax is approximately \$5.1 million. The Company elected to pay this amount in pre-defined installments through 2024.

Deferred tax assets and liabilities are measured using enacted tax rates that are expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. In 2017, as a result of the U.S. corporate income tax rate reduction, the Company recorded a charge of \$7.4 million to adjust the carrying value of its net deferred tax assets in the United States. After further analysis and after the effect of filing its 2017 U.S. tax return, the Company revised this amount in 2018 and recorded an income tax benefit of \$3.8 million.

The Tax Act introduced a new provision effective in 2018 that imposes a minimum tax on earnings of a foreign corporation that are deemed to exceed a certain threshold return relative to the underlying business investment. These earnings are referred to as global intangible low-taxed income ("GILTI"). The Company has included \$0.9 million of income tax expense in its 2019 provision for the GILTI provision, net of foreign tax credits, which will not result in any cash tax payments since it is offset by net operating losses. On its 2018 U.S. tax return, the impact of the GILTI provision, net of foreign tax credits, was \$4.5 million.

The Tax Act introduced a new provision that limits the amount of interest expense that can be deducted. Beginning in 2018, interest expense in excess of 30 percent of a taxpayer's adjusted taxable income cannot be deducted. However, any interest expense that is disallowed in the current year can be carried forward to future years. The Company has concluded that, in the foreseeable future, it will not be able to utilize any of these carry forwards. Therefore, a valuation allowance of \$13.3 million has been recorded to offset this deferred tax asset.

The provision for income taxes is reconciled with the federal statutory rate as follows:

	Year Ended December 31,		
	2019	2018	2017
Federal income tax rate	21.0%	21.0%	35.0%
Valuation allowance adjustments	8.5	6.2	0.9
GILTI inclusion, net of foreign tax credits	1.3	12.0	0.0
State income taxes, net of federal tax benefit	1.0	(3.4)	(1.6)
Foreign earnings taxed at different rates	0.1	1.7	(21.6)
Deferred tax adjustments	0.0	2.3	0.0
Transition tax from Tax Act	0.0	15.5	21.7
Deferred tax adjustments from Tax Act	0.0	(6.8)	12.3
Change in tax contingency reserves	(6.5)	(2.0)	2.2
Intra-entity transfer of intangible assets	(21.6)	0.0	0.0
Other	(1.8)	0.9	(0.8)
	2.0%	47.4%	48.1%

As a result of the Tax Act and the one-time mandatory transition tax, all previously unremitted earnings for which a U.S. deferred tax liability had not been accrued have now been subject to U.S. tax. At December 31, 2019, there was approximately \$512 million of such unremitted earnings. Substantially all unremitted earnings will remain indefinitely invested in our foreign subsidiaries for the foreseeable future. In the event these earnings are remitted as a dividend, they could be subject to taxation based on currency gains or losses, state taxes, and foreign withholding taxes. We estimate that we will not incur significant additional taxes on those potential remittances.

#### Taxes Excluded from Net Income Attributable to Koppers

The amount of deferred income tax expense (benefit) included in comprehensive income (loss) but excluded from net income attributable to Koppers relating primarily to adjustments to copper swap contracts is \$4.1 million, \$(10.0) million, and \$3.5 million for the years ended December 31, 2019, 2018 and 2017, respectively.

The amount of deferred income tax expense (benefit) included in comprehensive income (loss) but excluded from net income attributable to Koppers relating to adjustments to reflect the unfunded status of employee post-retirement benefit plans is \$0.8 million, \$(0.2) million, and \$2.8 million for the years ended December 31, 2019, 2018 and 2017, respectively.

#### Deferred Tax Assets and Liabilities

Deferred income taxes reflect the net tax effects of differences between the carrying amounts of assets and liabilities for financial reporting purposes and for income tax purposes.

Significant components of our deferred tax assets and liabilities are as follows:

	Year Ended December 31,	
	2019	2018
<i>(Dollars in millions)</i>		
<b>Deferred tax assets:</b>		
Reserves, including insurance and environmental	\$ 23.3	\$ 20.2
Tax credits	22.5	27.0
Federal and state tax loss carryforwards, expiring from 2019 to 2038	17.8	18.5
Pension and other postretirement benefits obligations	9.4	11.1
Accrued employee compensation	8.5	5.4
Asset retirement obligations	6.5	8.8
Foreign tax loss carryforwards	5.6	5.5
Book/tax inventory accounting differences	5.1	1.9
Loss on derivative contracts	0.0	2.1
Other	3.3	4.9
Valuation allowance	(58.0)	(59.9)
<b>Total deferred tax assets</b>	<b>44.0</b>	<b>45.5</b>
<b>Deferred tax liabilities:</b>		
Tax over book depreciation and amortization	26.1	35.7
Gain on derivative contracts	1.4	0.0
Other	0.2	1.1
<b>Total deferred tax liabilities</b>	<b>27.7</b>	<b>36.8</b>
<b>Net deferred tax assets</b>	<b>\$ 16.3</b>	<b>\$ 8.7</b>

Management evaluated the ability to realize the deferred tax assets that are related to our domestic operations, particularly in light of our domestic financial reporting losses. In assessing the need for a valuation allowance, management considered all positive and negative evidence related to the realization of our net deferred tax assets. We believe that it will be in a taxable income position in the foreseeable future and it will have sufficient taxable income to utilize deferred tax assets related to its domestic operations.

A valuation allowance is necessary when it is more likely than not that a deferred tax asset will not be realized. Certain deferred tax assets reflected above are not expected to be realized and a valuation allowance has been provided for them. Valuation allowances are recorded to offset the following deferred tax assets:

	<i>December 31,</i>	
	<i>2019</i>	<i>2018</i>
Federal foreign tax credits	\$ 20.5	\$ 25.7
State temporary differences, net operating losses and tax credits	20.2	21.1
Federal temporary differences	11.2	7.0
Foreign temporary differences, net operating losses and capital losses	6.1	6.1
<b>Total valuation allowances</b>	<b>\$ 58.0</b>	<b>\$ 59.9</b>

After filing its 2018 U.S. tax return, the Company forfeited \$5.3 million of foreign tax credit carryforwards, which have a carryforward period of 10 years, and decreased the valuation allowance on these carryforwards. Since the year ended December 31, 2018, the Company has increased the valuation allowance on the interest deductions that have been disallowed by \$4.8 million.

#### *Unrecognized Tax Benefits*

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	<i>December 31,</i>		
	<i>2019</i>	<i>2018</i>	<i>2017</i>
<i>(Dollars in millions)</i>			
Balance at beginning of year	\$ 7.0	\$ 8.7	\$ 9.7
Additions based on tax provisions related to the current year	0.1	0.1	0.1
Additions for tax provisions of prior years	0.0	0.0	2.7
Reductions resulting from a lapse in the statute of limitations	(0.3)	(0.3)	(0.4)
Reductions of tax provisions of prior years	(1.8)	(1.5)	(3.4)
Reductions resulting from audit closures	(2.9)	0.0	0.0
<b>Balance at end of year</b>	<b>\$ 2.1</b>	<b>\$ 7.0</b>	<b>\$ 8.7</b>

As of December 31, 2019 and 2018, the total amount of unrecognized tax benefits that, if recognized, would affect the effective tax rate, was approximately \$2.0 million and \$3.7 million, respectively.

We recognize interest expense and any related penalties from unrecognized tax benefits in income tax expense. For the years ended December 31, 2019, 2018, and 2017, we recognized \$0.0 million, \$(1.4) million and \$(0.6) million, respectively, in interest and penalties. As of December 31, 2019 and 2018, we had accrued interest and penalties of approximately \$0.8 million and \$2.2 million, respectively.

We believe that it is reasonably possible that the amount of unrecognized tax benefits will decrease in the next twelve months by approximately \$0.3 million due to the expirations of certain limitations and potential audit resolutions. We do not anticipate significant increases to the amount of unrecognized tax benefits within the next twelve months.

Koppers Holdings and its subsidiaries file income tax returns in the U.S. federal jurisdiction, individual U.S. state jurisdictions and non-U.S. jurisdictions. With few exceptions, we are no longer subject to U.S. federal, U.S. state, or non-U.S. income tax examinations by tax authorities for years before 2016.

## 11. Inventories

Inventories as of December 31, 2019 and 2018 were as follows:

	December 31,	
	2019	2018
<i>(Dollars in millions)</i>		
Raw materials	\$ 237.0	\$ 199.5
Work in process	12.0	16.0
Finished goods	113.4	128.1
	362.4	343.6
Less revaluation to LIFO	63.3	58.9
Net	\$ 299.1	\$ 284.7

## 12. Fair Value Measurements

Carrying amounts and the related estimated fair values of our financial instruments as of December 31, 2019 and 2018 are as follows:

	December 31, 2019		December 31, 2018	
	Fair Value	Carrying Value	Fair Value	Carrying Value
<i>(Dollars in millions)</i>				
<b>Financial assets:</b>				
Cash and cash equivalents, including restricted cash	\$ 33.0	\$ 33.0	\$ 40.6	\$ 40.6
Investments and other assets <sup>(a)</sup>	1.2	1.2	1.2	1.2
<b>Financial liabilities:</b>				
Long-term debt (including current portion)	\$ 896.2	\$ 911.9	\$ 945.3	\$ 1,002.6

*(a) Excludes equity method investments.*

**Cash and cash equivalents** – The carrying value approximates fair value because of the short maturity of those instruments.

**Investments and other assets** – Represents the broker-quoted cash surrender value on universal life insurance policies. This asset is classified as Level 2 in the valuation hierarchy and is measured from values received from financial institutions.

**Debt** – The fair value of our long-term debt is estimated based on the market prices for the same or similar issuances or on the current rates offered to us for debt of the same remaining maturities (Level 2). The fair value of our Credit Facility approximates carrying value due to the variable rate nature of this instrument.



### 13. Property, Plant and Equipment

Property, plant and equipment as of December 31, 2019 and 2018 were as follows:

	December 31,	
	2019	2018
<i>(Dollars in millions)</i>		
Land	\$ 17.4	\$ 17.5
Buildings	90.6	65.1
Machinery and equipment	786.1	800.9
	894.1	\$ 883.5
Less accumulated depreciation	478.7	465.6
Net	\$ 415.4	\$ 417.9

Depreciation expense, including impairment charges, for the years ended December 31, 2019, 2018 and 2017 amounted to \$34.4 million, \$31.6 million and \$37.5 million, respectively.

*Impairments* – We did not incur impairment charges in 2019 or 2018. Impairment charges for 2017 were \$3.7 million and were primarily related to the decision to discontinue naphthalene and coal tar distillation activities at CMC plants located in the United States.

### 14. Goodwill and Other Identifiable Intangible Assets

The change in the carrying amount of goodwill attributable to each reporting unit for the years ended December 31, 2019 and December 31, 2018 was as follows:

	Performance Chemicals	Railroad Products and Services	Utility Products	Total
<i>(Dollars in millions)</i>				
Balance at December 31, 2017	\$ 177.7	\$ 6.9	\$ 3.6	\$ 188.2
Acquisitions	\$ 0.0	\$ 34.1	\$ 77.0	\$ 111.1
Currency translation	(2.3)	0.0	(0.5)	(2.8)
Balance at December 31, 2018	\$ 175.4	\$ 41.0	\$ 80.1	\$ 296.5
Purchase accounting adjustment	\$ 0.0	\$ 0.0	\$ (0.4)	\$ (0.4)
Balance at December 31, 2019	\$ 175.4	\$ 41.0	\$ 79.7	\$ 296.1

Goodwill represents the excess of the cost over the fair value of acquired identifiable tangible and intangible assets and liabilities assumed from businesses acquired. Goodwill is tested for impairment at the reporting unit level annually in the fourth quarter or more frequently if a change in circumstances or the occurrence of events indicates that potential impairment exists, using discounted cash flows. We performed an assessment of goodwill at the reporting unit level, using a quantitative assessment by comparing the estimated fair value using discounted cash flow calculations of each reporting unit with its estimated net book value. The discounted cash flow calculations are dependent on several subjective factors including the timing of future cash flows, forecasted growth rates, and the discount rate. We determined that the estimated fair values exceeded the carrying values of all the reporting units, and accordingly, there was no impairment of goodwill for the year ended December 31, 2019 and 2018, respectively.

Our identifiable intangible assets are being amortized over their estimated useful lives and are summarized below:

	Estimated life in years	Weighted average remaining life in years	2019			December 31, 2018		
			Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
<i>(Dollars in millions)</i>								
Customer contracts	9 to 18	10.4	\$ 227.0	\$ 69.5	\$ 157.5	\$ 226.6	\$ 54.3	\$ 172.3
Technology	4 to 12	2.3	26.7	19.9	6.8	26.7	16.2	10.5
Trademarks	2 to 17	2.3	7.6	4.4	3.2	7.6	3.5	4.1
Supply contracts	10	0.2	2.4	2.3	0.1	2.4	2.1	0.3
Non-compete agreements	12	4.8	1.6	0.8	0.8	1.6	0.8	0.8
Favorable lease agreements	3	0.0	0.7	0.7	0.0	0.7	0.7	0.0
<b>Total</b>		<b>9.7</b>	<b>\$ 266.0</b>	<b>\$ 97.6</b>	<b>\$ 168.4</b>	<b>\$ 265.6</b>	<b>\$ 77.6</b>	<b>\$ 188.0</b>

In 2019, the gross carrying value of identifiable intangible assets increased by \$0.4 million. Total amortization expense related to these identifiable intangible assets was \$20.7 million, \$19.2 million and \$14.6 million for the years ended December 31, 2019, 2018 and 2017, respectively. Estimated amortization expense for the next five years is summarized below:

	Estimated annual amortization
<i>(Dollars in millions)</i>	
2020	\$ 19.5
2021	17.6
2022	14.8
2023	14.5
2024	14.2

#### 15. Pensions and Post-Retirement Benefit Plans

We maintain a number of defined benefit and defined contribution plans to provide retirement benefits for employees in the United States, as well as employees outside the United States. These plans are maintained and contributions are made in accordance with the Employee Retirement Income Security Act of 1974 ("ERISA"), local statutory law or as determined by the board of directors. The defined benefit pension plans generally provide benefits based upon years of service and compensation. Pension plans are funded except for three domestic non-qualified defined benefit pension plans for certain key executives.

In the United States, all qualified and two of the non-qualified defined benefit pension plans for salaried and hourly employees have been closed to new participants and have been frozen. Accordingly, these pension plans no longer accrue additional years of service or recognize future increases in compensation for benefit purposes.

The defined contribution plans generally provide retirement assets to employee participants based upon employer and employee contributions to the participant's individual investment account. We also provide retiree medical insurance coverage to certain U.S. employees and a life insurance benefit to most U.S. employees. For salaried employees, the retiree medical and retiree insurance plans have been closed to new participants.

In 2017, we offered a cash lump sum or annuity buyout to terminated deferred vested participants and completed an irrevocable transaction with an insurance company to annuitize approximately \$31.3 million of retiree pension obligations for a selected group of retirees in our U.S. qualified defined benefit pension plan. We recorded a pension settlement charge of \$10.0 million related to these two transactions.

Expense related to defined contribution plans totaled \$8.3 million, \$7.5 million and \$8.9 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Net periodic pension costs for 2019, 2018 and 2017 were as follows:

	Year Ended December 31,					
	Pension Benefits			Other Benefits		
	2019	2018	2017	2019	2018	2017
<i>(Dollars in millions)</i>						
Service cost	\$ 1.5	\$ 1.9	\$ 2.0	\$ 0.1	\$ 0.1	\$ 0.1
Interest cost	7.8	7.5	9.0	0.4	0.4	0.4
Expected return on plan assets	(7.9)	(8.5)	(9.6)	0.0	0.0	0.0
Amortization of net loss (gain)	1.6	1.4	1.9	(0.2)	0.0	(0.2)
Settlements and curtailments	0.0	0.0	10.0	0.0	0.0	0.0
Net periodic benefit cost	\$ 3.0	\$ 2.3	\$ 13.3	\$ 0.3	\$ 0.5	\$ 0.3

The change in the funded status of the pension and postretirement plans as of December 31, 2019 and December 31, 2018 is as follows:

	Year Ended December 31,			
	Pension Benefits		Other Benefits	
	2019	2018	2019	2018
<i>(Dollars in millions)</i>				
Change in benefit obligation:				
Benefit obligation at beginning of year	\$ 201.7	\$ 219.1	\$ 9.4	\$ 11.1
Service cost	1.5	1.9	0.1	0.1
Interest cost	7.8	7.5	0.4	0.4
Actuarial losses (gains)	20.1	(13.2)	(0.3)	(1.7)
Plan amendments	0.0	0.7	0.0	0.0
Currency translation	1.6	(3.5)	0.0	0.0
Benefits paid	(12.9)	(10.8)	(0.3)	(0.5)
Benefit obligation at end of year	219.8	201.7	9.2	9.4
Change in plan assets:				
Fair value of plan assets at beginning of year	169.6	188.8	0.0	0.0
Actual return on plan assets	28.6	(8.6)	0.0	0.0
Employer contribution	4.2	4.2	0.3	0.5
Currency translation	2.0	(4.0)	0.0	0.0
Benefits paid	(12.9)	(10.8)	(0.3)	(0.5)
Fair value of plan assets at end of year	191.5	169.6	0.0	0.0
Funded status of the plan	\$ (28.3)	\$ (32.1)	\$ (9.2)	\$ (9.4)

In 2019, the net actuarial loss of \$20.1 million is due principally to the increase in the discount rate used to measure the benefit obligation as of December 31, 2019 compared to the prior year.

Plan Data

	Year Ended December 31,			
	Pension Benefits		Other Benefits	
	2019	2018	2019	2018
<i>(Dollars in millions)</i>				
Amounts recognized in the balance sheet consist of:				
Noncurrent assets	\$ 10.9	\$ 8.9	\$ 0.0	\$ 0.0
Current liabilities	1.0	1.2	0.8	1.0
Noncurrent liabilities	38.2	39.8	8.4	8.4
Pension plans with projected benefit obligations in excess of plan assets:				
Benefit obligation	\$ 160.4	\$ 148.6		
Fair value of plan assets	121.2	107.7		
Pension plans with accumulated benefit obligations in excess of plan assets:				
Accumulated benefit obligation	\$ 160.2	\$ 148.4		
Fair value of plan assets	121.2	107.7		

The measurement date for all pension and postretirement assets and obligations is December 31 for each respective year.

The accumulated benefit obligation for all defined benefit pension plans as of December 31, 2019 and 2018 was \$219.0 million and \$201.3 million, respectively.

*Expected Contributions for the 2020 Fiscal Year*

Our expected contributions for 2020 are estimated to be \$4.0 million for pension plans and \$0.8 million for other benefit plans.

*Projected Benefit Payments*

Benefit payments for pension benefits, which are primarily funded by the pension plan assets, and other benefits, which are funded by general corporate assets, are expected to be paid as follows:

	Pension Benefits		Other Benefits	
<i>(Dollars in millions)</i>				
2020	\$	11.4	\$	0.8
2021		11.3		0.7
2022		11.4		0.6
2023		11.6		0.6
2024		14.0		0.6
Next five years		61.2		2.7

*Weighted-Average Assumptions*

	December 31,			
	Pension Benefits		Other Benefits	
	2019	2018	2019	2018
Discount rate	3.05%	4.03%	3.43%	4.45%
Expected return on plan assets	4.30	4.83		
Rate of compensation increase	3.00	3.41		
Initial medical trend rate			5.70	5.90

*Basis for the Selection of the Long-Term Rate of Return on Assets*

The long-term rate of return on assets assumption was determined by using the plan's asset allocation as described in the plan's investment policy and modeling a distribution of compound average returns over a time horizon. The model uses asset class return, variance, and correlation assumptions to produce the expected return. The return assumptions used forward looking gross returns influenced by the current bond yields, corporate bond spreads and equity risk premiums based on current market conditions.

In general, the long-term rate of return is the sum of the portion of total assets in each asset class multiplied by the expected return for that class, adjusted for expected expenses to be paid from the assets. To develop the expected long-term rate of return on assets assumption, we considered the historical returns and the future expectations for returns for each asset class, as well as the target asset allocation of the pension portfolio.

### Investment Strategy

The weighted average asset allocation for our pension plans at December 31 by asset category is as follows:

	December 31,	
	2019	2018
Debt securities	70%	72%
Equity securities	24	24
Other	6	4
	100%	100%

Our investment strategy for our pension plans is to maintain an adequate level of diversification, to reduce interest rate and market risk and to provide adequate liquidity to meet immediate and future benefit payment requirements. Our overall investment strategy is to achieve a mix of growth seeking assets, principally U.S. and international public company equity securities and income generating assets, principally debt securities, real estate and cash. Currently, we target an allocation of 30 percent to 40 percent growth seeking assets and 60 percent to 70 percent income generating assets on an overall basis. We utilize investment managers to assist in identifying and monitoring investments that meet these allocation criteria. With respect to the U.S. defined benefit plan, we have implemented a strategy of reallocating pension assets from growth seeking assets to income generating assets as certain funded status levels are reached.

All assets are invested in pooled or commingled investment vehicles. Our interest in these investment vehicles is expressed as a unit of account with a value per unit that is the result of the accumulated values of the underlying investments. Equity securities held within these investment vehicles are typically priced on a daily basis using the closing market price from the exchange through which the security is traded. Debt securities held within these investment vehicles are typically priced on a daily basis by independent pricing services. Certain investments are valued using the net asset value ("NAV") practical expedient and have not been categorized in the fair value hierarchy but are included to reconcile the fair value hierarchy to the total fair value of plan assets. The fair value of real estate investments is either priced through a listing on an exchange or are subject to periodic appraisals.

The following table sets forth by level, our pension plan assets at fair value, within the fair value hierarchy, as of December 31, 2019 and December 31, 2018:

	December 31, 2019				Total
	Quoted prices in active markets for identical assets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total	
<i>(Dollars in millions)</i>					
U.S. equity securities	\$ 0.0	\$ 14.1	\$ 0.0	\$ 14.1	14.1
International equity securities	0.0	22.3	0.0	22.3	22.3
U.S. debt securities	0.0	58.3	0.0	58.3	58.3
International debt securities	0.0	48.1	0.0	48.1	48.1
Real estate and other investments	0.0	0.8	4.3	5.1	5.1
Cash and cash equivalents	0.0	3.6	0.0	3.6	3.6
	\$ 0.0	\$ 147.2	\$ 4.3	\$ 151.5	151.5
Investments measured at NAV(a)					40.0
<b>Total assets at fair value</b>				\$	<b>191.5</b>

(a) The fair value amounts presented in the table above are intended to permit reconciliations of the fair value hierarchy to the total plan assets.

	Quoted prices in active markets for identical assets (Level 1)		Significant observable inputs (Level 2)		Significant unobservable inputs (Level 3)		Total
<i>(Dollars in millions)</i>							
U.S. equity securities	\$	12.3	\$	9.7	\$	0.0	\$ 22.0
International equity securities		14.2		5.2		0.0	19.4
U.S. debt securities		34.3		39.0		0.0	73.3
International debt securities		5.3		43.1		0.0	48.4
Real estate and other investments		0.0		1.3		3.2	4.5
Cash and cash equivalents		0.0		2.0		0.0	2.0
	\$	66.1	\$	100.3	\$	3.2	\$ 169.6

The table below sets forth a summary of changes in the fair value of the Level 3 pension plans' assets for the year ended December 31, 2019:

	December 31, 2019	
	Other Investments	
<i>(Dollars in millions)</i>		
Balance at beginning of year	\$	3.2
Purchases, sales, issuances and settlements		0.8
Realized and unrealized gains		0.3
Balance at the end of year	\$	4.3
The amount of total losses during the period attributable to the change in unrealized losses relating to Level 3 net assets still held at the reporting date	\$	0.0

#### Incentive Plan

We have short-term management incentive plans that pay cash bonuses if certain Company performance goals are met. The charge to operating expense for these plans was \$12.2 million in 2019, \$10.3 million in 2018 and \$11.2 million in 2017.

#### 16. Debt

Debt as of December 31, 2019 and 2018 was as follows:

	Weighted Average Interest Rate	Maturity	December 31,	
			2019	2018
Term Loan	4.97%	2024	\$ 82.5	\$ 92.5
Revolving Credit Facility	4.97%	2024	329.0	390.0
Construction and other loans	4.97%	2021	0.4	20.1
Senior Notes due 2025	6.00%	2025	500.0	500.0
Total debt			911.9	1,002.6
Less short-term debt and current maturities of long-term debt			10.2	11.6
Less unamortized debt issuance costs			10.7	12.2
Long-term debt			\$ 891.0	\$ 978.8

## Credit Facility

### Subsequent Event

On February 26, 2020, we entered into the Fourth Amendment (the "Fourth Amendment") and amended the Credit Facility to, among other things: (1) revise the LIBOR replacement language in the Credit Facility, (2) revise certain provisions regarding mandatory prepayments of the term loan facility with proceeds of equity issuances and associated definitions, (3) remove the step downs in the maximum total secured leverage ratio and maximum total leverage ratio which would otherwise occur at the time of a first equity issuance, and (4) revise certain provisions regarding disposition of assets by certain subsidiaries of Koppers Inc. All other material terms, conditions and covenants with respect to the Credit Facility remain unchanged.

The secured term loan has a quarterly amortization of \$2.5 million and the interest rate on the Credit Facility is variable and is based on LIBOR.

Borrowings under the Credit Facility are secured by a first priority lien on substantially all of the assets of Koppers Inc., Koppers Holdings Inc. and their material domestic subsidiaries. The Credit Facility contains certain covenants for Koppers Inc. and its restricted subsidiaries that limit capital expenditures, additional indebtedness, liens, dividends, investments or acquisitions. In addition, such covenants give rise to events of default upon the failure by Koppers Inc. and its restricted subsidiaries to meet certain financial ratios.

As of December 31, 2019, we had \$221.6 million of unused revolving credit availability for working capital purposes after restrictions from certain letter of credit commitments and other covenants. As of December 31, 2019, \$7.3 million of commitments were utilized by outstanding letters of credit.

### Construction Loan

Our 75-percent owned subsidiary, KJCC entered into a committed loan facility agreement with a third-party bank consisting of a working capital line and a construction loan. As of December 31, 2019, there are no borrowings under the working capital line and the construction loan was fully repaid in September 2019. Borrowings under the working capital line would be secured by a letter of credit issued by a bank under the Credit Facility.

### Senior Notes due 2025

The 2025 Notes are senior obligations of Koppers Inc., are unsecured and are guaranteed by Koppers Holdings Inc. and certain of Koppers Inc.'s domestic subsidiaries. The 2025 Notes pay interest semi-annually in arrears on February 15 and August 15 and will mature on February 15, 2025 unless earlier redeemed or repurchased. On or after February 15, 2020, we are entitled to redeem all or a portion of the 2025 Senior Notes at a redemption price of 104.5 percent of principal value, declining to a redemption price of 101.5 percent on or after February 15, 2022 until the redemption price is equivalent to the principal value on April 15, 2023.

The indenture governing the 2025 Senior Notes includes customary covenants that restrict, among other things, the ability of Koppers Inc. and its restricted subsidiaries to incur additional debt, pay dividends or make certain other restricted payments, incur liens, merge or sell all or substantially all of the assets of Koppers Inc. or its subsidiaries or enter into various transactions with affiliates.

### Loss on Extinguishment of Debt

In February 2017, all of the outstanding Koppers Inc. senior notes due 2019 were repurchased at a premium to carrying value and accordingly, we realized a loss on extinguishment of debt totaling \$10.0 million consisting of \$7.3 million for bond premium and bond tender expenses and \$2.7 million for the write-off of unamortized debt issuance costs.

Also in February 2017, Koppers Inc. repaid its term loan in full and entered into the Credit Facility. Accordingly, we realized a loss of \$3.3 million for the write-off of unamortized debt issuance costs.

### Debt Maturities and Deferred Financing Costs

At December 31, 2019 the aggregate debt maturities for the next five years are as follows:

(Dollars in millions)

2020	\$	10.2
2021		10.2
2022		10.0
2023		10.0
2024		371.5
Thereafter		500.0
<b>Total debt</b>	<b>\$</b>	<b>911.9</b>

Unamortized debt issuance costs (net of accumulated amortization of \$6.8 million and \$4.2 million at December 31, 2019 and 2018, respectively) were \$10.7 million and \$12.2 million at December 31, 2019 and 2018, respectively, and are included as a deduction from the carrying amount of long-term debt.

## 17. Leases

As described in Note 3 – “New Accounting Pronouncements,” on January 1, 2019, we adopted the provisions of ASU 2016-02 and ASU 2018-10 and recognized lease obligations and associated right-of-use assets for existing non-cancelable leases. We have non-cancelable operating leases primarily associated with railcars, office and manufacturing facilities, storage tanks, ships, production equipment and vehicles. Many of our leases include both lease (e.g., fixed rent) and non-lease components (e.g., maintenance and services). For certain asset classes such as railcars, storage tanks and ships, we have separated the lease and non-lease components based on the estimated stand-alone price for each component. For the remaining asset classes, we have elected the practical expedient to account for these components as a single lease component.

Many of our leases include one or more options to renew. The exercise of the lease renewal option is generally at our sole discretion. We evaluate renewal options at the lease commencement date and regularly thereafter to determine if we are reasonably certain to exercise the option, in which case we include the renewal period in our lease term. As most of our leases do not provide an implicit rate, we use our incremental borrowing rate based on information available to determine the present value of the lease payments.

Lease expense for operating leases is recognized on a straight-line basis over the lease term. Variable lease expense is recognized in the period in which the obligation for those payments is incurred. Operating lease costs were \$31.8 million and variable lease costs were \$3.7 million during the year ended December 31, 2019.

The following table presents information about the amount and timing of cash flows arising from our operating leases as of December 31, 2019:

<i>(Dollars in millions)</i>	
2020	\$ 30.2
2021	25.4
2022	21.7
2023	15.9
2024	13.8
Thereafter	43.9
<b>Total lease payments</b>	<b>\$ 150.9</b>
Less: Interest	(36.2)
<b>Present value of lease liabilities</b>	<b>\$ 114.7</b>

Supplemental consolidated balance sheet information related to leases is as follows:

	<i>December 31,</i>	
	<i>2019</i>	
<i>(Dollars in millions)</i>		
<b>Operating leases:</b>		
Operating lease right-of-use assets	\$	113.5
Current operating lease liabilities	\$	22.1
Operating lease liabilities		92.6
<b>Total operating lease liabilities</b>	<b>\$</b>	<b>114.7</b>
Weighted average remaining lease term, in years		6.9
Weighted average discount rate		7.7%



## 18. Derivative Financial Instruments

We utilize derivative instruments to manage exposures to risks that have been identified and measured and are capable of being controlled. The primary risks that we manage by using derivative instruments are commodity price risk associated with copper and foreign currency exchange risk associated with a number of currencies, principally the U.S. dollar, the Canadian dollar, the New Zealand dollar, the Euro and British pounds. Swap contracts on copper are used to manage the price risk associated with forecasted purchases of materials used in our manufacturing processes. Generally, we will not hedge cash flow exposures for durations longer than 36 months and we have hedged certain volumes of copper through the end of mid 2022. We enter into foreign currency forward contracts to manage foreign currency risk associated with our receivable and payable balances in addition to foreign-denominated sales. Generally, we enter into master netting arrangements with the counterparties and offset net derivative positions with the same counterparties. Currently, our agreements do not require cash collateral.

ASC Topic 815-10, "Derivatives and Hedging," requires companies to recognize all derivative instruments as either assets or liabilities at fair value in the balance sheet. Derivative instruments' fair value is determined using significant other observable inputs, or Level 2 in the fair value hierarchy. In accordance with ASC Topic 815-10, we designate certain of our commodity swaps as cash flow hedges of forecasted purchases of commodities. For derivative instruments that are designated and qualify as cash flow hedges, the effective portion of the gain or loss on the derivative is reported as a component of other comprehensive income and is reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. Gains and losses on the derivative instruments representing either hedge ineffectiveness or hedge components excluded from the assessment of effectiveness are recognized in current earnings.

For those commodity swaps which are not designated as cash flow hedges, the fair value of the commodity swap is recognized as an asset or liability in the consolidated balance sheet and the related gain or loss on the derivative is reported in current earnings. These amounts are classified in cost of sales in the consolidated statement of operations.

As of December 31, 2019 and December 31, 2018, we had outstanding copper swap contracts of the following amounts:

	<i>Units Outstanding (in Pounds)</i>		<i>Net Fair Value - Asset (Liability)</i>	
	<i>December 31,</i>		<i>December 31,</i>	
	<i>2019</i>	<i>2018</i>	<i>2019</i>	<i>2018</i>
<i>(Amounts in millions)</i>				
Cash flow hedges	56.5	35.5	\$ 4.5	\$ (6.8)
Not designated as hedges	16.6	13.3	1.7	(2.4)
<b>Total</b>	<b>73.1</b>	<b>48.8</b>	<b>\$ 6.2</b>	<b>\$ (9.2)</b>

As of December 31, 2019 and December 31, 2018, the fair value of the outstanding copper swap contracts is recorded in the balance sheet as follows:

	<i>December 31,</i>	
	<i>2019</i>	<i>2018</i>
<i>(Dollars in millions)</i>		
Other current assets	\$ 2.1	\$ 0.0
Other assets	4.1	0.0
Accrued liabilities	0.0	(9.0)
Other long-term liabilities	0.0	(0.2)
<b>Net asset (liability) on balance sheet</b>	<b>\$ 6.2</b>	<b>\$ (9.2)</b>
Accumulated other comprehensive gain (loss), net of tax	\$ 3.3	\$ (5.3)

In the next twelve months, we estimate that \$1.2 million of unrealized gains, net of tax, related to commodity price hedging will be reclassified from other comprehensive income into earnings.

See the consolidated statement of comprehensive income (loss) and consolidated statement of shareholders' equity for amounts recorded in other comprehensive income and for amounts reclassified from accumulated other comprehensive income into net income for the periods specified below. For the years ended December 31, 2019 and 2018, the following amounts were recognized in earnings related to copper swap contracts:

	<i>Year Ended December 31,</i>	
	<i>2019</i>	<i>2018</i>
<i>(Dollars in millions)</i>		
Gain (loss) from contracts not designated as hedges	\$ 4.1	\$ (6.9)

The fair value associated with forward contracts related to foreign currency that are not designated as hedges are immediately charged to earnings. These amounts are classified in cost of sales in the consolidated statement of operations. As of December 31, 2019 and December 31, 2018, the fair value of outstanding foreign currency forward contracts is recorded in the balance sheet as follows:

	December 31,	
	2019	2018
<i>(Dollars in millions)</i>		
Other current assets	\$ 0.3	\$ 0.9
Accrued liabilities	(0.5)	(1.0)
Net liability on balance sheet	\$ (0.2)	\$ (0.1)

As of December 31, 2019 and 2018, the net currency units outstanding were:

	December 31,	
	2019	2018
<i>(In millions)</i>		
British Pounds	GBP 3.7	GBP 5.7
New Zealand Dollars	NZD 16.0	NZD 16.0
United States Dollars	USD 6.2	USD 6.0
Euro	EUR 1.2	EUR 1.2

## 19. Common Stock and Senior Convertible Preferred Stock

Changes in senior convertible preferred stock, common stock and treasury stock for the three years ended December 31, 2019 are as follows:

	December 31,		
	2019	2018	2017
<i>(Shares in thousands)</i>			
<b>Senior Convertible Preferred Stock:</b>			
Balance at beginning and end of year	0	0	0
<b>Common Stock:</b>			
Balance at beginning of year	23,029	22,384	22,141
Issued for employee stock plans	292	645	243
Balance at end of year	23,321	23,029	22,384
<b>Treasury Stock:</b>			
Balance at beginning of year	(2,480)	(1,606)	(1,476)
Shares repurchased	(36)	(874)	(130)
Balance at end of year	(2,516)	(2,480)	(1,606)

## 20. Commitments and Contingent Liabilities

We are involved in litigation and various proceedings relating to environmental laws and regulations, product liability and other matters. Certain of these matters are discussed below. The ultimate resolution of these contingencies is subject to significant uncertainty and should we fail to prevail in any of these legal matters or should several of these legal matters be resolved against us in the same reporting period, these legal matters could, individually or in the aggregate, be material to the consolidated financial statements.

### *Legal Proceedings*

**Coal Tar Pitch Cases.** Koppers Inc. is one of several defendants in lawsuits filed in two states in which the plaintiffs claim they suffered a variety of illnesses (including cancer) as a result of exposure to coal tar pitch sold by the defendants. There were 64 plaintiffs in 34 cases pending as of December 31, 2019, compared to 65 plaintiffs in 35 cases pending as of December 31, 2018. As of December 31, 2019, there were 33 cases pending in the Court of Common Pleas of Allegheny County, Pennsylvania, and one case pending in the Circuit Court of Knox County, Tennessee.

The plaintiffs in all 34 pending cases seek to recover compensatory damages. Plaintiffs in 29 of those cases also seek to recover punitive damages. The plaintiffs in the 33 cases filed in Pennsylvania seek unspecified damages in excess of the court's minimum jurisdictional limit. The plaintiff in the Tennessee state court case seeks damages of \$15.0 million. The other defendants in these lawsuits vary from case to case and include companies such as Beazer East, Inc. ("Beazer East"), Honeywell International Inc., Graftech International Holdings, Dow Chemical Company, UCAR Carbon Company, Inc., and SGL Carbon Corporation. Discovery is proceeding in these cases. No trial dates have been set in any of these cases.

We have not provided a reserve for the coal tar pitch lawsuits because, at this time, we cannot reasonably determine the probability of a loss, and the amount of loss, if any, cannot be reasonably estimated. The timing of resolution of these cases cannot be reasonably determined. Although Koppers Inc. is vigorously defending these cases, an unfavorable resolution of these matters may have a material adverse effect on our business, financial condition, cash flows and results of operations.

**Pavement Sealer Cases.** Koppers Inc. was one of ten defendants in separate federal lawsuits, which had been filed since December 2018, by eleven municipalities in the state of Minnesota. The other defendants in these lawsuits included Beazer East, Ruetgers Canada, Inc., Stella-Jones Corp., Coopers Creek Chemical Corporation, Lone Star Specialty Products, LLC, Bonsal American, Inc., The Brewer Company, Specialty Technology & Research, Inc. and Vance Brothers, Inc. These lawsuits were filed in the United States District Court for the District of Minnesota. Plaintiffs in each of the lawsuits claimed that contamination allegedly caused by coal tar-based pavement sealer products impacted their stormwater retention ponds, resulting in substantially increased disposal costs when the ponds are periodically dredged. The plaintiffs sought to recover compensatory damages and other costs in addition to compelling the defendants to remove the alleged contamination from the plaintiffs' stormwater retention ponds and other stormwater-management devices. On May 17, 2019, Koppers Inc. and certain other defendants filed a joint motion to dismiss the lawsuits. The hearing on these motions was held on September 20, 2019 and the Court issued an order on December 20, 2019 which resulted in the dismissal, with prejudice, of all claims against Koppers Inc.

#### *Environmental and Other Litigation Matters*

We are subject to federal, state, local and foreign laws and regulations and potential liabilities relating to the protection of the environment and human health and safety including, among other things, the cleanup of contaminated sites, the treatment, storage and disposal of wastes, the discharge of effluent into waterways, the emission of substances into the air and various health and safety matters. We expect to incur substantial costs for ongoing compliance with such laws and regulations. We may also face governmental or third-party claims, or otherwise incur costs, relating to cleanup of, or for injuries resulting from, contamination at sites associated with past and present operations. We accrue for environmental liabilities when a determination can be made that a liability is probable and reasonably estimable.

**Environmental and Other Liabilities Retained or Assumed by Others** We have agreements with former owners of certain of our operating locations under which the former owners retained, assumed and/or agreed to indemnify us against certain environmental and other liabilities. The most significant of these agreements was entered into at Koppers Inc.'s formation on December 29, 1988 (the "Acquisition"). Under the related asset purchase agreement between Koppers Inc. and Beazer East, subject to certain limitations, Beazer East retained the responsibility for and agreed to indemnify Koppers Inc. against certain liabilities, damages, losses and costs, including, with certain limited exceptions, liabilities under and costs to comply with environmental laws to the extent attributable to acts or omissions occurring prior to the Acquisition and liabilities related to products sold by Beazer East prior to the Acquisition (the "Indemnity").

Beazer Limited, the parent company of Beazer East, unconditionally guaranteed Beazer East's performance of the Indemnity pursuant to a guarantee (the "Guarantee").

The Indemnity provides different mechanisms, subject to certain limitations, by which Beazer East is obligated to indemnify Koppers Inc. with regard to certain environmental, product and other liabilities and imposes certain conditions on Koppers Inc. before receiving such indemnification, including, in some cases, certain limitations regarding the time period as to which claims for indemnification can be brought. In July 2004, Koppers Inc. and Beazer East agreed to amend the environmental indemnification provisions of the December 29, 1988 asset purchase agreement to extend the indemnification period for pre-closing environmental liabilities, subject to the following paragraph, and agreed to share toxic tort litigation defense arising from any sites acquired from Beazer East.

Qualified expenditures under the Indemnity are not subject to a monetary limit. Qualified expenditures under the Indemnity include (i) environmental cleanup liabilities required by third parties, such as investigation, remediation and closure costs, relating to pre-December 29, 1988 ("Pre-Closing") acts or omissions of Beazer East or its predecessors; (ii) environmental claims by third parties for personal injuries, property damages and natural resources damages relating to Pre-Closing acts or omissions of Beazer East or its predecessors; (iii) punitive damages for the acts or omissions of Beazer East and its predecessors without regard to the date of the alleged conduct and (iv) product liability claims for products sold by Beazer East or its predecessors without regard to the date of the alleged conduct. The indemnification period ended July 14, 2019 (the "Claim Deadline") and Beazer East may now tender certain third-party claims described in sections (i) and (ii) above to Koppers Inc. However, to the extent the third-party claims described in sections (i) and (ii) above were tendered to Beazer East by the Claim Deadline, Beazer East will continue to be required to pay the costs arising from such claims under the Indemnity. Furthermore, the Claim Deadline did not change the provisions of the Indemnity with respect to indemnification for non-environmental claims, such as product liability claims, which claims may continue to be tendered by Koppers Inc. to Beazer East.

The Indemnity provides for the resolution of issues between Koppers Inc. and Beazer East by an arbitrator on an expedited basis upon the request of either party. The arbitrator could be asked, among other things, to make a determination regarding the allocation of environmental responsibilities between Koppers Inc. and Beazer East. Arbitration decisions under the Indemnity are final and binding on the parties.

Contamination has been identified at most manufacturing and other sites of our subsidiaries. One site currently owned and operated by Koppers Inc. in the United States is listed on the National Priorities List promulgated under CERCLA. Currently, at the properties acquired from Beazer East (which includes the National Priorities List site and all but one of the sites permitted under the Resource Conservation and Recovery Act ("RCRA")), a significant portion of all investigative, cleanup and closure activities are being conducted and paid for by Beazer East pursuant to the terms of the Indemnity. In addition, other of Koppers Inc.'s sites are or have been operated under RCRA and various other environmental permits, and remedial and closure activities are being conducted at some of these sites.

To date, the parties that retained, assumed and/or agreed to indemnify us against the liabilities referred to above, including Beazer East, have performed their obligations in all material respects. We believe that, for the last three years ended December 31, 2019, amounts paid by Beazer East as a result of its environmental remediation obligations under the Indemnity have averaged, in total, approximately \$10.5 million per year. Periodically, issues have arisen between Koppers Inc. and Beazer East and/or other indemnitors that have been resolved without arbitration. Koppers Inc. and Beazer East engage in discussions from time to time that involve, among other things, the allocation of environmental costs related to certain operating and closed facilities.

If for any reason (including disputed coverage or financial incapability) one or more of such parties fail to perform their obligations and we are held liable for or otherwise required to pay all or part of such liabilities without reimbursement, the imposition of such liabilities on us could have a material adverse effect on our business, financial condition, cash flows and results of operations. Furthermore, we could be required to record a contingent liability on our balance sheet with respect to such matters, which could result in a negative impact to our business, financial condition, cash flows and results of operations.

**Domestic Environmental Matters.** On June 4, 2018, Koppers Inc. received a letter from the U.S. Environmental Protection Agency ("EPA") concerning potential violations of the Clean Water Act observed during inspections and review of Spill Prevention, Control and Countermeasure Plans and Facility Response Plans at our facilities in Follansbee, WV; Green Spring, WV; and Clairton, PA. In addition, the EPA reviewed one facility's compliance with an earlier consent order regarding above ground storage tank integrity testing. In December 2019, the EPA presented Koppers Inc. with a proposed penalty of \$2.8 million regarding the alleged violations and we are currently in discussions with the EPA to resolve the matter. Accordingly we have accrued our estimated liability of the probable penalty as of December 31, 2019.

Koppers Inc. has been named as one of the potentially responsible parties ("PRPs") at the Portland Harbor CERCLA site located on the Willamette River in Oregon. Koppers Inc. operated a coal tar pitch terminal near the site. Koppers Inc. has responded to an EPA information request and has executed a PRP agreement which outlines a private process to develop an allocation of past and future costs among more than 80 parties to the site. Koppers Inc. believes it is a *de minimis* contributor at the site.

The EPA issued its Record of Decision ("ROD") in January 2017 for the Portland Harbor CERCLA site. The selected remedy includes a combination of sediment removal, capping, enhanced and monitored natural recovery and riverbank improvements. The ROD does not determine who is responsible for remediation costs. The net present value and undiscounted costs of the selected remedy as estimated in the ROD are approximately \$1.1 billion and \$1.7 billion, respectively. Responsibility for implementing and funding that work will be decided in the separate private allocation process which is ongoing.

Additionally, Koppers Inc. is involved in two separate natural resource damages assessments at the Portland Harbor site. An assessment is intended to identify damages to natural resources caused by the releases of hazardous substances to the Willamette River and to serve as the foundation to estimate liabilities for settlements of natural resource damages claims or litigation to recover from those who do not settle with the trustee groups. One of the natural resource damage assessments was filed in January 2017 by the Yakama Nation in Oregon federal court. Yakama Nation seeks recovery for future response costs and the costs of assessing injury to natural resources and recovery for past costs of overseeing investigations conducted on the site. Following the most recent court rulings, the Yakama Nation case has been stayed pending completion of the private allocation process for the Portland Harbor CERCLA site.

In September 2009, Koppers Inc. received a general notice letter notifying it that it may be a PRP at the Newark Bay CERCLA site. In January 2010, Koppers Inc. submitted a response to the general notice letter asserting that Koppers Inc. is a *de minimis* party at this site.

We have accrued the estimated costs of participating in the PRP group at the Portland Harbor and Newark Bay CERCLA sites and estimated *de minimis* settlement amounts at the sites totaling \$2.2 million at December 31, 2019. The actual cost could be materially higher as there has not been a determination of how those costs will be allocated among the PRPs at the sites. Accordingly, an unfavorable resolution of these matters may have a material adverse effect on our business, financial condition, cash flows and results of operations.

There are two plant sites related to the Performance Chemicals business and one plant site related to the Utility and Industrial Products business in the United States where we have recorded environmental remediation liabilities for soil and groundwater contamination which occurred prior to our acquisition of the businesses. As of December 31, 2019, our estimated environmental remediation liability for these acquired sites totals \$4.3 million.

**Foreign Environmental Matters.** On October 10, 2019, the New South Wales Environment Protection Authority (“NSW EPA”) filed a proceeding against one of our Australian subsidiaries, Koppers Carbon Materials & Chemicals Pty. Ltd. (“KCMC”), in relation to an incident which occurred at our Mayfield, Australia plant on October 20, 2018. The NSW EPA alleged that KCMC committed an offense under Australian law by failing to maintain its plant and equipment in a proper and efficient working condition. The NSW EPA alleged that KCMC did not properly maintain a valve which failed and released heated coal tar pitch into a bunded area on our site and released fumes into the atmosphere. The first hearing on the proceeding was held on November 22, 2019 in the Land and Environment Court of New South Wales and the Company entered a guilty plea with respect to the allegations. The maximum fine for the proceeding is \$1.0 million AUD (approximately \$0.7 million) plus legal costs incurred by the NSW EPA. The Land and Environment Court also has the authority to order KCMC to make certain improvements to its operations at the site of the incident. The Land and Environment Court is expected to enter a final order and assess a fine within the next few months. We have accrued our estimated liability associated with the matter as of December 31, 2019. We also continue to meet and correspond with the NSW EPA to discuss and present relevant information related to inquiries regarding other incidents at the facility, primarily related to odor complaints. We currently cannot estimate the potential penalties, fines or other expenditures, if any, that may result from these NSW EPA inquiries and, therefore, we cannot determine if the ultimate outcome of this matter will have a material impact on our financial position, results of operations or cash flows.

There is one plant site related to the Performance Chemicals business located in Australia where we have recorded an environmental remediation liability for soil and groundwater contamination which occurred prior to the acquisition of the business. As of December 31, 2019, our estimated environmental remediation liability for the acquired site totals \$1.4 million.

**Environmental Reserves Rollforward.** The following table reflects changes in the accrued liability for environmental matters, of which \$2.8 million and \$3.5 million are classified as current liabilities at December 31, 2019 and 2018:

	<i>December 31,</i>	
	<i>2019</i>	<i>2018</i>
<i>(Dollars in millions)</i>		
Balance at beginning of year	\$ 10.1	\$ 13.9
Expense	0.5	0.9
Revision of reserves	(0.8)	(2.4)
Cash expenditures	(0.3)	(3.8)
Acquisition	0.0	1.9
Currency translation	0.0	(0.4)
Balance at end of period	\$ 9.5	\$ 10.1

## 21. Selected Quarterly Financial Data (Unaudited)

The following is a summary of the quarterly results of operations for the years ended December 31, 2019 and 2018:

	Year Ended December 31, 2019				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Fiscal Year
<i>(Dollars in millions, except per share amounts)</i>					
Statement of operations data:					
Net sales	\$ 434.9	\$ 469.8	\$ 474.9	\$ 393.2	\$ 1,772.8
Operating profit	28.4	38.5	39.6	24.3	130.8
Income from continuing operations	12.4	14.4	20.5	20.2	67.5
Net income (a)	12.4	14.4	20.4	20.2	67.4
Net income attributable to Koppers (a)	11.5	14.7	19.8	20.6	66.6
Common stock data:					
Earnings per common share attributable to Koppers common shareholders: (a)(b)					
Basic –					
Continuing operations	\$ 0.56	\$ 0.71	\$ 0.96	\$ 0.99	\$ 3.23
Discontinued operations	0.00	0.00	0.00	0.00	0.00
Earnings per basic common share	\$ 0.56	\$ 0.71	\$ 0.96	\$ 0.99	\$ 3.23
Diluted –					
Continuing operations	\$ 0.55	\$ 0.70	\$ 0.94	\$ 0.96	\$ 3.16
Discontinued operations	0.00	0.00	0.00	0.00	0.00
Earnings per diluted common share	\$ 0.55	\$ 0.70	\$ 0.94	\$ 0.96	\$ 3.16

	Year Ended December 31, 2018				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Fiscal Year
<i>(Dollars in millions, except per share amounts)</i>					
Statement of operations data:					
Net sales	\$ 406.1	\$ 436.0	\$ 442.7	\$ 425.4	\$ 1,710.2
Operating profit	43.3	22.3	31.2	13.6	110.4
Income (loss) from continuing operations	23.8	0.5	6.9	(2.4)	28.8
Net income (loss)	23.7	1.0	6.9	(2.4)	29.2
Net income (loss) attributable to Koppers	17.8	0.6	7.6	(2.6)	23.4
Common stock data:					
Earnings (loss) per common share attributable to Koppers common shareholders: (b)					
Basic –					
Continuing operations	\$ 0.86	\$ 0.01	\$ 0.36	\$ (0.13)	\$ 1.10
Discontinued operations	0.00	0.02	0.00	0.00	0.02
Earnings (loss) per basic common share	\$ 0.86	\$ 0.03	\$ 0.36	\$ (0.13)	\$ 1.12
Diluted –					
Continuing operations	\$ 0.81	\$ 0.01	\$ 0.35	\$ (0.13)	\$ 1.08
Discontinued operations	0.00	0.02	0.00	0.00	0.02
Earnings (loss) per diluted common share	\$ 0.81	\$ 0.03	\$ 0.35	\$ (0.13)	\$ 1.10

(a) In the fourth quarter of 2019, we completed an intra-entity transfer of intangible assets and as a result, recognized a one-time deferred tax benefit of \$14.9 million.

(b) The cumulative sum of quarterly basic and diluted net income per share amounts may not equal total basic and diluted net income per share amounts for the year due to differences in weighted average and equivalent shares outstanding for each of the periods presented.

## 22. Related Party Transactions and Equity Investments

At December 31, 2017, KJCC had an outstanding loan from its 25-percent non-controlling shareholder of \$2.5 million. This loan was repaid in November 2018.

During 2016, we sold our 30 percent interest in TKK. We had loaned \$10.0 million, gross of accumulated equity losses of \$1.1 million, to TKK, including interest. The loan and interest was fully repaid and we recorded a gain of \$1.3 million in 2017.

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

None.

**ITEM 9A. CONTROLS AND PROCEDURES***(a) Evaluation of Disclosure Controls and Procedures*

The Company's management, with the participation of the Chief Executive Officer and Chief Financial Officer and utilizing the Committee of Sponsoring Organizations of the Treadway Commission (COSO) Internal Control – Integrated Framework (2013), have evaluated the effectiveness of the Company's disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934 as of the end of the period covered by this report. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer have concluded that these controls and procedures were effective as of the end of the period covered by this report.

*(b) Changes in Internal Control Over Financial Reporting*

There was no change in our internal control over financial reporting (as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) that occurred during our most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Beginning January 1, 2019, we implemented ASC 842, Leases. The new lease standard did not have a material impact on our ongoing net income, but the standard did have a material impact on our balance sheet. As such, we implemented changes to our processes related to lease identification and the control activities with them. These included the development of new policies based on the model provided in the new lease standard, new training, ongoing lease review requirements, and gathering of information provided for disclosures.

On April 10, 2018, we acquired UIP and on February 28, 2018, we acquired KRR. We have implemented internal controls over significant processes specific to UIP and KRR that management believes are appropriate in consideration of related integration of operations, systems, and control activities.

See Management Report on page 43 for management's annual report on internal control over financial reporting. See Report of Independent Registered Public Accounting Firm on page 44 for KPMG LLP's attestation report on internal control over financial reporting.

**ITEM 9B. OTHER INFORMATION**

None.

**PART III**

**ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

The information required by Item 401 of Regulation S-K with respect to directors is contained in our definitive Proxy Statement for our 2020 Annual Meeting of Shareholders (the "Proxy Statement") which we will file with the Securities and Exchange Commission, pursuant to Regulation 14A, not later than 120 days after the end of our fiscal year under the caption "Proxy Item 1 – Proposal for Election of Directors", and is incorporated herein by reference.

The information required by this item concerning our executive officers is incorporated by reference herein from Part I of this report under "Executive Officers of the Registrant".

The information required by Item 405 of Regulation S-K, if disclosure is required thereunder, is included in the Proxy Statement under the caption "General Matters - Delinquent Section 16(a) Reports" and is incorporated herein by reference.

The information required by Item 407(d)(4) and Item 407(d)(5) of Regulation S-K is included in the Proxy Statement under the caption "Board Meetings and Committees" and is incorporated herein by reference.

The audit committee and our board have approved and adopted a Code of Conduct for all directors, officers and employees and a Code of Ethics Applicable to Senior Officers, copies of which are available on our website at [www.koppers.com](http://www.koppers.com) and upon written request by our shareholders at no cost. Requests should be sent to Koppers Holdings Inc., Attention: Corporate Secretary's Office, 436 Seventh Avenue, Suite 1550, Pittsburgh, Pennsylvania 15219. We will describe the date and nature of any amendment to our Code of Conduct or Code of Ethics Applicable to Senior Officers or any waiver (implicit or explicit) from a provision of our Code of Conduct or Code of Ethics Applicable to Senior Officers within four business days following the date of the amendment or waiver on our Internet website at [www.koppers.com](http://www.koppers.com). We do not intend to incorporate the contents of our website into this report.

**ITEM 11. EXECUTIVE COMPENSATION**

The information required by Item 11 is contained in the Proxy Statement under the captions "Executive Compensation" and "Committee Reports to Shareholders – Management Development and Compensation Committee Report" and is incorporated herein by reference.

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

The information required by Item 12 is contained in the Proxy Statement under the caption "Common Stock Ownership" and is incorporated herein by reference.

The following table provides information as of December 31, 2019, regarding the number of shares of our common stock that may be issued under our 2018 Long Term Incentive Plan:

<b>Plan Category:</b>	<i>Number of securities to be issued upon exercise of outstanding options, warrants and rights</i>	<i>Weighted average exercise price of outstanding options, warrants and rights</i>	<i>Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in first column)</i>
Equity compensation plans approved by security holders	1,755,047 <sup>(1)</sup>	\$28.45 <sup>(2)</sup>	602,985

<sup>(1)</sup> Includes shares of our common stock that may be issued pursuant to outstanding options, time-based restricted stock units ("RSUs") and performance-based RSUs awarded under our 2018 Long-Term Incentive Plan.

<sup>(2)</sup> Does not reflect time-based RSUs and performance-based RSUs included in the first column, which do not have an exercise price.

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

The information required by Item 13 is contained in the Proxy Statement under the captions "Transactions with Related Persons" and "Corporate Governance Matters – Director Independence" and is incorporated herein by reference.

**ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES**

The information required by Item 14 is contained in the Proxy Statement under the caption "Auditors" and is incorporated herein by reference.



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

Financial statements filed as part of this report are included in “Item 8 – Financial Statements and Supplementary Data” as listed on the index on page 42.

**(a) 2. Financial Statement Schedules**

“Schedule II – Valuation and Qualifying Accounts and Reserves” is included on page 89. All other schedules are omitted because they are not applicable or the required information is contained in the applicable financial statements or notes thereto.

**(a) 3. Exhibits**

## EXHIBIT INDEX

<i>Exhibit No.</i>	<i>Exhibit</i>	<i>Incorporation by Reference</i>
2.1	<a href="#">Agreement and Plan of Merger, dated April 10, 2018, by and among Koppers Inc., Cox Industries, Inc., each of the Selling Shareholders party thereto, and the Shareholder Representative party thereto</a>	Exhibit 2.5 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).
3.1	<a href="#">Amended and Restated Articles of Incorporation of the Company, as amended on May 7, 2015</a>	Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q filed on August 6, 2015 (Commission File No. 001-32737).
3.2	<a href="#">Second Amended and Restated Bylaws of the Company, as adopted on August 2, 2017</a>	Exhibit 3.2 to the Company's Quarterly Report on Form 10-Q filed on August 3, 2017 (Commission File No. 001-32737).
4.1	<a href="#">Indenture, dated as of January 25, 2017, among Koppers Inc., Koppers Holdings Inc., the other guarantors named therein and Wells Fargo Bank, National Association, as Trustee</a>	Exhibit 4.1 to the Company's Current Report on Form 8-K filed on January 25, 2017 (Commission File No. 001-32737).
4.2	<a href="#">First Supplemental Indenture, dated as of March 7, 2018, among M.A. Energy Resources, LLC, the Issuer, Koppers Holdings Inc., as a Guarantor, the other Subsidiary Guarantors and Wells Fargo Bank, National Association, as trustee</a>	Exhibit 4.8 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).
4.3	<a href="#">Second Supplemental Indenture, dated as of April 17, 2018, among the Guaranteeing Subsidiaries party thereto, the Issuer, Koppers Holdings Inc., as a Guarantor, the other Subsidiary Guarantors and Wells Fargo Bank, National Association, as trustee</a>	Exhibit 4.9 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).
4.4***	<a href="#">Description of Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934</a>	
10.1	Asset Purchase Agreement by and between Koppers Inc. and Koppers Company, Inc., dated as of December 28, 1988	Respective exhibits to the Koppers Inc. Prospectus filed on February 7, 1994. (P)
10.2	Asset Purchase Agreement Guarantee provided by Beazer PLC, dated as of December 28, 1988	Respective exhibits to the Koppers Inc. Prospectus filed on February 7, 1994. (P)
10.3*	<a href="#">Employment agreement with Steven R. Lacy dated April 5, 2002</a>	Exhibit 10.35 of the Koppers Inc. Form 10-K for the year ended December 31, 2002 filed on March 5, 2003 (Commission File No. 001-12716).
10.4*	Koppers Industries, Inc. Non-contributory Long Term Disability Plan for Salaried Employees	Respective exhibits to the Koppers Inc. Prospectus filed on February 7, 1994 pursuant to Rule 424(b) of the Securities Act of 1933, as amended, in connection with the offering of the 8 1 / 2 % Senior Notes due 2004. (P)
10.5*	Koppers Industries, Inc. Survivor Benefit Plan	Respective exhibits to the Koppers Inc. Prospectus filed on February 7, 1994 pursuant to Rule 424(b) of the Securities Act of 1933, as amended, in connection with the offering of the 8 1 / 2 % Senior Notes due 2004. (P)

<u>Exhibit No.</u>	<u>Exhibit</u>	<u>Incorporation by Reference</u>
10.6	<a href="#">Amendment and Restatement to Article VII of the Asset Purchase Agreement by and between Koppers Inc. and Beazer East, Inc., dated July 15, 2004</a>	Exhibit 10.33 to the Koppers Inc. Quarterly Report on Form 10-Q filed on August 6, 2004 (Commission File No. 001-12716).
10.7	<a href="#">Agreement and Plan of Merger dated as of November 18, 2004, by and among Koppers Inc., Merger Sub for KI Inc. and Koppers Holdings Inc. (f/k/a KI Holdings Inc.)</a>	Exhibit 10.34 to the Company's Registration Statement on Form S-4 filed on February 14, 2005 (Registration No. 333-122810).
10.8*	<a href="#">Koppers Holdings Inc. 2005 Long Term Incentive Plan, as Amended and Restated effective March 24, 2016</a>	Appendix A to the Company's Definitive Proxy Statement for its 2016 Annual Meeting of Shareholders filed on April 5, 2016 (Commission File No. 001-32737).
10.9*	<a href="#">Koppers Holdings Inc. Benefit Restoration Plan</a>	Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2007 (Commission File No. 001-32737).
10.10*	<a href="#">Koppers Inc. Supplemental Executive Retirement Plan I</a>	Exhibit 10.53 to the Company's Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 20, 2009 (Commission File No. 001-32737).
10.11*	<a href="#">Koppers Inc. Supplemental Executive Retirement Plan II, as amended and restated</a>	Exhibit 10.93 to the Company's Quarterly Report on Form 10-Q filed on August 7, 2014 (Commission File No. 001-32737).
10.12*	<a href="#">Amendment to Employment Agreement with Steven R. Lacy effective as of January 1, 2009</a>	Exhibit 10.55 to the Company's Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 20, 2009 (Commission File No. 001-32737).
10.13*	<a href="#">Amendment to Koppers Holdings Inc. Benefit Restoration Plan effective as of January 1, 2009</a>	Exhibit 10.57 to the Company's Annual Report on Form 10-K for the year ended December 31, 2008 filed on February 20, 2009 (Commission File No. 001-32737).
10.14*	<a href="#">Restricted Stock Unit Issuance Agreement – Time Vesting</a>	Exhibit 10.62 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012 filed on February 25, 2013 (Commission File No. 001-32737).
10.15*	<a href="#">Restricted Stock Unit Issuance Agreement – Performance Vesting</a>	Exhibit 10.63 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012 filed on February 25, 2013 (Commission File No. 001-32737).
10.16*	<a href="#">Notice of Grant of Stock Option</a>	Exhibit 10.64 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012 filed on February 25, 2013 (Commission File No. 001-32737).
10.17*	<a href="#">Form of Koppers Holdings Inc. Restricted Stock Unit Issuance Agreement Non-Employee Director –Time Vesting</a>	Exhibit 10.66 to the Company's Quarterly Report on Form 10-Q filed on May 5, 2011 (Commission File No. 001-32737).

<i>Exhibit No.</i>	<i>Exhibit</i>	<i>Incorporation by Reference</i>
10.18*	<a href="#">Amendment No. 2 to Employment Agreement with Steven R. Lacy effective December 19, 2012</a>	Exhibit 10.73 to the Company's Annual Report on Form 10-K for the year ended December 31, 2012 filed on February 25, 2013 (Commission File No. 001-32737).
10.19*	<a href="#">Form of Amended and Restated Change in Control Agreement entered into as of May 6, 2013 between the Company and the named Executive</a>	Exhibit 10.80 to the Company's Quarterly Report on Form 10-Q filed on August 8, 2013 (Commission File No. 001-32737).
10.20*	<a href="#">Amendment No. 3 to Employment Agreement with Steven R. Lacy effective August 7, 2013</a>	Exhibit 10.81 to the Company's Quarterly Report on Form 10-Q filed on November 7, 2013 (Commission File No. 001-32737).
10.21*	<a href="#">2014 Restricted Stock Unit Issuance Agreement – Time Vesting</a>	Exhibit 10.84 to the Company's Annual Report on Form 10-K for the year ended December 31, 2013 filed on March 3, 2014 (Commission File No. 001-32737).
10.22*	<a href="#">Koppers Annual Incentive Plan, as amended January 25, 2016.</a>	Exhibit 10.97 to the Company's Annual Report on Form 10-K for the year ended December 31, 2015 filed on February 29, 2016 (Commission File No. 001-32737).
10.23*	<a href="#">Restricted Stock Unit Issuance Agreement – Time Vesting</a>	Exhibit 10.98 to the Company's Annual Report on Form 10-K for the year ended December 31, 2014 filed on March 2, 2015 (Commission File No. 001-32737).
10.24*	<a href="#">Restricted Stock Unit Issuance Agreement – Performance Vesting</a>	Exhibit 10.99 to the Company's Annual Report on Form 10-K for the year ended December 31, 2014 filed on March 2, 2015 (Commission File No. 001-32737).
10.25*	<a href="#">Notice of Grant of Stock Option</a>	Exhibit 10.100 to the Company's Annual Report on Form 10-K for the year ended December 31, 2014 filed on March 2, 2015 (Commission File No. 001-32737).
10.26*	<a href="#">2016 Restricted Stock Unit Issuance Agreement – Performance Vesting</a>	Exhibit 10.107 to the Company's Quarterly Report on Form 10-Q filed on May 6, 2016 (Commission File No. 001-32737).
10.27	<a href="#">Credit Agreement, dated as of February 17, 2017, by and among Koppers Inc., as Borrower, the Guarantors party thereto, the Lenders party thereto, PNC Bank, National Association, as Administrative Agent, and the other agents party thereto</a>	Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 22, 2017 (Commission File No. 001-32737).
10.28*	<a href="#">Koppers Holdings Inc. Employee Stock Purchase Plan</a>	Appendix A to the Company's definitive proxy statement on Schedule 14A, filed on April 4, 2017 (Commission File No. 001-32737).
10.29	<a href="#">First Amendment to Credit Agreement dated as of February 26, 2018, by and among Koppers Inc., as Borrower, the Guarantors party thereto, the Lenders party thereto, PNC Bank, National Association, as Administrative Agent, and the other agents party thereto</a>	Exhibit 10.118 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).

<i>Exhibit No.</i>	<i>Exhibit</i>	<i>Incorporation by Reference</i>
10.30	<a href="#">Second Amendment to Credit Agreement and Joinder, dated as of April 10, 2018, by and among Koppers Inc., as Borrower, the Guarantors party thereto, the Lenders party thereto, and PNC Bank, National Association, as Administrative Agent</a>	Exhibit 10.119 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).
10.31*	<a href="#">Koppers Holdings Inc. 2018 Long Term Incentive Plan</a>	Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 3, 2018 (Commission File No. 001-32737).
10.32*	<a href="#">Form of Restricted Stock Unit Issuance Agreement Time Vesting</a>	Exhibit 10.120 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.33*	<a href="#">Form of Restricted Stock Unit Issuance Agreement – Performance Vesting</a>	Exhibit 10.121 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.34*	<a href="#">Form of Restricted Stock Unit Issuance Agreement Non-Employee Director – Time Vesting</a>	Exhibit 10.122 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.35*	<a href="#">Form of Notice of Grant of Stock Option</a>	Exhibit 10.123 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.36*	<a href="#">Form of Restricted Stock Unit Issuance Agreement – Performance Vesting</a>	Exhibit 10.125 to the Company's Annual Report on Form 10-K for the year ended December 31, 2018 filed on March 1, 2019 (Commission File No. 001-32737).
10.37	<a href="#">Third Amendment to Credit Agreement and Joinder, dated as of May 1, 2019, by and among Koppers Inc., as Borrower, the Guarantors party thereto, the Lenders party thereto, and PNC Bank National Association, as Administrative Agent.</a>	Exhibit 10.126 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2019 (Commission File No. 001-32737).
10.38* ***	<a href="#">Form of Restricted Stock Unit Issuance Agreement – Time Vesting</a>	
10.39* ***	<a href="#">Form of Restricted Stock Unit Issuance Agreement – Performance Vesting</a>	
10.40* ***	<a href="#">Form of Notice of Grant of Stock Option</a>	
10.41* ***	<a href="#">Form of Restricted Stock Unit Issuance Agreement for Steven R. Lacy</a>	
21***	<a href="#">List of subsidiaries of the Company.</a>	
23.1***	<a href="#">Consent of Independent Registered Public Accounting Firm.</a>	
24***	<a href="#">Powers of Attorney.</a>	
31.1***	<a href="#">Certification of Chief Executive Officer pursuant to Rule 13a-14(a).</a>	
31.2***	<a href="#">Certification of Chief Financial Officer pursuant to Rule 13a-14(a).</a>	

32.1***	<a href="#">Certification of Chief Executive Officer and Chief Financial Officer pursuant to Section 1350.</a>
101.INS***	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded with the Inline XBRL document
101.SCH***	Inline XBRL Taxonomy Extension Schema Document
101.CAL***	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF***	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB***	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE***	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

\* *Management Contract or Compensatory Plan.*

\*\*\* *Filed herewith.*

(P) *Paper exhibits*

#### **ITEM 16. FORM 10-K SUMMARY**

None.

## KOPPERS HOLDINGS INC.

## SCHEDULE II – VALUATION AND QUALIFYING ACCOUNTS

For the years ended December 31, 2019, 2018 and 2017

	<i>Balance at Beginning of Year</i>		<i>Increase to Expense</i>		<i>Net Write-offs</i>		<i>Currency Translation</i>		<i>Balance at End of Year</i>
<i>(Dollars in millions)</i>									
<b>2019</b>									
Allowance for doubtful accounts	\$ 2.5	\$	0.6	\$	(0.5)	\$	0.0	\$	2.6
Deferred tax valuation allowance	\$ 59.9	\$	3.3	\$	(5.2)	\$	0.0	\$	58.0
<b>2018</b>									
Allowance for doubtful accounts	\$ 2.5	\$	0.7	\$	(0.7)	\$	0.0	\$	2.5
Deferred tax valuation allowance	\$ 44.5	\$	15.8	\$	0.0	\$	(0.4)	\$	59.9
<b>2017</b>									
Allowance for doubtful accounts	\$ 3.8	\$	0.4	\$	(1.8)	\$	0.1	\$	2.5
Deferred tax valuation allowance	\$ 40.2	\$	4.0	\$	(0.5)	\$	0.8	\$	44.5

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended, Koppers Holdings Inc. has duly caused this annual report on Form 10-K to be signed on its behalf by the undersigned, thereunto duly authorized.

KOPPERS HOLDINGS INC.

BY: /s/ MICHAEL J. ZUGAY  
 Michael J. Zugay  
 Chief Financial Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, as amended, this annual report on Form 10-K has been signed below by the following persons on behalf of the Registrant and in the capacities and on the date indicated.

<i>Signature</i>	<i>Capacity</i>	<i>Date</i>
<u>/s/ LEROY M. BALL, JR.</u> Leroy M. Ball, Jr.	Director, President and Chief Executive Officer	February 27, 2020
<u>/s/ MICHAEL J. ZUGAY</u> Michael J. Zugay	Chief Financial Officer (Principal Financial Officer)	February 27, 2020
<u>/s/ BRADLEY A. PEARCE</u> Bradley A. Pearce	Chief Accounting Officer (Principal Accounting Officer)	February 27, 2020
Stephen R. Tritch Xudong Feng Traci L. Jensen David L. Motley Albert J. Neupaver Louis L. Testoni Sonja M. Wilkerson	Director and Non-Executive Chairman of the Board Director Director Director Director Director Director	By <u>/s/ LEROY M. BALL, JR.</u> Leroy M. Ball, Jr. <i>Attorney-in-Fact</i>  February 27, 2020



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

The following description sets forth certain material terms and provisions of the securities of Koppers Holdings Inc. (the "Company") that are registered under Section 12 of the Securities Exchange Act of 1934, as amended. This description also summarizes certain relevant provisions of Pennsylvania law. The following summary does not purport to be complete and is subject to, and is qualified in its entirety by reference to, the applicable provisions of Pennsylvania law and our Amended and Restated Articles of Incorporation (the "Articles of Incorporation") and our Second Amended and Restated Bylaws (the "Bylaws"), copies of which are incorporated by reference as exhibits to the Annual Report on Form 10-K of which this exhibit is a part. We encourage you to read our Articles of Incorporation, our Bylaws and the applicable provisions of Pennsylvania law for additional information.

**Common Stock**

Pursuant to the terms of the Articles of Incorporation, we are authorized to issue up to 80,000,000 shares of common stock, \$0.01 par value per share. As of January 31, 2020, an aggregate of 20,804,050 shares of our common stock was outstanding.

***Voting Rights***

Holders of common stock are entitled to one vote for each share held on all matters submitted to a vote of shareholders and do not have cumulative voting rights. Accordingly, holders of a majority of the shares of common stock entitled to vote in any election of directors may elect all of the directors standing for election.

***Dividend Rights***

Holders of common stock are entitled to receive ratably such dividends, if any, as may be declared by our board of directors out of funds legally available therefor, subject to any preferential dividend rights of outstanding preferred stock.

***Liquidation Rights***

Upon the liquidation, dissolution or winding up of the Company, the holders of common stock are entitled to receive ratably our net assets available after the payment of all debts and other liabilities and subject to the prior rights of any outstanding preferred stock.

***Other Rights***

Holders of our common stock have no preemptive, subscription, redemption or conversion rights. The outstanding shares of common stock are, and any shares offered by us hereby will be, when issued and paid for, fully paid and non-assessable, which means that its holders will have paid their purchase price in full and we may not require them to pay additional funds. If we issue any preferred stock, the rights, preferences and privileges of holders of common stock will be subject to, and may be adversely affected by, the rights of the holders of our preferred stock.

*Impact of Issuance of Preferred Stock.* Our board of directors is authorized, subject to any limitations prescribed by law, without further shareholder approval, to provide for the issuance of shares of preferred stock in one or more series. Each series of preferred stock will have such rights, preferences, privileges and restrictions, including voting rights, dividend rights, conversion rights, redemption privileges and liquidation preferences, as will be determined by our board of directors. It is not possible to state the actual effect of the issuance of any shares of preferred stock upon the rights of holders of the common stock until our board of directors determines the specific rights of the holders of such preferred stock. However, the effects might include, among other things:

- impairing the dividend rights of the common stock;
- diluting the voting power of the common stock;
- impairing the liquidation rights of the common stock; and
- delaying, deferring or preventing a change in control.

### **Certain Corporate Anti-Takeover Provisions**

The Articles of Incorporation and the Bylaws contain a number of provisions relating to corporate governance and to the rights of shareholders. Certain of these provisions may be deemed to have a potential “anti-takeover” effect by delaying, deferring or preventing a change of control of the Company. These provisions include the following:

- ***Preferred Stock.*** Our board of directors has the authority to issue one or more series of preferred stock with voting rights and other powers as the board of directors may determine, as described above.
- ***Removal of Directors, Vacancies.*** Our shareholders are able to remove directors only for cause and only by the affirmative vote of the holders of a majority of the outstanding shares of our capital stock entitled to vote in the election of directors. Vacancies on the board of directors may be filled only by the board of directors.
- ***No Cumulative Voting.*** The Articles of Incorporation provide that our shareholders do not have the right to cumulative votes in the election of directors. Under Pennsylvania law, cumulative voting rights would have been available to the holders of our common stock if the Articles of Incorporation had not negated cumulative voting.
- ***No Shareholder Action by Written Consent; Calling of Special Meetings of Shareholders.*** The Articles of Incorporation do not permit shareholder action without a meeting by consent except for the unanimous consent of all holders of our common stock. The Articles of Incorporation also provide that special meetings of the shareholders may be called only by the board of directors or the chairman of the board of directors.
- ***Advance Notice Requirements for Stockholder Proposals and Director Nominations.*** The Bylaws provide that shareholders seeking to nominate candidates

for election as directors or to bring business before an annual meeting of shareholders must provide timely notice of their proposal in writing to the corporate secretary.

In addition, the Pennsylvania Business Corporation Law (the “BCL”) provides that directors may, in discharging their duties, consider the effects of any action upon employees, suppliers, customers and the communities in which its offices are located. Directors are not required to consider the interests of shareholders to a greater degree than other constituencies’ interests. The BCL expressly provides that directors do not violate their fiduciary duties solely by relying on “poison pills” or the anti-takeover provisions of the BCL. We do not currently have a “poison pill.”

### **Pennsylvania Anti-Takeover Law Provisions**

The BCL provides, in its subchapters 25(E), 25(F), 25(G), 25(H), 25(I) and 25(J), certain anti-takeover protections with respect to corporations that do not elect out of them. Under the Articles of Incorporation, we have elected out of these subchapters.

The BCL permits an amendment of a corporation’s articles of incorporation or other corporate action, if approved by shareholders generally, to provide mandatory special treatment for specified groups of nonconsenting shareholders of the same class by providing, for example, that shares of common stock held only by designated shareholders of record, and no other shares of common stock, shall be cashed out at a price determined by the corporation, subject to applicable dissenters’ rights.

### **Transfer Agent and Registrar**

The transfer agent and registrar for our common stock is Computershare Shareowner Services LLC.

### **New York Stock Exchange Listing**

Our common stock is listed on the New York Stock Exchange under the symbol “KOP.”

## KOPPERS HOLDINGS INC.

RESTRICTED STOCK UNIT ISSUANCE AGREEMENT – TIME VESTING

## RECITALS

A. The Board has adopted the Plan for the purpose of retaining the services of selected Employees, non-employee members of the Board (or the board of directors of any Parent or Subsidiary) and consultants and other independent advisors who provide services to the Corporation (or any Parent or Subsidiary).

B. Participant is to render valuable services to the Corporation (or a Parent or Subsidiary), and this Agreement is executed pursuant to, and is intended to carry out the purposes of, the Plan in connection with the Corporation's issuance of shares of Common Stock to Participant under the Plan.

C. The award made by the Corporation pursuant to this Agreement is in consideration for the Participant's acceptance of, and agreement to, the terms, conditions and restrictions of the restrictive covenants set forth in Paragraph 9 of this Agreement.

D. Unless otherwise defined in this Agreement, all capitalized terms in this Agreement shall have the meaning assigned to them in the attached Appendix A.

NOW, THEREFORE, it is hereby agreed as follows:

1. Grant of Restricted Stock Units. The Corporation hereby awards to Participant, as of the Award Date, Restricted Stock Units under the Plan. Each Restricted Stock Unit represents the right to receive one share of Common Stock on the specified issuance date following the vesting of that unit. The number of shares of Common Stock subject to the awarded Restricted Stock Units, the applicable vesting schedule for those shares, the date on which those vested shares shall become issuable to Participant and the remaining terms and conditions governing the award (the "Award") shall be as set forth in this Agreement.

## AWARD SUMMARY

Award Date: [\_\_\_\_, \_\_\_\_]

Number of Shares Subject to Award: \_\_\_\_\_ shares of Common Stock (the "Shares")

Vesting Schedule: 25% of the Shares shall vest upon Participant's completion of a consecutive twelve (12)-month period of Service measured from the Award Date. 25% of the Shares shall vest upon Participant's completion of a consecutive twenty-four (24)-month period of Service measured from the Award Date. 25% of the Shares shall vest upon Participant's completion of a consecutive thirty-six (36)-month period of Service measured from the Award Date. 25% of the Shares shall vest upon Participant's completion of a consecutive forty-eight (48)-month period of Service measured from the Award Date. However, one or more Shares may be subject to accelerated vesting in accordance with the provisions of Paragraph 5 of this Agreement.

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Issuance Schedule: The Shares in which Participant vests in accordance with the foregoing Vesting Schedule shall become issuable immediately upon vesting (the "Issue Date"). The actual issuance of the Shares shall be subject to the Corporation's collection of all applicable Withholding Taxes and shall be effected on the applicable Issue Date or as soon as administratively practicable thereafter, but in no event later than the close of the calendar year in which such Issue Date occurs or (if later) the fifteenth (15th) day of the third (3rd) calendar month following such Issue Date. The procedures pursuant to which the applicable Withholding Taxes are to be collected are set forth in Paragraph 7 of this Agreement.

Restrictive Covenants: The Award is being made by the Corporation in consideration for the Participant's acceptance of, and agreement to be bound by, the terms, conditions and restrictions of the restrictive covenants set forth in Paragraph 9 of this Agreement, which acceptance and agreement shall be evidenced by the Participant's execution of this Agreement.

2. Limited Transferability. Prior to the actual issuance of the Shares which vest hereunder, Participant may not transfer any interest in the Award or the underlying Shares; provided, however, any Shares which vest hereunder but which otherwise remain unissued at the time of Participant's death may be transferred pursuant to the provisions of Participant's will or the laws of inheritance or to Participant's designated beneficiary or beneficiaries of this Award. Participant may make a beneficiary designation for this Award at any time by filing the appropriate form with the Plan Administrator or its designee.

3. Cessation of Service. Except as otherwise provided in Paragraph 5 below, should Participant cease Service for any reason prior to vesting in one or more Shares subject to this Award, then the Award will be immediately cancelled with respect to those unvested Shares. Participant shall thereupon cease to have any right or entitlement to receive any Shares under those cancelled units.

4. Stockholder Rights and Dividend Equivalents

(a) The holder of this Award shall not have any stockholder rights, including voting or dividend rights, with respect to the Shares subject to the Award until Participant becomes the record holder of those Shares following their actual issuance upon the Corporation's collection of the applicable Withholding Taxes.

(b) Notwithstanding the foregoing, should any stock dividend, whether regular or extraordinary, be declared and paid on the outstanding Common Stock while one or more Shares remain subject to this Award (i.e., those Shares are not otherwise issued and outstanding for purposes of entitlement to the dividend or distribution), then Participant shall automatically be credited with an additional number of Restricted Stock Units equal to the number of shares of Common Stock which would have been paid on the Shares (plus the number of additional shares previously credited to Participant pursuant to the dividend equivalent right provisions of this Paragraph 4) at the time subject to this Award had those Shares been actually issued and outstanding and entitled to that dividend. The additional Restricted Stock Units so credited shall vest at the same time as the Shares to which they relate and shall be distributed to Participant concurrently with the issuance of those Shares on the applicable Issue Date. However, each such distribution shall be subject to the Corporation's collection of the Withholding Taxes applicable to that distribution.

(c) Notwithstanding the foregoing, should any cash dividend, whether regular or extraordinary, be declared and paid on the outstanding Common Stock while one or more Shares remain subject to this Award (i.e., those Shares are not otherwise issued and outstanding for purposes of entitlement to the dividend or distribution), then a special book account shall be established for Participant and credited with a dollar amount equal to the amount of that dividend paid per share multiplied by the number of Restricted Stock Units at the time subject to this Award (plus the number of additional shares previously credited to Participant pursuant to the dividend equivalent right provisions of this Paragraph 4) as of the record date for the dividend. As of the first business day in January each year, the cash dividend amounts credited to the special book account during the immediately preceding calendar year shall be converted into a book entry of an additional number of Restricted Stock Units determined by dividing (i) those cash dividend equivalent amounts by (ii) the average of the Fair Market Value per share of Common Stock on each of the dates in the immediately preceding calendar year on which those dividends on the outstanding Common Stock were paid. The additional Restricted Stock Units so credited shall vest at the same time as the Shares to which they relate and shall be distributed to Participant concurrently with the issuance of those Shares on the applicable Issue Date. However, each such distribution shall be subject to the Corporation's collection of the Withholding Taxes applicable to that distribution.

5. Accelerated Vesting/Change in Control.

(a) Should Participant's Service terminate by reason of his or her Retirement, death or Permanent Disability prior to the final vesting date set forth in Paragraph 1, then Participant shall immediately vest in the additional number of Shares (if any) in which Participant would have been vested at the time of such termination had 25% of the Shares that were scheduled to be vested on the next anniversary of the Award Date instead vested in a series of twelve (12) successive equal monthly installments over the duration of the twelve (12) month period preceding such Award Date.

(b) Any Restricted Stock Units subject to this Award at the time of a Change in Control may be assumed by the successor entity or otherwise continued in full force and effect or may be replaced with a cash retention program of the successor entity which preserves the Fair Market Value of the unvested shares of Common Stock subject to the Award at the time of the Change in Control and provides for subsequent payout of that value in accordance with the same (or more favorable) vesting schedule in effect for the Award at the time of such Change in Control. In the event of such assumption or continuation of the Award or such replacement of the Award with a cash retention program, no accelerated vesting of the Restricted Stock Units shall occur at the time of the Change in Control.

(c) In the event the Award is assumed or otherwise continued in effect, the Restricted Stock Units subject to the Award shall be adjusted immediately after the consummation of the Change in Control so as to apply to the number and class of securities into which the Shares subject to those units immediately prior to the Change in Control would have been converted in consummation of that Change in Control had those Shares actually been issued and outstanding at that time. To the extent the actual holders of the outstanding Common Stock receive cash consideration for their Common Stock in consummation of the Change in Control, the successor corporation (or parent entity) may, in connection with the assumption or continuation of the Restricted Stock Units subject to the Award at that time, substitute one or more shares of its own common stock with a fair market value equivalent to the cash consideration paid per share of Common Stock in the Change in Control transaction, provided such common stock is readily tradable on an established U.S. securities exchange or market.

(d) If the Restricted Stock Units subject to this Award at the time of the Change in Control are not assumed or otherwise continued in effect or replaced with a cash retention program in accordance with Paragraph 5(a), then those units will vest immediately prior to the closing of the Change in Control. The Shares subject to those vested units, together with any other Shares in which Participant is at that time vested, will be issued on the Issue Date triggered by the Change in Control (or otherwise converted into the right to receive the same consideration per share of Common Stock payable to the other stockholders of the Corporation in consummation of that Change in Control and distributed at the same time as such stockholder payments), subject to the Corporation's collection of the applicable Withholding Taxes pursuant to the provisions of Paragraph 7. For purposes of this Paragraph 5(d), the Issue Date shall be the effective date of the Change in Control so long as it qualifies as a "change in the ownership or effective control" of the Corporation within the meaning of Section 409A(a)(2)(A)(v) of the Code and regulations thereunder. If it does not so qualify, the Issue Date shall be the date that is three (3) years from the Award Date.

(e) Upon an involuntary termination of Participant's Service for reasons other than Misconduct within twenty-four (24) months following a Change in Control transaction which does not otherwise result in the accelerated vesting of the Restricted Stock Units pursuant to the provisions of subparagraph (d) of this Paragraph 5, all unvested Restricted Stock Units hereunder shall immediately vest at that time. Any unvested cash account maintained on Participant's behalf pursuant to the cash retention program established in accordance with subparagraph (b) of this Paragraph 5 shall also vest at the time of such involuntary termination. The Issue Date for such vested Shares or cash shall be six months after the date of termination (or, if earlier, the date that is three (3) years from the Award Date), so long as the Change in Control qualifies as a "change in the ownership or effective control" of the Corporation within the meaning of Section 409A(a)(2)(A)(v) of the Code and regulations thereunder. If it does not so qualify, the Issue Date shall be the date that is three (3) years from the Award Date.

(f) This Agreement shall not in any way affect the right of the Corporation to adjust, reclassify, reorganize or otherwise change its capital or business structure or to merge, consolidate, dissolve, liquidate or sell or transfer all or any part of its business or assets.

6. Adjustment in Shares. In the event of any of the following transactions affecting the outstanding shares of Common Stock as a class without the Corporation's receipt of consideration: any stock split, stock dividend, spin-off transaction, extraordinary distribution (whether in cash, securities or other property), recapitalization, combination of shares, exchange of shares or other similar transaction affecting the outstanding Common Stock as a class without the Corporation's receipt of consideration or in the event of a substantial reduction to the value of the outstanding shares of Common Stock by reason of a spin-off transaction or extraordinary distribution, then equitable adjustments shall be made to the total number and/or class of securities issuable pursuant to this Award in such manner as the Plan Administrator deems appropriate in order to reflect such change and thereby prevent the dilution or enlargement of benefits hereunder. In determining such adjustments, the Plan Administrator shall take into account any amounts credited to Participant pursuant to the dividend equivalent right provisions of Paragraph 4 in connection with such transaction, and the determination of the Plan Administrator shall be final, binding and conclusive.

Collection of Withholding Taxes.

(a) Upon the applicable Issue Date, the Corporation shall issue to or on behalf of Participant a certificate (which may be in electronic form) for the applicable number of underlying shares of Common Stock, subject, however, to the Corporation's collection of the applicable Withholding Taxes.

(b) Until such time as the Corporation provides Participant with written or electronic notice to the contrary, the Corporation shall collect Withholding Taxes required to be withheld with respect to the vesting or issuance of the vested Shares hereunder (including shares attributable to the dividend equivalent rights provided under Paragraph 4) through an automatic share withholding procedure pursuant to which the Corporation will withhold, at the time of such vesting or issuance, a portion of the Shares with a Fair Market Value (measured as of the vesting or issuance date, as applicable) equal to the amount of those taxes (including taxes resulting from such withholding) (the "Share Withholding Method"); provided, however, that the amount of any Shares so withheld shall not exceed the amount necessary to satisfy the Corporation's required tax withholding obligations using the minimum statutory withholding rates for federal and state tax purposes that are applicable to supplemental taxable income, or as otherwise approved by the Plan Administrator. Participant shall be notified in writing or electronically in the event such Share Withholding Method is no longer available.

(c) Should any Shares (including shares attributable to the dividend equivalent rights provided under Paragraph 4) vest or be issued at a time when the Share Withholding Method is not available, then the Withholding Taxes required to be withheld with respect to those Shares shall be collected from Participant through either of the following alternatives:

- Participant's delivery of his or her separate check payable to the Corporation in the amount of such taxes, or
- the use of the proceeds from a next-day sale of the Shares issued to Participant, provided and only if (i) such a sale is permissible under the Corporation's trading policies governing the sale of Common Stock, (ii) Participant makes an irrevocable commitment, on or before the Issue Date for those Shares, to effect such sale of the Shares and (iii) the transaction is not otherwise deemed to constitute a prohibited loan under Section 402 of the Sarbanes-Oxley Act of 2002.

(d) Except as otherwise provided in Paragraph 4 and Paragraph 5(b) the settlement of all Restricted Stock Units which vest under the Award shall be made solely in shares of Common Stock. In no event, however, shall any fractional shares be issued. Accordingly, the total number of shares of Common Stock to be issued pursuant to the Award shall, to the extent necessary, be rounded down to the next whole share in order to avoid the issuance of a fractional share.

8. Compliance with Laws and Regulations. The issuance of shares of Common Stock pursuant to the Award shall be subject to compliance by the Corporation and Participant with all applicable requirements of law relating thereto and with all applicable regulations of any stock exchange on which the Common Stock may be listed for trading at the time of such issuance.



(a) As a condition of receiving this Award, the Participant hereby acknowledges and agrees that during the period in which the Participant is employed by, or providing service to, the Corporation, and for the Restrictive Covenant Period following the date on which the Participant ceases to be employed by, or provide service to, the Corporation for any reason, the Participant shall comply with the restrictive covenants set forth herein. The restrictive covenants set forth herein shall not supersede and replace any other restrictions and obligations the Participant may be subject to with the Corporation and if there is a conflict between comparable restrictions the more restrictive provisions shall control, as reasonably determined by the Corporation.

(i) Participant acknowledges that during Participant's employment with the Corporation, Participant will have access to, possess or help the Corporation develop valuable proprietary commercial and/or technical information, trade secrets and other confidential information belonging to the Corporation and will be instrumental to the development and/or maintenance of goodwill with the Corporation's customers. Participant acknowledges that such proprietary information, trade secrets, confidential information and goodwill are valuable assets of the Corporation and the Corporation has a legitimate interest in protecting itself from disclosure or misappropriation of such information and from interference with its goodwill relationships with its customers.

(ii) Other than in the ordinary course or for the benefit of the business of the Corporation, during the term of Participant's employment with the Corporation and thereafter, Participant shall not, directly or indirectly, divulge, furnish or make accessible to any other person, business, firm or corporation, or use in any way, any Confidential Information of the Corporation which Participant has acquired or become acquainted with or shall acquire or become acquainted with as a result of Participant's employment with the Corporation, whether developed by Participant, or by others. The Confidential Information is the property of the Corporation and Participant acknowledges that the use, misappropriation or disclosure of the Confidential Information would constitute a breach of trust, fiduciary duty and would cause irreparable injury to the Corporation. Furthermore, Participant acknowledges that during Participant's employment with the Corporation, Participant may be exposed to the confidential information of customers and other third parties and Participant shall maintain the confidentiality of this information and shall only use it as necessary to carry out the work for the Corporation consistent with restrictions placed upon such Confidential Information. Nothing contained herein shall restrict Participant's use of general knowledge acquired by Participant as part of Participant's normal growth in Participant's profession.

(iii) Participant shall not, during the term of Participant's employment with the Corporation and for the Restrictive Covenant Period, render services as an officer, owner (other than having less than two (2%) percent ownership of a publicly traded corporation's stock), director, consultant, employee, or other service provider, to, or on behalf of, a Competing Business, provided, however, this Section 9(a)(iii) will not apply if Participant's duties and responsibilities for any Competing Business do not involve Participant in the provision of any services that are similar to or competitive with the services Participant provided to the Corporation. Participant acknowledges that the Corporation is engaged in business throughout the world and that the marketplace for the Corporation's products and services is worldwide, and thus the geographic area, length and scope of this noncompetition provision are reasonable and necessary to protect the legitimate business interests of the Corporation. In the event a court of competent jurisdiction determines that one or more of the provisions are so broad as to be

unenforceable, then such provision shall be deemed to be reduced in scope or length, as the case may be, to the extent required to make such Paragraphs enforceable.

(iv) Participant shall disclose promptly and assign to the Corporation or the Affiliate all right, title and interest in any invention or idea, patentable or not, made or conceived by Participant during employment by the Corporation or the Affiliate, relating in any manner to the actual or anticipated business, research or development work of the Corporation or the Affiliate and shall do anything reasonably necessary to enable the Corporation or the Affiliate to secure a patent where appropriate in the United States and in foreign countries.

(v) Participant shall not, directly or indirectly, solicit, for the purpose of offering or attempting to offer any service, product or other application which is the same as or similar to the services, products or other applications offered or in the process of being developed by the Corporation within the last year prior to termination of Participant's employment with the Corporation, any of the Corporation's customers with whom Participant had contact, or about whom Participant obtained, or had access to, confidential information during Participant's employment, for the Restrictive Covenant Period. Participant further agrees, for the Restrictive Covenant Period, that Participant shall not solicit or attempt to solicit any employee of, or consultant to, the Corporation, which employee or consultant had been rendering services to the Corporation at any time within the six-month period immediately preceding the termination of Participant employment, to leave the employ of, or no longer render service to or for the benefit of, the Corporation.

(vi) Participant shall not make any Disparaging Statements about the Corporation to any of the Corporation's past, present, or future customers, employees, clients, contractors, vendors, or to the media or to any other person either orally or by any other medium of communication, including internet communication. As used herein, the term "Disparaging Statement" means any communication, oral or written, which would cause or tend to cause humiliation or embarrassment or to cause a recipient of such communication to question the business condition, integrity, product, service, quality, confidence, or good character of the Corporation.

(b) Participant acknowledges that a breach of any of the covenants contained in this Agreement may cause irreparable damage to the Corporation, the exact amount of which would be difficult to ascertain, and that the remedies at law for any such breach or threatened breach would be inadequate. Accordingly, Participant agrees that if Participant breaches or threatens to breach any of the covenants contained in this Agreement, in addition to any other remedy which may be available to the Corporation at law or in equity, the Corporation shall be entitled to (i) cease or withhold any payment of Shares to Participant pursuant to this Award, including the return of any previously delivered Shares or proceeds recognized upon any sale or other disposition of those Shares; and/or (ii) institute and prosecute proceedings in any court of competent jurisdiction for specific performance and injunctive relief to prevent the breach or any threatened breach thereof without bond or other security or a showing that monetary damages will not provide an adequate remedy. Participant agrees to disclose in advance the existence and terms of the restrictions and covenants contained in this Agreement to any employer or service recipient by whom Participant might be employed or retained during the period in which the covenants or restrictions apply. Participant agrees that, in the event of a final determination of Participant's breach of any of the covenants contained in this Agreement, the restrictions in the relevant paragraph shall be extended for a period equal to the period that Participant was in breach. Participant represents and acknowledges that Participant has been advised by the Corporation to consult Participant's own legal counsel with respect to this

Agreement and Participant has had full opportunity, prior to execution of this Agreement, to review thoroughly this Agreement with Participant's legal counsel.

(c) Upon delivery of the Shares pursuant to this Award, the Plan Administrator may require Participant to certify on a form acceptable to the Plan Administrator, that Participant is in compliance with the terms, conditions and restrictions of the Plan and this Agreement.

(d) This Award, and the right to receive and retain any Shares or cash payments covered by this Award, shall be subject to rescission, cancellation or recoupment, in whole or part, if and to the extent so provided under any "clawback" or similar policy of the Corporation in effect on the Award Date or that may be established thereafter, including any modification or amendment thereto, or as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable law. By accepting this Award under the Plan, Participant agrees and acknowledges that Participant is obligated to cooperate with, and provide any and all assistance necessary to, the Corporation to recover or recoup any Award or amounts paid under the Plan subject to claw-back pursuant to such law or policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to recover or recoup any Award or amounts paid pursuant to this Award.

10. Notices. Any notice required to be given or delivered to the Corporation under the terms of this Agreement shall be in writing and addressed to the Secretary of the Corporation at its principal corporate office at 436 Seventh Avenue, Pittsburgh, PA 15219. Except to the extent electronic notice is expressly authorized hereunder, any notice required to be given or delivered to Participant shall be in writing and addressed to Participant at the address indicated below Participant's signature line on this Agreement. All notices shall be deemed effective upon personal delivery (or electronic delivery to the extent authorized hereunder) or upon deposit in the U.S. mail, postage prepaid and properly addressed to the party to be notified.

11. Successors and Assigns. Except to the extent otherwise provided in this Agreement, the provisions of this Agreement shall inure to the benefit of, and be binding upon, the Corporation and its successors and assigns and Participant, Participant's assigns, the legal representatives, heirs and legatees of Participant's estate and any beneficiaries of the Award designated by Participant.

12. Construction. This Agreement and the Award evidenced hereby are made and granted pursuant to the Plan and are in all respects limited by and subject to the terms of the Plan. All decisions of the Plan Administrator with respect to any question or issue arising under the Plan or this Agreement shall be conclusive and binding on all persons having an interest in the Award.

13. Governing Law. The interpretation, performance and enforcement of this Agreement shall be governed by the laws of the Commonwealth of Pennsylvania without resort to Pennsylvania's conflict-of-laws rules.

14. Employment at Will. Nothing in this Agreement or in the Plan shall confer upon Participant any right to continue in Service for any period of specific duration or interfere with or otherwise restrict in any way the rights of the Corporation (or any Parent or Subsidiary employing or retaining Participant) or of Participant, which rights are hereby expressly reserved by each, to terminate Participant's Service at any time for any reason, with or without cause,

unless such rights are otherwise limited pursuant to a separate agreement between the Corporation (or any Parent or Subsidiary) and Participant.

15. Section 409A. This Award is intended to be excepted from coverage under, or compliant with the provisions of, Section 409A of the Code and the regulations promulgated thereunder ("Section 409A") and shall be construed accordingly. Notwithstanding the foregoing or any provision of the Plan to the contrary, if the Award is subject to the provisions of Section 409A (and not excepted therefrom), the provisions of the Plan and this Agreement shall be administered, interpreted and construed in a manner necessary to comply with Section 409A (or disregarded to the extent such provision cannot be so administered, interpreted, or construed). If any payments or benefits hereunder may be deemed to constitute nonconforming deferred compensation subject to taxation under the provisions of Section 409A, Participant agrees that the Corporation may, without the consent of Participant, modify the Agreement and the Award to the extent and in the manner the Corporation deems necessary or advisable or take such other action or actions, including an amendment or action with retroactive effect, that the Corporation deems appropriate in order either to preclude any such payments or benefits from being deemed "deferred compensation" within the meaning of Section 409A or to provide such payments or benefits in a manner that complies with the provisions of Section 409A such that they will not be taxable thereunder. Notwithstanding, the Corporation makes no representations and/or warranties with respect to compliance with Section 409A, and Participant recognizes and acknowledges that Section 409A could potentially impose upon Participant certain taxes or interest charges for which Participant is and shall remain solely responsible.

16. Survivability. The terms of this Agreement survive the termination of Participant's employment with the Corporation for any reason.

17. Severability. In the event that any provision of this Agreement is determined to be partially or wholly invalid, illegal or unenforceable in any jurisdiction, then such provision shall, as to such jurisdiction, be modified or restricted to the extent necessary to make such provision valid, binding and enforceable, or if such provision cannot be modified or restricted, then such provision shall, as to such jurisdiction, be deemed to be excised from this Agreement; provided, however, that the binding effect and enforceability of the remaining provisions of this Agreement, to the extent the economic benefits conferred upon the parties by virtue of this Agreement remain substantially unimpaired, shall not be affected or impaired in any manner, and any such invalidity, illegality or unenforceability with respect to such provisions shall not invalidate or render unenforceable such provision in any other jurisdiction.

IN WITNESS WHEREOF, the parties have executed this Agreement on the Award Date indicated above.

**KOPPERS HOLDINGS INC.**

A

By: \_\_\_\_\_

Title: President and CEO

**Participant** \_\_\_\_\_

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

APPENDIX A

DEFINITIONS

The following definitions shall be in effect under the Agreement:

- A. Affiliate means any entity that, directly or through one or more intermediaries, is controlled by the Corporation, and any entity in which the Corporation has a significant equity interest as determined by the Plan Administrator.
- B. Agreement shall mean this Restricted Stock Unit Issuance Agreement.
- C. Award shall mean the award of restricted stock units made to Participant pursuant to the terms of this Agreement.
- D. Award Date shall mean the date the restricted stock units are awarded to Participant pursuant to the Agreement and shall be the date indicated in Paragraph 1 of the Agreement.
- E. Board shall mean the Corporation's Board of Directors.
- F. Change in Control of the Corporation shall have occurred in the event that:
- (i) a person, partnership, joint venture, corporation or other entity, or two or more of any of the foregoing acting as a "person" within the meaning of Sections 13(d)(3) of the 1934 Act, other than the Corporation, a majority-owned subsidiary of the Corporation or an employee benefit plan of the Corporation or such subsidiary (or such plan's related trust), become(s) the "beneficial owner" (as defined in Rule 13d-3 under the Act) of fifty percent (50%) or more of the then outstanding voting stock of the Corporation;
  - (ii) during any period of two consecutive years, individuals who at the beginning of such period constitute the Board (together with any new Board member whose election by the Corporation's Board or whose nomination for election by the Corporation's stockholders, was approved by a vote of at least two-thirds of the Board members then still in office who either were Board members at the beginning of such period or whose election or nomination for election was previously so approved) cease for any reason to constitute a majority of the Board members then in office;
  - (iii) all or substantially all of the business of the Corporation is disposed of pursuant to a merger, consolidation or other transaction in which the Corporation is not the surviving corporation or the Corporation combines with another company and is the surviving corporation (unless the Corporation's stockholders immediately following such merger, consolidation, combination, or other transaction beneficially own, directly or indirectly, more than fifty percent (50%) of the aggregate voting stock or other ownership interests of (x) the entity or entities, if any, that succeed to the business of the Corporation or (y) the combined company);
  - (iv) the closing of the sale of all or substantially all of the assets of the Corporation or a liquidation or dissolution of the Corporation; or

(v) the acquisition, directly or indirectly, by any person or related group of persons (other than the Corporation or a person that directly or indirectly controls, is controlled by, or is under common control with, the Corporation of beneficial ownership (within the meaning of Rule 13d-3 of the Act) of securities possessing more than twenty percent (20%) of the total combined voting power of the Corporation's outstanding securities pursuant to a tender or exchange offer made directly to the Corporation's stockholders which the Board does not recommend such stockholders to accept.

G. Code shall mean the Internal Revenue Code of 1986, as amended.

H. Common Stock shall mean shares of the Corporation's common stock.

I. Competing Business shall mean: any person, corporation, partnership, joint venture, association or other entity engaged in the development or offering or attempting to offer any service, product, chemical formulation or other material which: (i) is a direct or indirect product of the extraction or distillation of coal tar; (ii) is utilized in the distillation, impregnation or treatment of materials with coal tar, petroleum pitch or their respective by-products or distillates; (iii) constitutes or is utilized in conjunction with railroad track joints, ties, mounting hardware, bridge timbers, bridge crossings or bridging assemblies; (iv) constitutes or is utilized in conjunction with utility poles (including components thereof) or marine pilings; (v) is utilized for the preservation or recovery of wood materials or (vi) constitutes any product or service which was in the process of being developed by the Corporation within the last year prior to termination of Participant's employment with the Corporation.

J. Confidential Information shall mean any proprietary or confidential information of the Corporation, including but not limited to any trade secrets, confidential or secret designs, technologies, content, processes, formulae, plans, manuals, devices, machines, know-how, methods, compositions, ideas, improvements, financial and marketing information, costs, pricing, sales, sales volume, methods and proposals, customer and prospective customer lists, identity of key personnel in the employ of customers and prospective customers, amount or kind of customer's purchases from the Corporation, system documentation, hardware, engineering and configuration information, computer programs, source and object codes (whether or not patented, patentable, copyrighted or copyrightable), related software development information, inventions or other confidential or proprietary information belonging to the Corporation or directly or indirectly relating to the Corporation's business and affairs.

K. Corporation shall mean Koppers Holdings Inc., a Pennsylvania corporation, and any successor corporation to all or substantially all of the assets or voting stock of Koppers Holdings Inc. which shall by appropriate action adopt the Plan.

L. Disparaging Statements shall have the meaning set forth in Paragraph 9(a)(vi).

M. Employee shall mean an individual who is in the employ of the Corporation (or any Parent or Subsidiary), subject to the control and direction of the employer entity as to both the work to be performed and the manner and method of performance.

N. Fair Market Value per share of Common Stock on any relevant date shall be determined in accordance with the following provisions:

(i) If the Common Stock is at the time traded on the Nasdaq Global Market, then the Fair Market Value shall be the closing selling price per share of Common Stock at the close of regular hours trading (i.e., before after-hours trading begins) on the Nasdaq Global Market on the date in question, as such price is reported by the National Association of Securities Dealers for that particular Stock Exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

(ii) If the Common Stock is at the time listed on any other Stock Exchange, then the Fair Market Value shall be the closing selling price per share of Common Stock at the close of regular hours trading (i.e., before after-hours trading begins) on the date in question on the Stock Exchange determined by the Plan Administrator to be the primary market for the Common Stock, as such price is officially quoted in the composite tape of transactions on such exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

O. Misconduct shall mean the commission of any act of fraud, embezzlement or dishonesty by Participant, any unauthorized use or disclosure by Participant of confidential information or trade secrets of the Corporation (or any Parent or Subsidiary), or any other intentional misconduct by Participant adversely affecting the business or affairs of the Corporation (or any Parent or Subsidiary) in a material manner. The foregoing definition shall not in any way preclude or restrict the right of the Corporation (or any Parent or Subsidiary) to discharge or dismiss Participant or any other person in the Service of the Corporation (or any Parent or Subsidiary) for any other acts or omissions, but such other acts or omissions shall not be deemed, for purposes of the Plan or this Agreement, to constitute grounds for termination for Misconduct.

P. 1934 Act shall mean the Securities Exchange Act of 1934, as amended from time to time.

Q. Participant shall mean the person to whom the Award is made pursuant to the Agreement.

R. Parent shall mean any corporation (other than the Corporation) in an unbroken chain of corporations ending with the Corporation, provided each corporation in the unbroken chain (other than the Corporation) owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

S. Permanent Disability shall mean the inability of a Participant to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which is expected to result in death or to be of continuous duration of twelve (12) months or more.

T. Plan shall mean the Corporation's 2018 Long Term Incentive Plan.

U. Plan Administrator shall mean the committee(s) designated by the Board to administer the Plan.



V. Restrictive Covenant Period shall mean the two year period following a Participant's termination of employment from the Corporation for any reason.

W. Retirement shall mean Participant's voluntary termination from Service (i) on or after his attainment of age sixty-five (65), or (ii) on or after his attainment of age 55 with at least ten (10) years of service, or involuntary termination from Service with at least thirty (30) years of service other than in connection with a termination for Misconduct. "Years of service" means Participant's total number of years of "accumulated service" as such term is defined with respect to salaried employees under the Retirement Plan for Koppers Inc. (regardless of whether Participant is eligible to receive a benefit under such plan).

X. Service shall mean Participant's performance of services for the Corporation (or any Parent or Subsidiary) in the capacity of an Employee, a non-employee member of the board of directors or a consultant or independent advisor. For purposes of this Agreement, Participant shall be deemed to cease Service immediately upon the occurrence of either of the following events: (i) Participant no longer performs services in any of the foregoing capacities for the Corporation (or any Parent or Subsidiary) or (ii) the entity for which Participant performs such services ceases to remain a Parent or Subsidiary of the Corporation, even though Participant may subsequently continue to perform services for that entity. Service shall not be deemed to cease during a period of military leave, sick leave or other personal leave approved by the Corporation; provided, however, that except to the extent otherwise required by law or expressly authorized by the Plan Administrator or by the Corporation's written policy on leaves of absence, no Service credit shall be given for vesting purposes for any period Participant is on a leave of absence.

Y. Stock Exchange shall mean the Nasdaq Global Market, the New York Stock Exchange or such other stock exchange on which the Common Stock is listed.

Z. Subsidiary shall mean any corporation (other than the Corporation) in an unbroken chain of corporations beginning with the Corporation, provided each corporation (other than the last corporation) in the unbroken chain owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

AA. Withholding Taxes shall mean the federal, state and local income and employment taxes required to be withheld by the Corporation in connection with the vesting and concurrent issuance of the shares of Common Stock under the Award, including any additional shares resulting from the dividend equivalent right provisions of the Award.

## KOPPERS HOLDINGS INC.

RESTRICTED STOCK UNIT ISSUANCE AGREEMENT- PERFORMANCE VESTING

## RECITALS

- A. The Board has adopted the Plan for the purpose of retaining the services of selected Employees, non-employee members of the Board (or the board of directors of any Parent or Subsidiary) and consultants and other independent advisors who provide services to the Corporation (or any Parent or Subsidiary).
- B. Participant is to render valuable services to the Corporation (or a Parent or Subsidiary), and this Agreement is executed pursuant to, and is intended to carry out the purposes of, the Plan in connection with the Corporation's issuance of shares of Common Stock to Participant under the Plan.
- C. The award made by the Corporation pursuant to this Agreement is in consideration for the Participant's acceptance of, and agreement to, the terms, conditions and restrictions of the restrictive covenants set forth in Paragraph 9 of this Agreement.
- D. Unless otherwise defined in this Agreement, all capitalized terms in this Agreement shall have the meaning assigned to them in the attached Appendix A.

NOW, THEREFORE, it is hereby agreed as follows:

1. Grant of Restricted Stock Units. The Corporation hereby awards to Participant, as of the Award Date, Restricted Stock Units under the Plan. Except as otherwise provided in this Agreement, the Restricted Stock Units shall vest on [\_\_\_\_\_, \_\_\_\_], provided (i) the Participant continues in Service until [\_\_\_\_\_, \_\_\_\_], and (ii) the pre-established performance objective tied to Relative TSR (as defined in Schedule I attached hereto) measured over a specified period is attained. Each Restricted Stock Unit which so vests shall entitle Participant to receive one share of Common Stock on the specified issue date. The number of shares of Common Stock subject to the awarded Restricted Stock Units, the applicable performance target for the vesting of those shares, the alternative and special vesting provisions which may become applicable to such shares, the date on which the vested shares shall become issuable (or, under certain circumstances, the cash equivalent thereof shall become payable) to Participant and the remaining terms and conditions governing the award (the "Award") shall be as set forth in this Agreement.

## AWARD SUMMARY

Award Date: [\_\_\_\_\_, \_\_\_\_]

Target Number \_\_\_\_\_ shares of Common Stock (the "Shares"); provided, however, of \_\_\_\_\_ Shares that the actual number of Restricted Stock Units shall be determined in Subject \_\_\_\_\_ to accordance with the provisions of Schedule I attached hereto.

Award:

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Vesting Schedule: The Shares shall vest on [\_\_\_\_\_, \_\_\_\_], provided (i) the Participant continues in Service until [\_\_\_\_\_, \_\_\_\_], and (ii) the Performance Objective set forth in the attached Schedule I is attained over the Measurement Period. However, the Shares may also vest in accordance with the special vesting provisions of Paragraph 5 of this Agreement.

Issuance Schedule: The Shares in which Participant vests in accordance with the foregoing Vesting Schedule shall become issuable on [\_\_\_\_\_, \_\_\_\_], (or upon the date of an earlier Change in Control, or six months after the date of an earlier involuntary termination other than for Misconduct following a Change in Control, if so provided herein) (the "Issue Date"). The actual issuance of the Shares shall be subject to the Corporation's collection of all applicable Withholding Taxes and shall be effected on the applicable Issue Date or as soon as administratively practicable thereafter, but in no event later than the close of the calendar year in which such Issue Date occurs or (if later) the fifteenth (15th) day of the third (3rd) calendar month following such Issue Date. The procedures pursuant to which the applicable Withholding Taxes are to be collected are set forth in Paragraph 7 of this Agreement.

Notwithstanding the foregoing, or anything contained herein to the contrary, the Committee has the discretion to provide for the payment of vested Shares in cash, rather than Shares. In the event the Committee exercises such discretion, all references herein to payment in Shares or the right to receive Shares shall be replaced with references to payment in cash and/or the right to receive payment in cash equal to the Fair Market Value of the Shares on the date the Committee certifies the attainment of the Performance Objective.

Restrictive Covenants:The Award is being made by the Corporation in consideration for the Participant's acceptance of, and agreement to be bound by, the terms, conditions and restrictions of the restrictive covenants set forth in Paragraph 9 of this Agreement, which acceptance and agreement shall be evidenced by the Participant's execution of this Agreement.

2. Limited Transferability. Prior to the actual issuance of the Shares which vest hereunder, Participant may not transfer any interest in the Award or the underlying Shares; provided, however, any Shares which vest hereunder but which otherwise remain unissued at the time of Participant's death may be transferred pursuant to the provisions of Participant's will or the laws of inheritance or to Participant's designated beneficiary or beneficiaries of this Award. Participant may make a beneficiary designation for this Award at any time by filing the appropriate form with the Plan Administrator or its designee.

3. Cessation of Service. Except as otherwise provided in Paragraph 5 below, should Participant cease Service for any reason prior to vesting in one or more Shares subject to this Award, then the Award will be immediately cancelled with respect to those unvested Shares. Participant shall thereupon cease to have any right or entitlement to receive any Shares under those cancelled units.

4. Stockholder Rights and Dividend Equivalents

(a) The holder of this Award shall not have any stockholder rights, including voting or dividend rights, with respect to the Shares subject to the Award until Participant becomes the record holder of those Shares following their actual issuance upon the Corporation's collection of the applicable Withholding Taxes.

(b) Notwithstanding the foregoing, should any stock dividend, whether regular or extraordinary, be declared and paid on the outstanding Common Stock while one or more Shares remain subject to this Award (i.e., those Shares are not otherwise issued and outstanding for purposes of entitlement to the dividend or distribution), then Participant shall automatically be credited with an additional number of Restricted Stock Units equal to the number of shares of Common Stock which would have been paid on the Shares (plus the number of additional shares previously credited to Participant pursuant to the dividend equivalent right provisions of this Paragraph 4) at the time subject to this Award had those Shares been actually issued and outstanding and entitled to that dividend. The additional Restricted Stock Units so credited shall vest at the same time as the Shares to which they relate and shall be distributed to Participant concurrently with the issuance of those Shares on the applicable Issue Date. However, each such distribution shall be subject to the Corporation's collection of the Withholding Taxes applicable to that distribution.

(c) Notwithstanding the foregoing, should any cash dividend, whether regular or extraordinary, be declared and paid on the outstanding Common Stock while one or more Shares remain subject to this Award (i.e., those Shares are not otherwise issued and outstanding for purposes of entitlement to the dividend or distribution), then a special book account shall be established for Participant and credited with a dollar amount equal to the amount of that dividend paid per share multiplied by the number of Restricted Stock Units at the time subject to this Award (plus the number of additional shares previously credited to Participant pursuant to the dividend equivalent right provisions of this Paragraph 4) as of the record date for the dividend. As of the first business day in January each year, the cash dividend amounts credited to the special book account during the immediately preceding calendar year shall be converted into a book entry of an additional number of Restricted Stock Units determined by dividing (i) those cash dividend equivalent amounts by (ii) the average of the Fair Market Value per share of Common Stock on each of the dates in the immediately preceding calendar year on which those dividends on the outstanding Common Stock were paid. The additional Restricted Stock Units so credited shall vest at the same time as the Shares to which they relate and shall be distributed to Participant concurrently with the issuance of those Shares on the applicable Issue Date. However, each such distribution shall be subject to the Corporation's collection of the Withholding Taxes applicable to that distribution.

5. Special Vesting/Change in Control.

(a) Should Participant's Service terminate by reason of his or her Retirement, death or Permanent Disability prior to [\_\_\_\_\_, \_\_\_\_], then on [\_\_\_\_\_, \_\_\_\_], Participant shall vest in a number of Shares equal to the number of Shares (if any) in which Participant would have been vested on [\_\_\_\_\_, \_\_\_\_], had Participant continued in the Corporation's Service through [\_\_\_\_\_, \_\_\_\_], *multiplied by a fraction*, the numerator of which is the number of full months of Service Participant completed between the Award Date and the termination of Participant's Service, and the denominator of which is thirty-six (36); provided, however, that, in the event that Participant's Service terminates by reason of his or her Retirement, death or Permanent Disability on or after the last day of the Measurement Period, the Participant shall vest in a number of Shares equal to the number of Shares (if any) in which

Participant would have vested had his or her Service continued without interruption through [\_\_\_\_\_, \_\_\_\_]. In the event of the termination of Participant's Service due to Participant's Retirement, such vesting shall be conditioned upon Participant's compliance with the conditions of Section 9 through [\_\_\_\_\_, \_\_\_\_].

(b) Any Restricted Stock Units subject to this Award at the time of a Change in Control may be assumed by the successor entity or otherwise continued in full force and effect or may be replaced with a cash retention program of the successor entity which preserves the Fair Market Value of the unvested shares of Common Stock subject to the Award at the time of the Change in Control and provides for subsequent payout of that value in accordance with the same (or more favorable) vesting schedule in effect for the Award at the time of such Change in Control. In the event of such assumption or continuation of the Award or such replacement of the Award with a cash retention program, no accelerated vesting of the Restricted Stock Units shall occur at the time of the Change in Control. However, in the event that the Change in Control occurs prior to the end of the Measurement Period, the vesting provisions in effect for the Award following the Change in Control shall no longer be tied to the attainment of the full Performance Objective set forth in Schedule I and shall instead be converted into the following vesting schedule: The Award (whether in its assumed or continued form or as converted into a cash retention program) shall vest with respect to the number of Shares (or the amount of cash) determined under Section 5(c) below upon Participant's continuation in Service through [\_\_\_\_\_, \_\_\_\_]. Following the completion of such Service vesting period, the securities, cash or other property underlying the vested Award shall be issued on the applicable Issue Date. The Award may also vest in accordance with the special vesting provisions of Paragraphs 5(a) and (e) of this Agreement.

(c) In the event the Award is assumed or otherwise continued in effect, the Restricted Stock Units subject to the Award shall be adjusted immediately after the consummation of the Change in Control so as to apply to the number and class of securities into which the Shares subject to those units immediately prior to the Change in Control would have been converted in consummation of that Change in Control had those Shares actually been issued and outstanding at that time. However, in the event that the Change in Control occurs within the first eighteen (18) months of the Measurement Period, the Award shall remain outstanding and eligible for Service vesting under the terms of this Agreement with respect only to the number of Shares (as so adjusted) that would have been earned pursuant to the Performance Objective identified in Schedule I if the Corporation's performance at the end of the Measurement Period was at the Target level. In the event that the Change in Control occurs on or after the first day of the nineteenth (19th) month of the Measurement Period and prior to the end of the Measurement Period, the Award shall remain outstanding and eligible for Service vesting under the terms of this Agreement only with respect to the number of Shares (as so adjusted) that would have been earned pursuant to the Performance Objective identified in Schedule I (pro-rated through the date of the Change in Control) based on the Corporation's actual performance through the effective date of the Change in Control. To the extent the actual holders of the outstanding Common Stock receive cash consideration for their Common Stock in consummation of the Change in Control, the successor corporation (or parent entity) may, in connection with the assumption or continuation of the Restricted Stock Units subject to the Award at that time, substitute one or more shares of its own common stock with a fair market value equivalent to the cash consideration paid per share of Common Stock in the Change in Control transaction, provided such common stock is readily tradable on an established U.S. securities exchange or market. In the event the Award is converted into a cash retention program, the

amount of cash subject to the Award under such program shall be equal to the value of the number of Shares determined in accordance with the foregoing provisions of this Section 5(c) as of the effective date of the Change in Control (based on the per-share value of the consideration received by holders of the outstanding Common Stock in connection with the Change in Control), plus credited interest or earnings through the Issue Date as determined under the terms of such cash retention program.

(d) If (i) the Change in Control occurs on or after the end of the Measurement Period but prior to [\_\_\_\_\_, \_\_\_\_], or (ii) if the Change in Control occurs prior to the end of the Measurement Period but the Restricted Stock Units subject to this Award at the time of the Change in Control are not assumed or otherwise continued in effect or replaced with a cash retention program in accordance with Paragraph 5(b), then (i) if the Change in Control occurs within the first eighteen (18) months of the Measurement Period, a number of units equal to the number of Shares that would have been earned pursuant to the Performance Objective identified in Schedule I if the Corporation's performance at the end of the Measurement Period was at the Target level (less any Shares in which Participant is at the time vested) will vest immediately prior to the closing of the Change in Control and (ii) if the Change in Control occurs on or after the first day of the nineteenth (19th) month of the Measurement Period, a number of units equal to the number of Shares that have been earned pursuant to the Performance Objective identified in Schedule I (pro-rated through the date of the Change in Control if it occurs prior to the end of the Measurement Period) based on the Corporation's actual performance through the earlier of the effective date of the Change in Control or the end of the Measurement Period will vest immediately prior to the closing of the Change in Control. The Shares that vest under this subparagraph (d) will be issued on the Issue Date triggered by the Change in Control (or otherwise converted into the right to receive the same consideration per share of Common Stock payable to the other stockholders of the Corporation in consummation of that Change in Control and distributed at the same time as such stockholder payments), subject to the Corporation's collection of the applicable Withholding Taxes pursuant to the provisions of Paragraph 7. For purposes of this Paragraph 5(d), the Issue Date shall be the effective date of the Change in Control so long as it qualifies as a "change in the ownership or effective control" of the Corporation within the meaning of Section 409A(a)(2)(A)(v) of the Code and regulations thereunder. If it does not so qualify, the Issue Date shall be [\_\_\_\_\_, \_\_\_\_].

(e) Upon an involuntary termination of Participant's Service for reasons other than Misconduct within twenty-four (24) months following a Change in Control transaction which does not otherwise result in the accelerated vesting of the Restricted Stock Units pursuant to the provisions of subparagraph (d) of this Paragraph 5 and prior to [\_\_\_\_\_, \_\_\_\_], a number of units equal to the number of Shares that would have been earned pursuant to Section 5(c) shall vest on such date of termination. Any unvested cash account maintained on Participant's behalf pursuant to the cash retention program established in accordance with subparagraph (b) of this Paragraph 5 shall also vest at the time of such involuntary termination. The Issue Date for such vested Shares or cash shall be six months after the date of termination (or, if earlier, [\_\_\_\_\_, \_\_\_\_]), so long as the Change in Control qualifies as a "change in the ownership or effective control" of the Corporation within the meaning of Section 409A(a)(2)(A)(v) of the Code and regulations thereunder. If it does not so qualify, the Issue Date shall be [\_\_\_\_\_, \_\_\_\_].

(f) This Agreement shall not in any way affect the right of the Corporation to adjust, reclassify, reorganize or otherwise change its capital or business structure

or to merge, consolidate, dissolve, liquidate or sell or transfer all or any part of its business or assets.

6. Adjustment in Shares. In the event of any of the following transactions affecting the outstanding shares of Common Stock as a class without the Corporation's receipt of consideration: any stock split, stock dividend, spin-off transaction, extraordinary distribution (whether in cash, securities or other property), recapitalization, combination of shares, exchange of shares or other similar transaction affecting the outstanding Common Stock as a class without the Corporation's receipt of consideration or in the event of a substantial reduction to the value of the outstanding shares of Common Stock by reason of a spin-off transaction or extraordinary distribution, then equitable adjustments shall be made to the total number and/or class of securities issuable pursuant to this Award in such manner as the Plan Administrator deems appropriate in order to reflect such change and thereby prevent the dilution or enlargement of benefits hereunder. In determining such adjustments, the Plan Administrator shall take into account any amounts credited to Participant pursuant to the dividend equivalent right provisions of Paragraph 4 in connection with such transaction, and the determination of the Plan Administrator shall be final, binding and conclusive.

7. Collection of Withholding Taxes.

(a) Upon the applicable Issue Date, the Corporation shall issue to or on behalf of Participant a certificate (which may be in electronic form) for the applicable number of underlying shares of Common Stock, subject, however, to the Corporation's collection of the applicable Withholding Taxes.

(b) Until such time as the Corporation provides Participant with written or electronic notice to the contrary, the Corporation shall collect Withholding Taxes required to be withheld with respect to the vesting or issuance of the vested Shares hereunder (including shares attributable to the dividend equivalent rights provided under Paragraph 4) through an automatic share withholding procedure pursuant to which the Corporation will withhold, at the time of such vesting or issuance, a portion of the Shares with a Fair Market Value (measured as of the vesting or issuance date, as applicable) equal to the amount of those taxes (including taxes resulting from such withholding) (the "Share Withholding Method"); provided, however, that the amount of any Shares so withheld shall not exceed the amount necessary to satisfy the Corporation's required tax withholding obligations using the minimum statutory withholding rates for federal and state tax purposes that are applicable to supplemental taxable income, or as otherwise approved by the Plan Administrator. Participant shall be notified in writing or electronically in the event such Share Withholding Method is no longer available.

(c) Should any Shares (including shares attributable to the dividend equivalent rights provided under Paragraph 4) vest or be issued at a time when the Share Withholding Method is not available, then the Withholding Taxes required to be withheld with respect to those Shares shall be collected from Participant through either of the following alternatives:

- Participant's delivery of his or her separate check payable to the Corporation in the amount of such taxes, or
- the use of the proceeds from a next-day sale of the Shares issued to Participant, provided and only if (i) such a sale is permissible under the Corporation's

trading policies governing the sale of Common Stock, (ii) Participant makes an irrevocable commitment, on or before the Issue Date for those Shares, to effect such sale of the Shares and (iii) the transaction is not otherwise deemed to constitute a prohibited loan under Section 402 of the Sarbanes-Oxley Act of 2002.

(d) Except as otherwise provided in Paragraph 5 and Paragraph 4, the settlement of all Restricted Stock Units which vest under the Award shall be made solely in shares of Common Stock. In no event, however, shall any fractional shares be issued. Accordingly, the total number of shares of Common Stock to be issued pursuant to the Award shall, to the extent necessary, be rounded down to the next whole share in order to avoid the issuance of a fractional share.

8. Compliance with Laws and Regulations. The issuance of shares of Common Stock pursuant to the Award shall be subject to compliance by the Corporation and Participant with all applicable requirements of law relating thereto and with all applicable regulations of any stock exchange on which the Common Stock may be listed for trading at the time of such issuance.

9. Restrictive Covenants; Additional Conditions.

(a) As a condition of receiving this Award, the Participant hereby acknowledges and agrees that during the period in which the Participant is employed by, or providing service to, the Corporation, and for the Restrictive Covenant Period following the date on which the Participant ceases to be employed by, or provide service to, the Corporation for any reason, the Participant shall comply with the restrictive covenants set forth herein. The restrictive covenants set forth herein shall not supersede and replace any other restrictions and obligations the Participant may be subject to with the Corporation and if there is a conflict between comparable restrictions the more restrictive provisions shall control, as reasonably determined by the Corporation:

(i) Participant acknowledges that during Participant's employment with the Corporation, Participant will have access to, possess or help the Corporation develop valuable proprietary commercial and/or technical information, trade secrets and other confidential information belonging to the Corporation and will be instrumental to the development and/or maintenance of goodwill with the Corporation's customers. Participant acknowledges that such proprietary information, trade secrets, confidential information and goodwill are valuable assets of the Corporation and the Corporation has a legitimate interest in protecting itself from disclosure or misappropriation of such information and from interference with its goodwill relationships with its customers.

(ii) Other than in the ordinary course or for the benefit of the business of the Corporation, during the term of Participant's employment with the Corporation and thereafter, Participant shall not, directly or indirectly, divulge, furnish or make accessible to any other person, business, firm or corporation, or use in any way, any Confidential Information of the Corporation which Participant has acquired or become acquainted with or shall acquire or become acquainted with as a result of Participant's employment with the Corporation, whether developed by Participant, or by others. The Confidential Information is the property of the Corporation and Participant acknowledges that the use, misappropriation or disclosure of the Confidential Information would constitute a breach of trust, fiduciary duty and would cause irreparable injury to the



Corporation. Furthermore, Participant acknowledges that during Participant's employment with the Corporation, Participant may be exposed to the confidential information of customers and other third parties and Participant shall maintain the confidentiality of this information and shall only use it as necessary to carry out the work for the Corporation consistent with restrictions placed upon such Confidential Information. Nothing contained herein shall restrict Participant's use of general knowledge acquired by Participant as part of Participant's normal growth in Participant's profession.

(iii) Participant shall not, during the term of Participant's employment with the Corporation and for the Restrictive Covenant Period, render services as an officer, owner (other than having less than two (2%) percent ownership of a publicly traded corporation's stock), director, consultant, employee, or other service provider, to, or on behalf of, a Competing Business, provided, however, this Section 9(a)(iii) will not apply if Participant's duties and responsibilities for any Competing Business do not involve Participant in the provision of any services that are similar to or competitive with the services Participant provided to the Corporation. Participant acknowledges that the Corporation is engaged in business throughout the world and that the marketplace for the Corporation's products and services is worldwide, and thus the geographic area, length and scope of this noncompetition provision are reasonable and necessary to protect the legitimate business interests of the Corporation. In the event a court of competent jurisdiction determines that one or more of the provisions are so broad as to be unenforceable, then such provision shall be deemed to be reduced in scope or length, as the case may be, to the extent required to make such Paragraphs enforceable.

(iv) Participant shall disclose promptly and assign to the Corporation or the Affiliate all right, title and interest in any invention or idea, patentable or not, made or conceived by Participant during employment by the Corporation or the Affiliate, relating in any manner to the actual or anticipated business, research or development work of the Corporation or the Affiliate and shall do anything reasonably necessary to enable the Corporation or the Affiliate to secure a patent where appropriate in the United States and in foreign countries.

(v) Participant shall not, directly or indirectly, solicit, for the purpose of offering or attempting to offer any service, product or other application which is the same as or similar to the services, products or other applications offered or in the process of being developed by the Corporation within the last year prior to termination of Participant's employment with the Corporation, any of the Corporation's customers with whom Participant had contact, or about whom Participant obtained, or had access to, confidential information during Participant's employment, for the Restrictive Covenant Period. Participant further agrees, for the Restrictive Covenant Period, that Participant shall not solicit or attempt to solicit any employee of, or consultant to, the Corporation, which employee or consultant had been rendering services to the Corporation at any time within the six-month period immediately preceding the termination of Participant employment, to leave the employ of, or no longer render service to or for the benefit of, the Corporation.

(vi) Participant shall not make any Disparaging Statements about the Corporation to any of the Corporation's past, present, or future customers, employees, clients, contractors, vendors, or to the media or to any other person either orally or by any other medium of communication, including internet communication. As used herein, the term "Disparaging Statement" means any communication, oral or written, which would

cause or tend to cause humiliation or embarrassment or to cause a recipient of such communication to question the business condition, integrity, product, service, quality, confidence, or good character of the Corporation.

(b) Participant acknowledges that a breach of any of the covenants contained in this Agreement may cause irreparable damage to the Corporation, the exact amount of which would be difficult to ascertain, and that the remedies at law for any such breach or threatened breach would be inadequate. Accordingly, Participant agrees that if Participant breaches or threatens to breach any of the covenants contained in this Agreement, in addition to any other remedy which may be available to the Corporation at law or in equity, the Corporation shall be entitled to (i) cease or withhold any payment of Shares to Participant pursuant to this Award, including the return of any previously delivered Shares or proceeds recognized upon any sale or other disposition of those Shares; and/or (ii) institute and prosecute proceedings in any court of competent jurisdiction for specific performance and injunctive relief to prevent the breach or any threatened breach thereof without bond or other security or a showing that monetary damages will not provide an adequate remedy. Participant agrees to disclose in advance the existence and terms of the restrictions and covenants contained in this Agreement to any employer or service recipient by whom Participant might be employed or retained during the period in which the covenants or restrictions apply. Participant agrees that, in the event of a final determination of Participant's breach of any of the covenants contained in this Agreement, the restrictions in the relevant paragraph shall be extended for a period equal to the period that Participant was in breach. Participant represents and acknowledges that Participant has been advised by the Corporation to consult Participant's own legal counsel with respect to this Agreement and Participant has had full opportunity, prior to execution of this Agreement, to review thoroughly this Agreement with Participant's legal counsel.

(c) Upon delivery of the Shares pursuant to this Award, the Plan Administrator may require Participant to certify on a form acceptable to the Plan Administrator, that Participant is in compliance with the terms, conditions and restrictions of the Plan and this Agreement.

(d) This Award, and the right to receive and retain any Shares or cash payments covered by this Award, shall be subject to rescission, cancellation or recoupment, in whole or part, if and to the extent so provided under any "clawback" or similar policy of the Corporation in effect on the Award Date or that may be established thereafter, including any modification or amendment thereto, or as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable law. By accepting this Award under the Plan, Participant agrees and acknowledges that Participant is obligated to cooperate with, and provide any and all assistance necessary to, the Corporation to recover or recoup any Award or amounts paid under the Plan subject to claw-back pursuant to such law or policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to recover or recoup any Award or amounts paid pursuant to this Award.

10. Notices. Any notice required to be given or delivered to the Corporation under the terms of this Agreement shall be in writing and addressed to the Secretary of the Corporation at its principal corporate office at 436 Seventh Avenue, Pittsburgh, PA 15219. Except to the extent electronic notice is expressly authorized hereunder, any notice required to be given or delivered to Participant shall be in writing and addressed to Participant at the address indicated below Participant's signature line on this Agreement. All notices shall be deemed effective upon

personal delivery (or electronic delivery to the extent authorized hereunder) or upon deposit in the U.S. mail, postage prepaid and properly addressed to the party to be notified.

11. Successors and Assigns. Except to the extent otherwise provided in this Agreement, the provisions of this Agreement shall inure to the benefit of, and be binding upon, the Corporation and its successors and assigns and Participant, Participant's assigns, the legal representatives, heirs and legatees of Participant's estate and any beneficiaries of the Award designated by Participant.

12. Construction. This Agreement and the Award evidenced hereby are made and granted pursuant to the Plan and are in all respects limited by and subject to the terms of the Plan. All decisions of the Plan Administrator with respect to any question or issue arising under the Plan or this Agreement shall be conclusive and binding on all persons having an interest in the Award.

13. Governing Law. The interpretation, performance and enforcement of this Agreement shall be governed by the laws of the Commonwealth of Pennsylvania without resort to Pennsylvania's conflict-of-laws rules.

14. Employment at Will. Nothing in this Agreement or in the Plan shall confer upon Participant any right to continue in Service for any period of specific duration or interfere with or otherwise restrict in any way the rights of the Corporation (or any Parent or Subsidiary employing or retaining Participant) or of Participant, which rights are hereby expressly reserved by each, to terminate Participant's Service at any time for any reason, with or without cause, unless such rights are otherwise limited pursuant to a separate agreement between the Corporation (or any Parent or Subsidiary) and Participant.

15. Section 409A. This Award is intended to be excepted from coverage under, or compliant with the provisions of, Section 409A of the Code and the regulations promulgated thereunder ("Section 409A") and shall be construed accordingly. Notwithstanding the foregoing or any provision of the Plan to the contrary, if the Award is subject to the provisions of Section 409A (and not excepted therefrom), the provisions of the Plan and this Agreement shall be administered, interpreted and construed in a manner necessary to comply with Section 409A (or disregarded to the extent such provision cannot be so administered, interpreted, or construed). If any payments or benefits hereunder may be deemed to constitute nonconforming deferred compensation subject to taxation under the provisions of Section 409A, Participant agrees that the Corporation may, without the consent of Participant, modify the Agreement and the Award to the extent and in the manner the Corporation deems necessary or advisable or take such other action or actions, including an amendment or action with retroactive effect, that the Corporation deems appropriate in order either to preclude any such payments or benefits from being deemed "deferred compensation" within the meaning of Section 409A or to provide such payments or benefits in a manner that complies with the provisions of Section 409A such that they will not be taxable thereunder. Notwithstanding, the Corporation makes no representations and/or warranties with respect to compliance with Section 409A, and Participant recognizes and acknowledges that Section 409A could potentially impose upon Participant certain taxes or interest charges for which Participant is and shall remain solely responsible.

16. Survivability. The terms of this Agreement survive the termination of Participant's employment with the Corporation for any reason.

17. Severability. In the event that any provision of this Agreement is determined to be partially or wholly invalid, illegal or unenforceable in any jurisdiction, then such provision shall, as to such jurisdiction, be modified or restricted to the extent necessary to make such provision valid, binding and enforceable, or if such provision cannot be modified or restricted, then such provision shall, as to such jurisdiction, be deemed to be excised from this Agreement; provided, however, that the binding effect and enforceability of the remaining provisions of this Agreement, to the extent the economic benefits conferred upon the parties by virtue of this Agreement remain substantially unimpaired, shall not be affected or impaired in any manner, and any such invalidity, illegality or unenforceability with respect to such provisions shall not invalidate or render unenforceable such provision in any other jurisdiction.

IN WITNESS WHEREOF, the parties have executed this Agreement on the Award Date indicated above.

**KOPPERS HOLDINGS INC.**

By: \_\_\_\_\_

Title: President and CEO

**Participant** \_\_\_\_\_

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

APPENDIX A

DEFINITIONS

The following definitions shall be in effect under the Agreement:

- A. Affiliate means any entity that, directly or through one or more intermediaries, is controlled by the Corporation, and any entity in which the Corporation has a significant equity interest as determined by the Plan Administrator.
- B. Agreement shall mean this Restricted Stock Unit Issuance Agreement.
- C. Award shall mean the award of restricted stock units made to Participant pursuant to the terms of this Agreement.
- D. Award Date shall mean the date the restricted stock units are awarded to Participant pursuant to the Agreement and shall be the date indicated in Paragraph 1 of the Agreement.
- E. Board shall mean the Corporation's Board of Directors.
- F. Change in Control of the Corporation shall have occurred in the event that:
- (vii) a person, partnership, joint venture, corporation or other entity, or two or more of any of the foregoing acting as a "person" within the meaning of Sections 13(d)(3) of the 1934 Act, other than the Corporation, a majority-owned subsidiary of the Corporation or an employee benefit plan of the Corporation or such subsidiary (or such plan's related trust), become(s) the "beneficial owner" (as defined in Rule 13d-3 under the Act) of fifty percent (50%) or more of the then outstanding voting stock of the Corporation;
  - (viii) during any period of two consecutive years, individuals who at the beginning of such period constitute the Board (together with any new Board member whose election by the Corporation's Board or whose nomination for election by the Corporation's stockholders, was approved by a vote of at least two-thirds of the Board members then still in office who either were Board members at the beginning of such period or whose election or nomination for election was previously so approved) cease for any reason to constitute a majority of the Board members then in office;
  - (ix) all or substantially all of the business of the Corporation is disposed of pursuant to a merger, consolidation or other transaction in which the Corporation is not the surviving corporation or the Corporation combines with another company and is the surviving corporation (unless the Corporation's stockholders immediately following such merger, consolidation, combination, or other transaction beneficially own, directly or indirectly, more than fifty percent (50%) of the aggregate voting stock or other ownership interests of (x) the entity or entities, if any, that succeed to the business of the Corporation or (y) the combined company);
  - (x) the closing of the sale of all or substantially all of the assets of the Corporation or a liquidation or dissolution of the Corporation; or

(xi) the acquisition, directly or indirectly, by any person or related group of persons other than the Corporation or a person that directly or indirectly controls, is controlled by, or is under common control with, the Corporation of beneficial ownership (within the meaning of Rule 13d-3 of the Act) of securities possessing more than twenty percent (20%) of the total combined voting power of the Corporation's outstanding securities pursuant to a tender or exchange offer made directly to the Corporation's stockholders which the Board does not recommend such stockholders to accept.

G. Code shall mean the Internal Revenue Code of 1986, as amended.

H. Common Stock shall mean shares of the Corporation's common stock.

I. Competing Business shall mean: any person, corporation, partnership, joint venture, association or other entity engaged in the development or offering or attempting to offer any service, product, chemical formulation or other material which: (i) is a direct or indirect product of the extraction or distillation of coal tar; (ii) is utilized in the distillation, impregnation or treatment of materials with coal tar, petroleum pitch or their respective by-products or distillates; (iii) constitutes or is utilized in conjunction with railroad track joints, ties, mounting hardware, bridge timbers, bridge crossings or bridging assemblies; (iv) constitutes or is utilized in conjunction with utility poles (including components thereof) or marine pilings; (v) is utilized for the preservation or recovery of wood materials or (vi) constitutes any product or service which was in the process of being developed by the Corporation within the last year prior to termination of Participant's employment with the Corporation.

J. Confidential Information shall mean any proprietary or confidential information of the Corporation, including but not limited to any trade secrets, confidential or secret designs, technologies, content, processes, formulae, plans, manuals, devices, machines, know-how, methods, compositions, ideas, improvements, financial and marketing information, costs, pricing, sales, sales volume, methods and proposals, customer and prospective customer lists, identity of key personnel in the employ of customers and prospective customers, amount or kind of customer's purchases from the Corporation, system documentation, hardware, engineering and configuration information, computer programs, source and object codes (whether or not patented, patentable, copyrighted or copyrightable), related software development information, inventions or other confidential or proprietary information belonging to the Corporation or directly or indirectly relating to the Corporation's business and affairs.

K. Corporation shall mean Koppers Holdings Inc., a Pennsylvania corporation, and any successor corporation to all or substantially all of the assets or voting stock of Koppers Holdings Inc. which shall by appropriate action adopt the Plan.

L. Disparaging Statements shall have the meaning set forth in Paragraph 9(a)(vi).

M. Employee shall mean an individual who is in the employ of the Corporation (or any Parent or Subsidiary), subject to the control and direction of the employer entity as to both the work to be performed and the manner and method of performance.

N. Fair Market Value per share of Common Stock on any relevant date shall be determined in accordance with the following provisions:

(i) If the Common Stock is at the time traded on the Nasdaq Global Market, then the Fair Market Value shall be the closing selling price per share of Common Stock at the close of regular hours trading (i.e., before after-hours trading begins) on the Nasdaq Global Market on the date in question, as such price is reported by the National Association of Securities Dealers for that particular Stock Exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

(ii) If the Common Stock is at the time listed on any other Stock Exchange, then the Fair Market Value shall be the closing selling price per share of Common Stock at the close of regular hours trading (i.e., before after-hours trading begins) on the date in question on the Stock Exchange determined by the Plan Administrator to be the primary market for the Common Stock, as such price is officially quoted in the composite tape of transactions on such exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

O. Measurement Period shall mean the period over which the Performance Objective is to be measured. That period shall be the three (3)-year period measured from January 1, [ ] to December 31, [ ].

P. Misconduct shall mean the commission of any act of fraud, embezzlement or dishonesty by Participant, any unauthorized use or disclosure by Participant of confidential information or trade secrets of the Corporation (or any Parent or Subsidiary), or any other intentional misconduct by Participant adversely affecting the business or affairs of the Corporation (or any Parent or Subsidiary) in a material manner. The foregoing definition shall not in any way preclude or restrict the right of the Corporation (or any Parent or Subsidiary) to discharge or dismiss Participant or any other person in the Service of the Corporation (or any Parent or Subsidiary) for any other acts or omissions, but such other acts or omissions shall not be deemed, for purposes of the Plan or this Agreement, to constitute grounds for termination for Misconduct.

Q. 1934 Act shall mean the Securities Exchange Act of 1934, as amended from time to time.

R. Participant shall mean the person to whom the Award is made pursuant to the Agreement.

S. Parent shall mean any corporation (other than the Corporation) in an unbroken chain of corporations ending with the Corporation, provided each corporation in the unbroken chain (other than the Corporation) owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

T. Permanent Disability shall mean the inability of Participant to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which is expected to result in death or to be of continuous duration of twelve (12) months or more.

U. Plan shall mean the Corporation's 2018 Long-Term Incentive Plan.

V. Plan Administrator shall mean the committee(s) designated by the Board to administer the Plan.

W. Restrictive Covenant Period shall mean the two-year period following a Participant's termination of employment from the Corporation for any reason.

X. Retirement shall mean Participant's voluntary termination from Service (i) on or after his attainment of age sixty five (65), or (ii) on or after his attainment of age 55 with at least ten (10) years of service, or involuntary termination from Service with at least thirty (30) years of service other than in connection with a termination for Misconduct. "Years of service" means Participant's total number of years of "accumulated service" as such term is defined with respect to salaried employees under the Retirement Plan for Koppers Inc. (regardless of whether Participant is eligible to receive a benefit under such plan).

Y. Service shall mean Participant's performance of services for the Corporation (or any Parent or Subsidiary) in the capacity of an Employee, a non-employee member of the board of directors or a consultant or independent advisor. For purposes of this Agreement, Participant shall be deemed to cease Service immediately upon the occurrence of either of the following events: (i) Participant no longer performs services in any of the foregoing capacities for the Corporation (or any Parent or Subsidiary) or (ii) the entity for which Participant performs such services ceases to remain a Parent or Subsidiary of the Corporation, even though Participant may subsequently continue to perform services for that entity. Service shall not be deemed to cease during a period of military leave, sick leave or other personal leave approved by the Corporation; provided, however, that except to the extent otherwise required by law or expressly authorized by the Plan Administrator or by the Corporation's written policy on leaves of absence, no Service credit shall be given for vesting purposes for any period the Participant is on a leave of absence.

Z. Stock Exchange shall mean the Nasdaq Global Market, the New York Stock Exchange or such other stock exchange on which the Common Stock is listed.

AA. Subsidiary shall mean any corporation (other than the Corporation) in an unbroken chain of corporations beginning with the Corporation, provided each corporation (other than the last corporation) in the unbroken chain owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

BB. Withholding Taxes shall mean the federal, state and local income and employment taxes required to be withheld by the Corporation in connection with the vesting and concurrent issuance of the shares of Common Stock under the Award, including any additional shares resulting from the dividend equivalent right provisions of the Award.



SCHEDULE I

PERFORMANCE OBJECTIVE

One hundred percent (100%) of the Restricted Stock Units shall vest on [\_\_\_\_\_, \_\_\_\_], provided (i) the Participant continues in Service until [\_\_\_\_\_, \_\_\_\_], and (ii) the realization of "Relative TSR" at the 50<sup>th</sup> percentile of the Peer Group over the three (3)-year period measured from January 1, [\_\_\_\_\_] to December 31, [\_\_\_\_\_] (the "Measurement Period").

The actual number of Restricted Stock Units to vest on [\_\_\_\_\_, \_\_\_\_] (provided Participant continues in Service until [\_\_\_\_\_, \_\_\_\_]), shall be determined in accordance with the following chart:

Performance Level	Relative TSR	% of Restricted Stock Units Vesting
Outstanding	80th percentile Or above	200%
	70th percentile	150%
Target	50th percentile	100%
	35th percentile	50%
Threshold	25th percentile Or below	0%

If the Corporation's performance falls within the range of the Threshold and Target or the Target and Outstanding achievement levels, then the number of Restricted Stock Units will be calculated based on a linear interpolation between the 0% and 50% levels, or the 50% and 100% levels, or the 100% and 150% levels, or the 150% and 200% levels, respectively. However, if the Company's TSR is negative for the performance period, any potential payout will be capped at 150%.

The term, "Relative TSR" shall mean total stockholder return relative to the peer group (listed below). The performance period will be [January 1, \_\_\_\_], to [December 31, \_\_\_\_], and TSR results will be calculated in early January at the end of the performance period defined above. TSR for the Company and each company in the peer group will be determined as follows: TSR equals (Ending Stock Price plus Value of Reinvested Dividends during performance period) divided by Starting Stock Price. Starting and Ending Stock Price will be average closing price for the prior two calendar months, and the Company will be "included" in the peer group for performance calculations and rankings.

The Company's performance shall be compared to the peer group which consists of the companies from the S&P SmallCap 600 Materials Index. In the event any of the foregoing companies, as of [December 31, \_\_\_\_], either (a) is no longer publicly traded or (b) has publicly

announced that a majority of its shares or substantially all of its assets are being acquired or that it is being merged into another company and will not be the surviving entity, but where the acquisition or merger has not yet closed as of such date despite the public announcement, then such company will be excluded from the Relative TSR calculation; provided, however, that if any of the above companies liquidates or files for bankruptcy, it will automatically be deemed in last place for purposes of the Relative TSR calculation.



attached hereto as Exhibit B. A copy of the Plan is available upon request made to the Corporate Secretary at the Company's principal offices.

Employment at Will. Nothing in this Notice or in the attached Stock Option Agreement or in the Plan shall confer upon Optionee any right to continue in Service for any period of specific duration or interfere with or otherwise restrict in any way the rights of the Company (or any Parent or Subsidiary employing or retaining Optionee) or of Optionee, which rights are hereby expressly reserved by each, to terminate Optionee's Service at any time for any reason, with or without cause, unless such rights have otherwise been limited pursuant to a separate agreement between the Company (or any Parent or Subsidiary) and the Participant.

Definitions. All capitalized terms in this Notice shall have the meaning assigned to them in this Notice or in the attached Stock Option Agreement.

DATED: \_\_\_\_\_

**KOPPERS HOLDINGS INC.**

By: \_\_\_\_\_

Title: President and CEO

**Participant:**

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

**ATTACHMENTS**

**Exhibit A - Stock Option Agreement**

**Exhibit B - Plan Prospectus**

## KOPPERS HOLDINGS INC.

STOCK OPTION AGREEMENTRECITALS

- A. The Board has adopted the Plan for the purpose of retaining the services of selected Employees, non-employee members of the Board (or the board of directors of any Parent or Subsidiary) and consultants and other independent advisors who provide services to the Corporation (or any Parent or Subsidiary).
- B. Optionee is to render valuable services to the Corporation (or a Parent or Subsidiary), and this Agreement is executed pursuant to, and is intended to carry out the purposes of, the Plan in connection with the Corporation's grant of an option to Optionee.
- C. The option granted by the Corporation pursuant to this Agreement is in consideration for the Optionee's acceptance of, and agreement to, the terms, conditions, and restrictions of the restrictive covenants set forth in Paragraph 11 of this Agreement.
- D. Unless otherwise defined in this Agreement, all capitalized terms in this Agreement shall have the meaning assigned to them in the attached Appendix.

NOW, THEREFORE, it is hereby agreed as follows:

1. Grant of Option. The Corporation hereby grants to Optionee, as of the Grant Date, an option to purchase up to the number of Option Shares specified in the Grant Notice. The Option Shares shall be purchasable from time to time during the option term specified in Paragraph 2 at the Exercise Price.

2. Option Term. This option shall have a maximum term of ten (10) years measured from the Grant Date and shall accordingly expire at the close of business on the Expiration Date, unless sooner terminated in accordance with Paragraph 5, 6 or 11.

3. Limited Transferability.

(a) This option shall be neither transferable nor assignable by Optionee other than by will or the laws of inheritance following Optionee's death and may be exercised, during Optionee's lifetime, only by Optionee. However, Optionee may designate one or more persons as the beneficiary or beneficiaries of this option, and this option shall, in accordance with such designation, automatically be transferred to such beneficiary or beneficiaries upon the Optionee's death while holding this option. Such beneficiary or beneficiaries shall take the transferred option subject to all the terms and conditions of this Agreement, including (without limitation) the limited time period during which this option may, pursuant to Paragraph 5, be exercised following Optionee's death.

(b) If this option is designated a Non-Statutory Option in the Grant Notice, then this option may be assigned in whole or in part during Optionee's lifetime to one or more of

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the Optionee's Family Members or to a trust established for the exclusive benefit of Optionee and/or one or more such Family Members, to the extent such assignment is in connection with the Optionee's estate plan or pursuant to a domestic relations order. The assigned portion shall be exercisable only by the person or persons who acquire a proprietary interest in the option pursuant to such assignment. The terms applicable to the assigned portion shall be the same as those in effect for this option immediately prior to such assignment.

4. Dates of Vesting. This option shall become exercisable for the Option Shares in one or more installments in accordance with the Vesting Schedule set forth in the Grant Notice. As the option becomes exercisable for such installments, those installments shall accumulate, and the option shall remain exercisable for the accumulated installments until the Expiration Date or sooner termination of the option term under Paragraph 5, 6 or 11.

5. Cessation of Service. The option term specified in Paragraph 2 shall terminate (and this option shall cease to be outstanding) prior to the Expiration Date should any of the following provisions become applicable:

(a) Except as otherwise provided in subparagraphs (b), (c), (d), (e) and (h) of this Paragraph 5, should Optionee cease to remain in Service for any reason while this option is outstanding, then Optionee (or any person or persons to whom this option is transferred pursuant to a permitted transfer under Paragraph 3) shall have a ninety (90)-day period measured from the date of such cessation of Service during which to exercise this option, but in no event shall this option be exercisable at any time after the Expiration Date.

(b) Should Optionee cease to remain in Service due to Optionee's voluntary resignation while this option is outstanding, then Optionee (or any person or persons to whom this option is transferred pursuant to a permitted transfer under Paragraph 3) shall have a thirty (30)-day period measured from the date of such cessation of Service during which to exercise this option, but in no event shall this option be exercisable at any time after the Expiration Date.

(c) Should Optionee die while this option is outstanding, then this option may be exercised by (i) the personal representative of Optionee's estate or (ii) the person or persons to whom the option is transferred pursuant to Optionee's will or the laws of inheritance following Optionee's death or to whom the option is transferred during Optionee's lifetime pursuant to a permitted transfer under Paragraph 3, as the case may be. However, if Optionee dies while holding this option and has an effective beneficiary designation in effect for this option at the time of his or her death, then the designated beneficiary or beneficiaries shall have the exclusive right to exercise this option following Optionee's death. Any such right to exercise this option shall lapse, and this option shall cease to be outstanding, upon the earlier of (i) the expiration of the twelve (12)-month period measured from the date of Optionee's death or (ii) the Expiration Date.

(d) Should Optionee cease Service by reason of Permanent Disability while this option is outstanding, then Optionee (or any person or persons to whom this option is transferred pursuant to a permitted transfer under Paragraph 3) shall have a twelve (12)-month period measured from the date of such cessation of Service during which to exercise this option. In no event shall this option be exercisable at any time after the Expiration Date.

(e) Should Optionee cease Service by reason of Retirement while this option is outstanding, then Optionee (or any person or persons to whom this option is transferred pursuant to a permitted transfer under Paragraph 3) shall have a three (3)-year period measured from the date of Optionee's Retirement during which to exercise this option. In no event shall this option be exercisable at any time after the Expiration Date.

(f) The applicable period of post-Service exercisability in effect pursuant to the foregoing provisions of this Paragraph 5 shall automatically be extended by an additional period of time equal in duration to any interval within such post-Service exercise period during which the exercise of this option or the immediate sale of the Option Shares acquired under this option cannot be effected in compliance with applicable federal and state securities laws, but in no event shall such an extension result in the extension of this option beyond the Expiration Date.

(g) During the limited period of post-Service exercisability, this option may not be exercised in the aggregate for more than the number of Option Shares for which this option is, at the time of Optionee's cessation of Service, vested and exercisable pursuant to the Exercise Schedule specified in the Grant Notice or the special vesting acceleration provisions of Paragraph 6. This option shall not vest or become exercisable for any additional Option Shares, whether pursuant to the normal Exercise Schedule specified in the Grant Notice or the special vesting acceleration provisions of Paragraph 6, following the Optionee's cessation of Service, except to the extent (if any) specifically authorized by the Plan Administrator pursuant to an express written agreement with the Optionee. Upon the expiration of such limited exercise period or (if earlier) upon the Expiration Date, this option shall terminate and cease to be outstanding for any exercisable Option Shares for which the option has not otherwise been exercised.

(h) Should Optionee's Service be terminated for Misconduct or should Optionee otherwise engage in any Misconduct while this option is outstanding, then this option shall terminate immediately and cease to remain outstanding.

6. Special Acceleration of Option.

(a) Should the Optionee's Service terminate by reason of his or her Retirement, death or Permanent Disability prior to the final vesting date for the Option, then the Option shall immediately vest in the additional number of Option Shares (if any) in which the Optionee would have been vested at the time of such termination had 25% of the Option Shares that were scheduled to be vested on the next anniversary of the Vesting Commencement Date instead vested in a series of twelve (12) successive equal monthly installments over the duration of the twelve (12) month period preceding such anniversary.

(b) This option, to the extent outstanding at the time of a Change in Control but not otherwise fully exercisable, shall automatically accelerate so that this option shall, immediately prior to the effective date of such Change in Control, become exercisable for all of the Option Shares at the time subject to this option and may be exercised for any or all of those Option Shares as fully vested shares of Common Stock. However, this option shall *not* become exercisable on such an accelerated basis, if and to the extent: (i) this option is to be assumed by the successor corporation (or parent thereof) or is otherwise to be continued in full force and effect pursuant to the terms of the Change in Control transaction or (ii) this option is to be replaced with a cash retention program of the successor corporation which preserves the spread existing at the time of the Change in Control on any Option Shares for which this option is not otherwise at that time exercisable (the excess of the Fair Market Value of those Option Shares over the aggregate

Exercise Price payable for such shares) and provides for subsequent payout of that spread in accordance with the same Vesting Schedule for those Option Shares as set forth in the Grant Notice.

(c) Immediately following the Change in Control, this option shall terminate and cease to be outstanding, except to the extent assumed by the Successor Corporation (or parent thereof) or otherwise continued in effect pursuant to the terms of the Change in Control transaction.

(d) If this option is assumed in connection with a Change in Control or otherwise continued in effect, then this option shall be appropriately adjusted, immediately after such Change in Control, to apply to the number and class of securities into which the shares of Common Stock subject to this option would have been converted in consummation of such Change in Control had those shares actually been outstanding at the time. Appropriate adjustments shall also be made to the Exercise Price, provided the aggregate Exercise Price shall remain the same. To the extent the actual holders of the Corporation's outstanding Common Stock receive cash consideration for their Common Stock in consummation of the Change in Control, the successor corporation may, in connection with the assumption or continuation of this option, substitute one or more shares of its own common stock with a fair market value equivalent to the cash consideration paid per share of Common Stock in such Change in Control, provided such common stock is readily tradable on an established U.S. securities exchange or market.

(e) In the event the Optionee's Service is involuntarily terminated for reasons other than Misconduct within twenty-four (24) months following a Change in Control transaction which does not result in the accelerated vesting of this option pursuant to the provisions of subparagraph (b) of this Paragraph 6, then the option (as assumed or continued in effect) shall automatically vest in full on an accelerated basis so that such option shall immediately become exercisable for all the Option Shares as fully-vested shares and may be exercised for any or all of those Option Shares as vested shares.

(f) This Agreement shall not in any way affect the right of the Corporation to adjust, reclassify, reorganize or otherwise change its capital or business structure or to merge, consolidate, dissolve, liquidate or sell or transfer all or any part of its business or assets.

7. Adjustment in Option Shares. In the event of any of the following transactions affecting the outstanding Common Stock as a class without the Corporation's receipt of consideration: any stock split, stock dividend, spin-off transaction, extraordinary distribution (whether in cash, securities or other property), recapitalization, combination of shares, exchange of shares or other similar transaction affecting the outstanding Common Stock without the Corporation's receipt of consideration or in the event of a substantial reduction to the value of the outstanding shares of Common Stock by reason of a spin-off transaction or extraordinary distribution, then equitable adjustments shall be made to (i) the total number and/or class of securities subject to this option and (ii) the Exercise Price in such manner as the Plan Administrator deems appropriate in order to reflect such change and thereby prevent the dilution or enlargement of benefits hereunder.

8. Stockholder Rights. The holder of this option shall not have any stockholder rights with respect to the Option Shares until such person shall have exercised the option, paid the Exercise Price and become a holder of record of the purchased shares.

9.



Manner of Exercising Option.

(a) In order to exercise this option with respect to all or any part of the Option Shares for which this option is at the time exercisable, Optionee (or any other person or persons exercising the option) must take the following actions:

(i) Execute and deliver to the Corporation a Notice of Exercise for the Option Shares for which the option is exercised or comply with such other procedures as the Corporation may establish for notifying the Corporation of the exercise of this option for one or more Option Shares.

(ii) Pay the aggregate Exercise Price for the purchased shares in one or more of the following forms:

(A) cash or check made payable to the Corporation;

(B) shares of Common Stock valued at Fair Market Value on the Exercise Date and held by Optionee (or any other person or persons exercising the option) for any required period necessary to avoid a charge to the Corporation's earnings for financial reporting purposes; or

(C) through a special sale and remittance procedure pursuant to which Optionee (or any other person or persons exercising the option) shall concurrently provide irrevocable instructions (i) to a brokerage firm (reasonably satisfactory to the Corporation for purposes of administering such procedure in accordance with the Corporation's pre-clearance/pre-notification policies) to effect the immediate sale of the purchased shares and remit to the Corporation, out of the sale proceeds available on the settlement date, sufficient funds to cover the aggregate Exercise Price payable for the purchased shares plus all applicable income and employment taxes required to be withheld by the Corporation by reason of such exercise and (ii) to the Corporation to deliver the certificates (which may be in electronic form) for the purchased shares directly to such brokerage firm on such settlement date in order to complete the sale.

Except to the extent the sale and remittance procedure is utilized in connection with the option exercise, payment of the Exercise Price must accompany the Notice of Exercise (or other notification procedure) delivered to the Corporation in connection with the option exercise.

(iii) Furnish to the Corporation appropriate documentation that the person or persons exercising the option (if other than Optionee) have the right to exercise this option.

(iv) Make appropriate arrangements with the Corporation (or Parent or Subsidiary employing or retaining Optionee) for the satisfaction of all applicable income and employment tax withholding requirements applicable to the option exercise.

(b) As soon as practical after the Exercise Date, the Corporation shall issue to or on behalf of Optionee (or any other person or persons exercising this option) a certificate (which may be in electronic form) for the purchased Option Shares, with the appropriate legends affixed thereto.

(c) In no event may this option be exercised for any fractional shares.

10. Compliance with Laws and Regulations.

(a) The exercise of this option and the issuance of the Option Shares upon such exercise shall be subject to compliance by the Corporation and Optionee with all applicable requirements of law relating thereto and with all applicable regulations of any stock exchange on which the Common Stock may be listed for trading at the time of such exercise and issuance.

(b) The inability of the Corporation to obtain approval from any regulatory body having authority deemed by the Corporation to be necessary to the lawful issuance and sale of any Common Stock pursuant to this option shall relieve the Corporation of any liability with respect to the non-issuance or sale of the Common Stock as to which such approval shall not have been obtained. The Corporation, however, shall use commercially reasonable efforts to obtain all such approvals.

11. Restrictive Covenants; Additional Conditions.

(a) As a condition of receiving this option, Optionee hereby acknowledges and agrees that during the period in which the Optionee is employed by, or providing service to, the Corporation, and for the Restrictive Covenant Period following the date on which the Optionee ceases to be employed by, or provide service to, the Corporation for any reason, the Optionee shall comply with the restrictive covenants set forth herein. The restrictive covenants set forth herein shall not supersede and replace any other restrictions and obligations the Optionee may be subject to with the Corporation and if there is a conflict between comparable restrictions the more restrictive provisions shall control, as reasonably determined by the Corporation.

(i) Optionee acknowledges that during the Optionee's employment with the Corporation, the Optionee will have access to, possess or help the Corporation develop valuable proprietary commercial and/or technical information, trade secrets and other confidential information belonging to the Corporation and will be instrumental to the development and/or maintenance of goodwill with the Corporation's customers. The Optionee acknowledges that such proprietary information, trade secrets, confidential information and goodwill are valuable assets of the Corporation and the Corporation has a legitimate interest in protecting itself from disclosure or misappropriation of such information and from interference with its goodwill relationships with its customers.

(ii) Other than in the ordinary course or for the benefit of the business of the Corporation, during the term of Optionee's employment with the Corporation and thereafter, Optionee shall not, directly or indirectly, divulge, furnish or make accessible to any other person, business, firm or corporation, or use in any way, any Confidential Information of the Corporation which the Optionee has acquired or become acquainted with or shall acquire or become acquainted with as a result of the Optionee's employment with the Corporation, whether developed by the Optionee, or by others. The Confidential Information is the property of the Corporation and Optionee acknowledges that the use, misappropriation or disclosure of the Confidential Information would constitute a breach of trust, fiduciary duty and would cause irreparable injury to the Corporation. Furthermore, Optionee acknowledges that during the Optionee's

employment with the Corporation, the Optionee may be exposed to the confidential information of customers and other third parties and the Optionee shall maintain the confidentiality of this information and shall only use it as necessary to carry out the work for the Corporation consistent with restrictions placed upon such Confidential Information. Nothing contained herein shall restrict Optionee's use of general knowledge acquired by the Optionee as part of the Optionee's normal growth in the Optionee's profession.

(iii) Optionee shall not, during the term of the Optionee's employment with the Corporation and for the Restrictive Covenant Period, render services as an officer, owner (other than having less than two (2%) percent ownership of a publicly traded corporation's stock), director, consultant, employee, or other service provider, to, or on behalf of, a Competing Business, provided, however, this Paragraph 11(a)(iii) will not apply if the Optionee's duties and responsibilities for any Competing Business do not involve the Optionee in the provision of any services that are similar to or competitive with the services Optionee provided to the Corporation. The Optionee acknowledges that the Corporation is engaged in business throughout the world and that the marketplace for the Corporation's products and services is worldwide, and thus the geographic area, length and scope of this noncompetition provision are reasonable and necessary to protect the legitimate business interests of the Corporation. In the event a court of competent jurisdiction determines that one or more of the provisions are so broad as to be unenforceable, then such provision shall be deemed to be reduced in scope or length, as the case may be, to the extent required to make such Paragraphs enforceable.

(iv) Optionee shall disclose promptly and assign to the Corporation or the Affiliate all right, title and interest in any invention or idea, patentable or not, made or conceived by the Optionee during employment by the Corporation or the Affiliate, relating in any manner to the actual or anticipated business, research or development work of the Corporation or the Affiliate and shall do anything reasonably necessary to enable the Corporation or the Affiliate to secure a patent where appropriate in the United States and in foreign countries.

(v) Optionee shall not, directly or indirectly, solicit, for the purpose of offering or attempting to offer any service, product or other application which is the same as or similar to the services, products or other applications offered or in the process of being developed by the Corporation within the last year prior to termination of the Optionee's employment with the Corporation, any of the Corporation's customers with whom the Optionee had contact, or about whom the Optionee obtained, or had access to, confidential information during the Optionee's employment, for the Restrictive Covenant Period. Optionee further agrees, for the Restrictive Covenant Period, that the Optionee shall not solicit or attempt to solicit any employee of, or consultant to, the Corporation, which employee or consultant had been rendering services to the Corporation at any time within the six-month period immediately preceding the termination of the Optionee's employment, to leave the employ of, or no longer render service to or for the benefit of, the Corporation.

(vi) Optionee shall not make any Disparaging Statements about the Corporation to any of the Corporation's past, present, or future customers, employees, clients, contractors, vendors, or to the media or to any other person either orally or by any other medium of communication, including internet communication. As used herein, the term "Disparaging Statement" means any communication, oral or written, which would cause or tend to cause humiliation or embarrassment or to cause a recipient of such communication to question the business condition, integrity, product, service, quality, confidence, or good character of the Corporation.

(b) Optionee acknowledges that a breach of any of the covenants contained in this Agreement may cause irreparable damage to the Corporation, the exact amount of which would be difficult to ascertain, and that the remedies at law for any such breach or threatened breach would be inadequate. Accordingly, Optionee agrees that if the Optionee breaches or threatens to breach any of the covenants contained in this Agreement, in addition to any other remedy which may be available to the Corporation at law or in equity, the Corporation shall be entitled to (i) rescind any exercise of this option, in which case the Optionee shall pay to the Corporation, in cash or by returning to the Corporation the Option Shares covered by this option; and/or (ii) institute and prosecute proceedings in any court of competent jurisdiction for specific performance and injunctive relief to prevent the breach or any threatened breach thereof without bond or other security or a showing that monetary damages will not provide an adequate remedy. Optionee agrees to disclose in advance the existence and terms of the restrictions and covenants contained in this Agreement to any employer or service recipient by whom the Optionee might be employed or retained during the period in which the covenants or restrictions apply. Optionee agrees that, in the event of a final determination of Optionee's breach of any of the covenants contained in this Agreement, the restrictions in the relevant paragraph shall be extended for a period equal to the period that Optionee was in breach. Optionee represents and acknowledges that the Optionee has been advised by the Corporation to consult Optionee's own legal counsel with respect to this Agreement and Optionee has had full opportunity, prior to execution of this Agreement, to review thoroughly this Agreement with Optionee's legal counsel.

(c) Upon exercise of this option, the Plan Administrator may require the Optionee to certify on a form acceptable to the Plan Administrator, that the Optionee is in compliance with the terms, conditions, and restrictions of the Plan and this Agreement.

(d) This option, and the right to receive and retain any Option Shares or cash payments covered by this option, shall be subject to rescission, cancellation or recoupment, in whole or part, if and to the extent so provided under any "clawback" or similar policy of the Corporation in effect on the Grant Date or that may be established thereafter, including any modification or amendment thereto, or as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable law. By accepting this option under the Plan, the Optionee agrees and acknowledges that Optionee is obligated to cooperate with, and provide any and all assistance necessary to, the Corporation to recover or cancel any option granted under the Plan subject to claw-back pursuant to such law or policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to recover or cancel any options granted pursuant to this Agreement.

12. Successors and Assigns. Except to the extent otherwise provided in this Agreement, the provisions of this Agreement shall inure to the benefit of, and be binding upon,

the Corporation and its successors and assigns and Optionee, Optionee's assigns, the legal representatives, heirs and legatees of Optionee's estate and any beneficiaries of this option designated by Optionee.

13. Notices. Any notice required to be given or delivered to the Secretary of the Corporation under the terms of this Agreement shall be in writing and addressed to the Corporation at its principal corporate office at 436 Seventh Avenue, Pittsburgh, PA 15219. Any notice required to be given or delivered to Optionee shall be in writing and addressed to Optionee at the address indicated below Optionee's signature line on the Grant Notice. All notices shall be deemed effective upon personal delivery or upon deposit in the U.S. mail, postage prepaid and properly addressed to the party to be notified.

14. Construction. This Agreement and the option evidenced hereby are made and granted pursuant to the Plan and are in all respects limited by and subject to the terms of the Plan. All decisions of the Plan Administrator with respect to any question or issue arising under the Plan or this Agreement shall be conclusive and binding on all persons having an interest in this option.

15. Governing Law. The interpretation, performance and enforcement of this Agreement shall be governed by the laws of the Commonwealth of Pennsylvania without resort to Pennsylvania's conflict-of-laws rules.

16. Excess Shares. If the Option Shares covered by this Agreement exceed, as of the Grant Date, the number of shares of Common Stock which may without stockholder approval be issued under the Plan, then this option shall be void with respect to those excess shares, unless stockholder approval of an amendment sufficiently increasing the number of shares of Common Stock issuable under the Plan is obtained in accordance with the provisions of the Plan. In no event shall the Option be exercisable with respect to any of the excess Option Shares unless and until such stockholder approval is obtained.

17. Additional Terms Applicable to an Incentive Option. In the event this option is designated an Incentive Option in the Grant Notice, the following terms and conditions shall also apply to the grant:

(a) This option shall cease to qualify for favorable tax treatment as an Incentive Option if (and to the extent) this option is exercised for one or more Option Shares: (A) more than three (3) months after the date Optionee ceases to be an Employee for any reason other than death or Permanent Disability or (B) more than twelve (12) months after the date Optionee ceases to be an Employee by reason of Permanent Disability.

(b) No installment under this option shall qualify for favorable tax treatment as an Incentive Option if (and to the extent) the aggregate Fair Market Value (determined at the Grant Date) of the Common Stock for which such installment first becomes exercisable hereunder would, when added to the aggregate value (determined as of the respective date or dates of grant) of the Common Stock or other securities for which this option or any other Incentive Options granted to Optionee prior to the Grant Date (whether under the Plan or any other option plan of the Corporation or any Parent or Subsidiary) first become exercisable during the same calendar year, exceed One Hundred Thousand Dollars (\$100,000) in the aggregate. Should such One Hundred Thousand Dollar (\$100,000) limitation be exceeded in any calendar year, this option

shall nevertheless become exercisable for the excess shares in such calendar year as a Non-Statutory Option.

(c) Should the exercisability of this option be accelerated upon a Change in Control, then this option shall qualify for favorable tax treatment as an Incentive Option only to the extent the aggregate Fair Market Value (determined at the Grant Date) of the Common Stock for which this option first becomes exercisable in the calendar year in which the Change in Control transaction occurs does not, when added to the aggregate value (determined as of the respective date or dates of grant) of the Common Stock or other securities for which this option or one or more other Incentive Options granted to Optionee prior to the Grant Date (whether under the Plan or any other option plan of the Corporation or any Parent or Subsidiary) first become exercisable during the same calendar year, exceed One Hundred Thousand Dollars (\$100,000) in the aggregate. Should the applicable One Hundred Thousand Dollar (\$100,000) limitation be exceeded in the calendar year of such Change in Control, the option may nevertheless be exercised for the excess shares in such calendar year as a Non-Statutory Option.

(d) Should Optionee hold, in addition to this option, one or more other options to purchase Common Stock which become exercisable for the first time in the same calendar year as this option, then for purposes of the foregoing limitations on the exercisability of such options as Incentive Options, this option and each of those other options shall be deemed to become first exercisable in that calendar year, on the basis of the chronological order in which such options were granted, except to the extent otherwise provided under applicable law or regulation.

18. Survivability. The terms of this Agreement survive the termination of Optionee's employment with the Corporation for any reason.

19. Severability. In the event that any provision of this Agreement is determined to be partially or wholly invalid, illegal or unenforceable in any jurisdiction, then such provision shall, as to such jurisdiction, be modified or restricted to the extent necessary to make such provision valid, binding and enforceable, or if such provision cannot be modified or restricted, then such provision shall, as to such jurisdiction, be deemed to be excised from this Agreement; provided, however, that the binding effect and enforceability of the remaining provisions of this Agreement, to the extent the economic benefits conferred upon the parties by virtue of this Agreement remain substantially unimpaired, shall not be affected or impaired in any manner, and any such invalidity, illegality or unenforceability with respect to such provisions shall not invalidate or render unenforceable such provision in any other jurisdiction.

**KOPPERS HOLDINGS INC.**

A

By: \_\_\_\_\_

Title: President and CEO

**Optionee** \_\_\_\_\_

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

## APPENDIX

The following definitions shall be in effect under the Agreement:

A. Affiliate means any entity that, directly or through one or more intermediaries, is controlled by the Corporation, and any entity in which the Corporation has a significant equity interest as determined by the Plan Administrator.

B. Agreement shall mean this Stock Option Agreement.

C. Board shall mean the Corporation's Board of Directors.

D. Change in Control of the Corporation shall have occurred in the event that:

(i) a person, partnership, joint venture, corporation or other entity, or two or more of any of the foregoing acting as a "person" within the meaning of Sections 13(d)(3) of the 1934 Act, other than the Corporation, a majority-owned subsidiary of the Corporation or an employee benefit plan of the Corporation or such subsidiary (or such plan's related trust), become(s) the "beneficial owner" (as defined in Rule 13d-3 under the Act) of fifty percent (50%) or more of the then outstanding voting stock of the Corporation;

(ii) during any period of two consecutive years, individuals who at the beginning of such period constitute the Board (together with any new Board member whose election by the Corporation's Board or whose nomination for election by the Corporation's stockholders, was approved by a vote of at least two-thirds of the Board members then still in office who either were Board members at the beginning of such period or whose election or nomination for election was previously so approved) cease for any reason to constitute a majority of the Board members then in office;

(iii) all or substantially all of the business of the Corporation is disposed of pursuant to a merger, consolidation or other transaction in which the Corporation is not the surviving corporation or the Corporation combines with another company and is the surviving corporation (unless the Corporation's stockholders immediately following such merger, consolidation, combination, or other transaction beneficially own, directly or indirectly, more than fifty percent (50%) of the aggregate voting stock or other ownership interests of (x) the entity or entities, if any, that succeed to the business of the Corporation or (y) the combined company);

(iv) the closing of the sale of all or substantially all of the assets of the Corporation or a liquidation or dissolution of the Corporation; or

(v) the acquisition, directly or indirectly, by any person or related group of persons (other than the Corporation or a person that directly or indirectly controls, is controlled by, or is under common control with, the Corporation) of beneficial ownership (within the meaning of Rule 13d-3 of the Act) of securities possessing more than twenty percent (20%) of the total combined voting power of the Corporation's outstanding securities pursuant to a tender or exchange offer made directly to the Corporation's stockholders which the Board does not recommend such stockholders to accept.

E. Code shall mean the Internal Revenue Code of 1986, as amended.



F. Common Stock shall mean shares of the Corporation's common stock.

G. Competing Business shall mean: any person, corporation, partnership, joint venture, association or other entity engaged in the development or offering or attempting to offer any service, product, chemical formulation or other material which: (i) is a direct or indirect product of the extraction or distillation of coal tar; (ii) is utilized in the distillation, impregnation or treatment of materials with coal tar, petroleum pitch or their respective by-products or distillates; (iii) constitutes or is utilized in conjunction with railroad track joints, ties, mounting hardware, bridge timbers, bridge crossings or bridging assemblies; (iv) constitutes or is utilized in conjunction with utility poles (including components thereof) or marine pilings; (v) is utilized for the preservation or recovery of wood materials or (vi) constitutes any product or service which was in the process of being developed by the Corporation within the last year prior to termination of Optionee's employment with the Corporation.

H. Confidential Information shall mean any proprietary or confidential information of the Corporation, including but not limited to any trade secrets, confidential or secret designs, technologies, content, processes, formulae, plans, manuals, devices, machines, know-how, methods, compositions, ideas, improvements, financial and marketing information, costs, pricing, sales, sales volume, methods and proposals, customer and prospective customer lists, identity of key personnel in the employ of customers and prospective customers, amount or kind of customer's purchases from the Corporation, system documentation, hardware, engineering and configuration information, computer programs, source and object codes (whether or not patented, patentable, copyrighted or copyrightable), related software development information, inventions or other confidential or proprietary information belonging to the Corporation or directly or indirectly relating to the Corporation's business and affairs.

I. Corporation shall mean Koppers Holdings Inc., a Pennsylvania corporation, and any successor corporation to all or substantially all of the assets or voting stock of Koppers Holdings Inc. which shall by appropriate action adopt the Plan.

J. Disparaging Statements shall have the meaning set forth in Paragraph 11(a)(vi).

K. Employee shall mean an individual who is in the employ of the Corporation (or any Parent or Subsidiary), subject to the control and direction of the employer entity as to both the work to be performed and the manner and method of performance.

L. Exercise Date shall mean the date on which the option shall have been exercised in accordance with Paragraph 9 of the Agreement.

M. Exercise Price shall mean the exercise price per Option Share as specified in the Grant Notice.

N. Expiration Date shall mean the date on which the option expires as specified in the Grant Notice.

O. Fair Market Value per share of Common Stock on any relevant date shall be determined in accordance with the following provisions:

(i) If the Common Stock is at the time traded on the Nasdaq Global Market, then the Fair Market Value shall be the closing selling price per share of Common Stock

at the close of regular hours trading (i.e., before after-hours trading begins) on the Nasdaq Global Market on the date in question, as such price is reported by the National Association of Securities Dealers for that particular Stock Exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

(ii) If the Common Stock is at the time listed on any other Stock Exchange, then the Fair Market Value shall be the closing selling price per share of Common Stock at the close of regular hours trading (i.e., before after-hours trading begins) on the date in question on the Stock Exchange determined by the Plan Administrator to be the primary market for the Common Stock, as such price is officially quoted in the composite tape of transactions on such exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

P. Family Member shall mean any of the following members of the Optionee's family: any child, stepchild, grandchild, parent, stepparent, grandparent, spouse, former spouse, sibling, niece, nephew, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law or sister-in-law.

Q. Grant Date shall mean the date of grant of the option as specified in the Grant Notice.

R. Grant Notice shall mean the Notice of Grant of Stock Option accompanying the Agreement, pursuant to which Optionee has been informed of the basic terms of the option evidenced hereby.

S. Incentive Option shall mean an option which satisfies the requirements of Code Section 422.

T. Misconduct shall mean the commission of any act of fraud, embezzlement or dishonesty by Optionee, any unauthorized use or disclosure by Optionee of confidential information or trade secrets of the Corporation (or any Parent or Subsidiary), or any other intentional misconduct by Optionee adversely affecting the business or affairs of the Corporation (or any Parent or Subsidiary) in a material manner. The foregoing definition shall not in any way preclude or restrict the right of the Corporation (or any Parent or Subsidiary) to discharge or dismiss Optionee or any other person in the Service of the Corporation (or any Parent or Subsidiary) for any other acts or omissions, but such other acts or omissions shall not be deemed, for purposes of the Plan or this Agreement, to constitute grounds for termination for Misconduct.

U. Non-Statutory Option shall mean an option not intended to satisfy the requirements of Code Section 422.

V. Notice of Exercise shall mean the notice of option exercise in the form prescribed by the Corporation.

W. Option Shares shall mean the number of shares of Common Stock subject to the option as specified in the Grant Notice.

X. Optionee shall mean the person to whom the option is granted as specified in the Grant Notice.

Y. Parent shall mean any corporation (other than the Corporation) in an unbroken chain of corporations ending with the Corporation, provided each corporation in the unbroken chain (other than the Corporation) owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

Z. Permanent Disability shall mean the inability of Optionee to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which is expected to result in death or to be of continuous duration of twelve (12) months or more.

AA. Plan shall mean the Corporation's 2018 Long Term Incentive Plan.

BB. Plan Administrator shall mean the committee(s) designated by the Board to administer the Plan.

CC. Restrictive Covenant Period shall mean the two-year period following an Optionee's termination of employment from the Corporation for any reason.

DD. Retirement shall mean the Optionee's voluntary termination from Service (i) on or after his attainment of age sixty-five (65), or (ii) on or after his attainment of age 55 with at least ten (10) years of service, or involuntary termination from Service with at least thirty (30) years of service other than in connection with a termination for Misconduct. "Years of service" means the Optionee's total number of years of "accumulated service" as such term is defined with respect to salaried employees under the Retirement Plan for Koppers Inc. (regardless of whether the Optionee is eligible to receive a benefit under such plan).

EE. Service shall mean the Optionee's performance of services for the Corporation (or any Parent or Subsidiary, whether now existing or subsequently established) by a person in the capacity of an Employee, a non-employee member of the board of directors or a consultant or independent advisor. However, the Optionee shall be deemed to cease Service immediately upon the occurrence of either of the following events: (i) the Optionee no longer performs services in any of the foregoing capacities for the Corporation or any Parent or Subsidiary or (ii) the entity for which the Optionee is performing such services ceases to remain a Parent or Subsidiary of the Corporation, even though the Optionee may subsequently continue to perform services for that entity. Service shall not be deemed to cease during a period of military leave, sick leave or other personal leave approved by the Corporation; provided, however, that should such leave of absence exceed three (3) months, then for purposes of determining the period within which the option may be exercised as an Incentive Stock Option under the federal tax laws (if the option is designated as such in the Grant Notice), the Optionee's Service shall be deemed to cease on the first day immediately following the expiration of such three (3)-month period, unless the Optionee is provided, either by statute or by written contract, with the right to return to Service following such leave. Except to the extent otherwise required by law or expressly authorized by the Plan Administrator or by the Corporation's written policy on leaves of absence, no Service credit shall be given for vesting purposes for any period the Optionee is on a leave of absence.

FF. Stock Exchange shall mean the Nasdaq Global Market, the New York Stock Exchange or such other stock exchange on which the Common Stock is listed.

GG. Subsidiary shall mean any corporation (other than the Corporation) in an unbroken chain of corporations beginning with the Corporation, provided each corporation (other

than the last corporation) in the unbroken chain owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

HH. Vesting Schedule shall mean the schedule set forth in the Grant Notice pursuant to which the option is to become exercisable for the Option Shares in one or more installments over the Optionee's period of Service.

Revised 1/21/2020

A-5

KOPPERS HOLDINGS INC.

RESTRICTED STOCK UNIT ISSUANCE AGREEMENT – TIME VESTING

RECITALS

A. The Board has adopted the Plan for the purpose of retaining the services of selected Employees, non-employee members of the Board (or the board of directors of any Parent or Subsidiary) and consultants and other independent advisors who provide services to the Corporation (or any Parent or Subsidiary).

B. Participant is to render valuable services to the Corporation (or a Parent or Subsidiary), and this Agreement is executed pursuant to, and is intended to carry out the purposes of, the Plan in connection with the Corporation's issuance of shares of Common Stock to Participant under the Plan.

C. The award made by the Corporation pursuant to this Agreement is in consideration for the Participant's acceptance of, and agreement to, the terms, conditions and restrictions of the restrictive covenants set forth in Paragraph 9 of this Agreement.

D. Unless otherwise defined in this Agreement, all capitalized terms in this Agreement shall have the meaning assigned to them in the attached Appendix A.

NOW, THEREFORE, it is hereby agreed as follows:

1. Grant of Restricted Stock Units. The Corporation hereby awards to Participant, as of the Award Date, Restricted Stock Units under the Plan. Each Restricted Stock Unit represents the right to receive one share of Common Stock on the specified issuance date following the vesting of that unit. The number of shares of Common Stock subject to the awarded Restricted Stock Units, the applicable vesting schedule for those shares, the date on which those vested shares shall become issuable to Participant and the remaining terms and conditions governing the award (the "Award") shall be as set forth in this Agreement.

AWARD SUMMARY

Award Date: [\_\_\_\_\_, 2020]

Number of Shares Subject to Award: \_\_\_\_\_ shares of Common Stock (the "Shares")

Vesting Schedule: 100% of the Shares shall vest on December 31, 2020, provided the Participant continues in Service until December 31, 2020.

However, one or more Shares may be subject to accelerated vesting in accordance with the provisions of Paragraph 5 of this Agreement.

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Issuance Schedule: The Shares in which Participant vests in accordance with the foregoing Vesting Schedule shall become issuable immediately upon vesting (the "Issue Date"). The actual issuance of the Shares shall be subject to the Corporation's collection of all applicable Withholding Taxes and shall be

effected on the applicable Issue Date or as soon as administratively practicable thereafter, but in no event later than the close of the calendar year in which such Issue Date occurs or (if later) the fifteenth (15th) day of the third (3rd) calendar month following such Issue Date. The procedures pursuant to which the applicable Withholding Taxes are to be collected are set forth in Paragraph 7 of this Agreement.

Restrictive Covenants: The Award is being made by the Corporation in consideration for the Participant's acceptance of, and agreement to be bound by, the terms, conditions and restrictions of the restrictive covenants set forth in Paragraph 9 of this Agreement, which acceptance and agreement shall be evidenced by the Participant's execution of this Agreement.

2. Limited Transferability. Prior to the actual issuance of the Shares which vest hereunder, Participant may not transfer any interest in the Award or the underlying Shares; provided, however, any Shares which vest hereunder but which otherwise remain unissued at the time of Participant's death may be transferred pursuant to the provisions of Participant's will or the laws of inheritance or to Participant's designated beneficiary or beneficiaries of this Award. Participant may make a beneficiary designation for this Award at any time by filing the appropriate form with the Plan Administrator or its designee.

3. Cessation of Service. Except as otherwise provided in Paragraph 5 below, should Participant cease Service for any reason prior to vesting in one or more Shares subject to this Award, then the Award will be immediately cancelled with respect to those unvested Shares. Participant shall thereupon cease to have any right or entitlement to receive any Shares under those cancelled units.

4. Stockholder Rights and Dividend Equivalents

(a) The holder of this Award shall not have any stockholder rights, including voting or dividend rights, with respect to the Shares subject to the Award until Participant becomes the record holder of those Shares following their actual issuance upon the Corporation's collection of the applicable Withholding Taxes.

(b) Notwithstanding the foregoing, should any stock dividend, whether regular or extraordinary, be declared and paid on the outstanding Common Stock while one or more Shares remain subject to this Award (i.e., those Shares are not otherwise issued and outstanding for purposes of entitlement to the dividend or distribution), then Participant shall automatically be credited with an additional number of Restricted Stock Units equal to the number of shares of Common Stock which would have been paid on the Shares (plus the number of additional shares previously credited to Participant pursuant to the dividend equivalent right provisions of this Paragraph 4) at the time subject to this Award had those Shares been actually issued and outstanding and entitled to that dividend. The additional Restricted Stock Units so credited shall vest at the same time as the Shares to which they relate and shall be distributed to Participant concurrently with the issuance of those Shares on the applicable Issue Date. However, each such distribution shall be subject to the Corporation's collection of the Withholding Taxes applicable to that distribution.

(c) Notwithstanding the foregoing, should any cash dividend, whether regular or extraordinary, be declared and paid on the outstanding Common Stock while one or more Shares remain subject to this Award (i.e., those Shares are not otherwise issued and

outstanding for purposes of entitlement to the dividend or distribution), then a special book account shall be established for Participant and credited with a dollar amount equal to the amount of that dividend paid per share multiplied by the number of Restricted Stock Units at the time subject to this Award (plus the number of additional shares previously credited to Participant pursuant to the dividend equivalent right provisions of this Paragraph 4) as of the record date for the dividend. As of the first business day in January each year, the cash dividend amounts credited to the special book account during the immediately preceding calendar year shall be converted into a book entry of an additional number of Restricted Stock Units determined by dividing (i) those cash dividend equivalent amounts by (ii) the average of the Fair Market Value per share of Common Stock on each of the dates in the immediately preceding calendar year on which those dividends on the outstanding Common Stock were paid. The additional Restricted Stock Units so credited shall vest at the same time as the Shares to which they relate and shall be distributed to Participant concurrently with the issuance of those Shares on the applicable Issue Date. However, each such distribution shall be subject to the Corporation's collection of the Withholding Taxes applicable to that distribution.

5. Accelerated Vesting/Change in Control.

(a) Should Participant's Service terminate by reason of his or her Retirement, death or Permanent Disability prior to the final vesting date set forth in Paragraph 1, then Participant shall immediately vest in the additional number of Shares (if any) in which Participant would have been vested at the time of such termination had 100% of the Shares that were scheduled to be vested on December 31, 2020 instead vested in a series of ten (10) successive equal monthly installments over the duration of the ten (10) month period preceding December 31, 2020.

(b) Any Restricted Stock Units subject to this Award at the time of a Change in Control may be assumed by the successor entity or otherwise continued in full force and effect or may be replaced with a cash retention program of the successor entity which preserves the Fair Market Value of the unvested shares of Common Stock subject to the Award at the time of the Change in Control and provides for subsequent payout of that value in accordance with the same (or more favorable) vesting schedule in effect for the Award at the time of such Change in Control. In the event of such assumption or continuation of the Award or such replacement of the Award with a cash retention program, no accelerated vesting of the Restricted Stock Units shall occur at the time of the Change in Control.

(c) In the event the Award is assumed or otherwise continued in effect, the Restricted Stock Units subject to the Award shall be adjusted immediately after the consummation of the Change in Control so as to apply to the number and class of securities into which the Shares subject to those units immediately prior to the Change in Control would have been converted in consummation of that Change in Control had those Shares actually been issued and outstanding at that time. To the extent the actual holders of the outstanding Common Stock receive cash consideration for their Common Stock in consummation of the Change in Control, the successor corporation (or parent entity) may, in connection with the assumption or continuation of the Restricted Stock Units subject to the Award at that time, substitute one or more shares of its own common stock with a fair market value equivalent to the cash consideration paid per share of Common Stock in the Change in Control transaction, provided such common stock is readily tradable on an established U.S. securities exchange or market.

(d) If the Restricted Stock Units subject to this Award at the time of the Change in Control are not assumed or otherwise continued in effect or replaced with a cash

retention program in accordance with Paragraph 5(a), then those units will vest immediately prior to the closing of the Change in Control. The Shares subject to those vested units, together with any other Shares in which Participant is at that time vested, will be issued on the Issue Date triggered by the Change in Control (or otherwise converted into the right to receive the same consideration per share of Common Stock payable to the other stockholders of the Corporation in consummation of that Change in Control and distributed at the same time as such stockholder payments), subject to the Corporation's collection of the applicable Withholding Taxes pursuant to the provisions of Paragraph 7. For purposes of this Paragraph 5(d), the Issue Date shall be the effective date of the Change in Control so long as it qualifies as a "change in the ownership or effective control" of the Corporation within the meaning of Section 409A(a)(2)(A)(v) of the Code and regulations thereunder. If it does not so qualify, the Issue Date shall be the date that is three (3) years from the Award Date.

(e) Upon an involuntary termination of Participant's Service for reasons other than Misconduct within twenty-four (24) months following a Change in Control transaction which does not otherwise result in the accelerated vesting of the Restricted Stock Units pursuant to the provisions of subparagraph (d) of this Paragraph 5, all unvested Restricted Stock Units hereunder shall immediately vest at that time. Any unvested cash account maintained on Participant's behalf pursuant to the cash retention program established in accordance with subparagraph (b) of this Paragraph 5 shall also vest at the time of such involuntary termination. The Issue Date for such vested Shares or cash shall be six months after the date of termination (or, if earlier, the date that is three (3) years from the Award Date), so long as the Change in Control qualifies as a "change in the ownership or effective control" of the Corporation within the meaning of Section 409A(a)(2)(A)(v) of the Code and regulations thereunder. If it does not so qualify, the Issue Date shall be the date that is three (3) years from the Award Date.

(f) This Agreement shall not in any way affect the right of the Corporation to adjust, reclassify, reorganize or otherwise change its capital or business structure or to merge, consolidate, dissolve, liquidate or sell or transfer all or any part of its business or assets.

6. Adjustment in Shares. In the event of any of the following transactions affecting the outstanding shares of Common Stock as a class without the Corporation's receipt of consideration: any stock split, stock dividend, spin-off transaction, extraordinary distribution (whether in cash, securities or other property), recapitalization, combination of shares, exchange of shares or other similar transaction affecting the outstanding Common Stock as a class without the Corporation's receipt of consideration or in the event of a substantial reduction to the value of the outstanding shares of Common Stock by reason of a spin-off transaction or extraordinary distribution, then equitable adjustments shall be made to the total number and/or class of securities issuable pursuant to this Award in such manner as the Plan Administrator deems appropriate in order to reflect such change and thereby prevent the dilution or enlargement of benefits hereunder. In determining such adjustments, the Plan Administrator shall take into account any amounts credited to Participant pursuant to the dividend equivalent right provisions of Paragraph 4 in connection with such transaction, and the determination of the Plan Administrator shall be final, binding and conclusive.

7. Collection of Withholding Taxes.

(a) Upon the applicable Issue Date, the Corporation shall issue to or on behalf of Participant a certificate (which may be in electronic form) for the applicable number



of underlying shares of Common Stock, subject, however, to the Corporation's collection of the applicable Withholding Taxes.

(b) Until such time as the Corporation provides Participant with written or electronic notice to the contrary, the Corporation shall collect Withholding Taxes required to be withheld with respect to the vesting or issuance of the vested Shares hereunder (including shares attributable to the dividend equivalent rights provided under Paragraph 4) through an automatic share withholding procedure pursuant to which the Corporation will withhold, at the time of such vesting or issuance, a portion of the Shares with a Fair Market Value (measured as of the vesting or issuance date, as applicable) equal to the amount of those taxes (including taxes resulting from such withholding) (the "Share Withholding Method"); provided, however, that the amount of any Shares so withheld shall not exceed the amount necessary to satisfy the Corporation's required tax withholding obligations using the minimum statutory withholding rates for federal and state tax purposes that are applicable to supplemental taxable income, or as otherwise approved by the Plan Administrator. Participant shall be notified in writing or electronically in the event such Share Withholding Method is no longer available.

(c) Should any Shares (including shares attributable to the dividend equivalent rights provided under Paragraph 4) vest or be issued at a time when the Share Withholding Method is not available, then the Withholding Taxes required to be withheld with respect to those Shares shall be collected from Participant through either of the following alternatives:

- Participant's delivery of his or her separate check payable to the Corporation in the amount of such taxes, or
- the use of the proceeds from a next-day sale of the Shares issued to Participant, provided and only if (i) such a sale is permissible under the Corporation's trading policies governing the sale of Common Stock, (ii) Participant makes an irrevocable commitment, on or before the Issue Date for those Shares, to effect such sale of the Shares and (iii) the transaction is not otherwise deemed to constitute a prohibited loan under Section 402 of the Sarbanes-Oxley Act of 2002.

(d) Except as otherwise provided in Paragraph 4 and Paragraph 5(b) the settlement of all Restricted Stock Units which vest under the Award shall be made solely in shares of Common Stock. In no event, however, shall any fractional shares be issued. Accordingly, the total number of shares of Common Stock to be issued pursuant to the Award shall, to the extent necessary, be rounded down to the next whole share in order to avoid the issuance of a fractional share.

8. Compliance with Laws and Regulations. The issuance of shares of Common Stock pursuant to the Award shall be subject to compliance by the Corporation and Participant with all applicable requirements of law relating thereto and with all applicable regulations of any stock exchange on which the Common Stock may be listed for trading at the time of such issuance.

9. Restrictive Covenants; Additional Conditions.

(a) As a condition of receiving this Award, the Participant hereby acknowledges and agrees that during the period in which the Participant is employed by, or providing service to, the Corporation, and for the Restrictive Covenant Period following the date

on which the Participant ceases to be employed by, or provide service to, the Corporation for any reason, the Participant shall comply with the restrictive covenants set forth herein. The restrictive covenants set forth herein shall not supersede and replace any other restrictions and obligations the Participant may be subject to with the Corporation and if there is a conflict between comparable restrictions the more restrictive provisions shall control, as reasonably determined by the Corporation.

(i) Participant acknowledges that during Participant's employment with the Corporation, Participant will have access to, possess or help the Corporation develop valuable proprietary commercial and/or technical information, trade secrets and other confidential information belonging to the Corporation and will be instrumental to the development and/or maintenance of goodwill with the Corporation's customers. Participant acknowledges that such proprietary information, trade secrets, confidential information and goodwill are valuable assets of the Corporation and the Corporation has a legitimate interest in protecting itself from disclosure or misappropriation of such information and from interference with its goodwill relationships with its customers.

(ii) Other than in the ordinary course or for the benefit of the business of the Corporation, during the term of Participant's employment with the Corporation and thereafter, Participant shall not, directly or indirectly, divulge, furnish or make accessible to any other person, business, firm or corporation, or use in any way, any Confidential Information of the Corporation which Participant has acquired or become acquainted with or shall acquire or become acquainted with as a result of Participant's employment with the Corporation, whether developed by Participant, or by others. The Confidential Information is the property of the Corporation and Participant acknowledges that the use, misappropriation or disclosure of the Confidential Information would constitute a breach of trust, fiduciary duty and would cause irreparable injury to the Corporation. Furthermore, Participant acknowledges that during Participant's employment with the Corporation, Participant may be exposed to the confidential information of customers and other third parties and Participant shall maintain the confidentiality of this information and shall only use it as necessary to carry out the work for the Corporation consistent with restrictions placed upon such Confidential Information. Nothing contained herein shall restrict Participant's use of general knowledge acquired by Participant as part of Participant's normal growth in Participant's profession.

(iii) Participant shall not, during the term of Participant's employment with the Corporation and for the Restrictive Covenant Period, render services as an officer, owner (other than having less than two (2%) percent ownership of a publicly traded corporation's stock), director, consultant, employee, or other service provider, to, or on behalf of, a Competing Business, provided, however, this Section 9(a)(iii) will not apply if Participant's duties and responsibilities for any Competing Business do not involve Participant in the provision of any services that are similar to or competitive with the services Participant provided to the Corporation. Participant acknowledges that the Corporation is engaged in business throughout the world and that the marketplace for the Corporation's products and services is worldwide, and thus the geographic area, length and scope of this noncompetition provision are reasonable and necessary to protect the legitimate business interests of the Corporation. In the event a court of competent jurisdiction determines that one or more of the provisions are so broad as to be unenforceable, then such provision shall be deemed to be reduced in scope or length, as the case may be, to the extent required to make such Paragraphs enforceable.

(iv) Participant shall disclose promptly and assign to the Corporation or the Affiliate all right, title and interest in any invention or idea, patentable or not,

made or conceived by Participant during employment by the Corporation or the Affiliate, relating in any manner to the actual or anticipated business, research or development work of the Corporation or the Affiliate and shall do anything reasonably necessary to enable the Corporation or the Affiliate to secure a patent where appropriate in the United States and in foreign countries.

(v) Participant shall not, directly or indirectly, solicit, for the purpose of offering or attempting to offer any service, product or other application which is the same as or similar to the services, products or other applications offered or in the process of being developed by the Corporation within the last year prior to termination of Participant's employment with the Corporation, any of the Corporation's customers with whom Participant had contact, or about whom Participant obtained, or had access to, confidential information during Participant's employment, for the Restrictive Covenant Period. Participant further agrees, for the Restrictive Covenant Period, that Participant shall not solicit or attempt to solicit any employee of, or consultant to, the Corporation, which employee or consultant had been rendering services to the Corporation at any time within the six-month period immediately preceding the termination of Participant employment, to leave the employ of, or no longer render service to or for the benefit of, the Corporation.

(vi) Participant shall not make any Disparaging Statements about the Corporation to any of the Corporation's past, present, or future customers, employees, clients, contractors, vendors, or to the media or to any other person either orally or by any other medium of communication, including internet communication. As used herein, the term "Disparaging Statement" means any communication, oral or written, which would cause or tend to cause humiliation or embarrassment or to cause a recipient of such communication to question the business condition, integrity, product, service, quality, confidence, or good character of the Corporation.

(b) Participant acknowledges that a breach of any of the covenants contained in this Agreement may cause irreparable damage to the Corporation, the exact amount of which would be difficult to ascertain, and that the remedies at law for any such breach or threatened breach would be inadequate. Accordingly, Participant agrees that if Participant breaches or threatens to breach any of the covenants contained in this Agreement, in addition to any other remedy which may be available to the Corporation at law or in equity, the Corporation shall be entitled to (i) cease or withhold any payment of Shares to Participant pursuant to this Award, including the return of any previously delivered Shares or proceeds recognized upon any sale or other disposition of those Shares; and/or (ii) institute and prosecute proceedings in any court of competent jurisdiction for specific performance and injunctive relief to prevent the breach or any threatened breach thereof without bond or other security or a showing that monetary damages will not provide an adequate remedy. Participant agrees to disclose in advance the existence and terms of the restrictions and covenants contained in this Agreement to any employer or service recipient by whom Participant might be employed or retained during the period in which the covenants or restrictions apply. Participant agrees that, in the event of a final determination of Participant's breach of any of the covenants contained in this Agreement, the restrictions in the relevant paragraph shall be extended for a period equal to the period that Participant was in breach. Participant represents and acknowledges that Participant has been advised by the Corporation to consult Participant's own legal counsel with respect to this Agreement and Participant has had full opportunity, prior to execution of this Agreement, to review thoroughly this Agreement with Participant's legal counsel.

(c) Upon delivery of the Shares pursuant to this Award, the Plan Administrator may require Participant to certify on a form acceptable to the Plan Administrator,

that Participant is in compliance with the terms, conditions and restrictions of the Plan and this Agreement.

(d) This Award, and the right to receive and retain any Shares or cash payments covered by this Award, shall be subject to rescission, cancellation or recoupment, in whole or part, if and to the extent so provided under any "clawback" or similar policy of the Corporation in effect on the Award Date or that may be established thereafter, including any modification or amendment thereto, or as required by the Sarbanes-Oxley Act of 2002, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or other applicable law. By accepting this Award under the Plan, Participant agrees and acknowledges that Participant is obligated to cooperate with, and provide any and all assistance necessary to, the Corporation to recover or recoup any Award or amounts paid under the Plan subject to claw-back pursuant to such law or policy. Such cooperation and assistance shall include, but is not limited to, executing, completing and submitting any documentation necessary to recover or recoup any Award or amounts paid pursuant to this Award.

10. Notices. Any notice required to be given or delivered to the Corporation under the terms of this Agreement shall be in writing and addressed to the Secretary of the Corporation at its principal corporate office at 436 Seventh Avenue, Pittsburgh, PA 15219. Except to the extent electronic notice is expressly authorized hereunder, any notice required to be given or delivered to Participant shall be in writing and addressed to Participant at the address indicated below Participant's signature line on this Agreement. All notices shall be deemed effective upon personal delivery (or electronic delivery to the extent authorized hereunder) or upon deposit in the U.S. mail, postage prepaid and properly addressed to the party to be notified.

11. Successors and Assigns. Except to the extent otherwise provided in this Agreement, the provisions of this Agreement shall inure to the benefit of, and be binding upon, the Corporation and its successors and assigns and Participant, Participant's assigns, the legal representatives, heirs and legatees of Participant's estate and any beneficiaries of the Award designated by Participant.

12. Construction. This Agreement and the Award evidenced hereby are made and granted pursuant to the Plan and are in all respects limited by and subject to the terms of the Plan. All decisions of the Plan Administrator with respect to any question or issue arising under the Plan or this Agreement shall be conclusive and binding on all persons having an interest in the Award.

13. Governing Law. The interpretation, performance and enforcement of this Agreement shall be governed by the laws of the Commonwealth of Pennsylvania without resort to Pennsylvania's conflict-of-laws rules.

14. Employment at Will. Nothing in this Agreement or in the Plan shall confer upon Participant any right to continue in Service for any period of specific duration or interfere with or otherwise restrict in any way the rights of the Corporation (or any Parent or Subsidiary employing or retaining Participant) or of Participant, which rights are hereby expressly reserved by each, to terminate Participant's Service at any time for any reason, with or without cause, unless such rights are otherwise limited pursuant to a separate agreement between the Corporation (or any Parent or Subsidiary) and Participant.

15. Section 409A. This Award is intended to be excepted from coverage under, or compliant with the provisions of, Section 409A of the Code and the regulations promulgated

thereunder ("Section 409A") and shall be construed accordingly. Notwithstanding the foregoing or any provision of the Plan to the contrary, if the Award is subject to the provisions of Section 409A (and not excepted therefrom), the provisions of the Plan and this Agreement shall be administered, interpreted and construed in a manner necessary to comply with Section 409A (or disregarded to the extent such provision cannot be so administered, interpreted, or construed). If any payments or benefits hereunder may be deemed to constitute nonconforming deferred compensation subject to taxation under the provisions of Section 409A, Participant agrees that the Corporation may, without the consent of Participant, modify the Agreement and the Award to the extent and in the manner the Corporation deems necessary or advisable or take such other action or actions, including an amendment or action with retroactive effect, that the Corporation deems appropriate in order either to preclude any such payments or benefits from being deemed "deferred compensation" within the meaning of Section 409A or to provide such payments or benefits in a manner that complies with the provisions of Section 409A such that they will not be taxable thereunder. Notwithstanding, the Corporation makes no representations and/or warranties with respect to compliance with Section 409A, and Participant recognizes and acknowledges that Section 409A could potentially impose upon Participant certain taxes or interest charges for which Participant is and shall remain solely responsible.

16. Survivability. The terms of this Agreement survive the termination of Participant's employment with the Corporation for any reason.

17. Severability. In the event that any provision of this Agreement is determined to be partially or wholly invalid, illegal or unenforceable in any jurisdiction, then such provision shall, as to such jurisdiction, be modified or restricted to the extent necessary to make such provision valid, binding and enforceable, or if such provision cannot be modified or restricted, then such provision shall, as to such jurisdiction, be deemed to be excised from this Agreement; provided, however, that the binding effect and enforceability of the remaining provisions of this Agreement, to the extent the economic benefits conferred upon the parties by virtue of this Agreement remain substantially unimpaired, shall not be affected or impaired in any manner, and any such invalidity, illegality or unenforceability with respect to such provisions shall not invalidate or render unenforceable such provision in any other jurisdiction.

IN WITNESS WHEREOF, the parties have executed this Agreement on the Award Date indicated above.

**KOPPERS HOLDINGS INC.**

A

By: \_\_\_\_\_

Title: President and CEO

**Participant** Steven R. Lacy

\_\_\_\_\_

Signature: \_\_\_\_\_

Address: \_\_\_\_\_

B \_\_\_\_\_

C \_\_\_\_\_

APPENDIX A

DEFINITIONS

The following definitions shall be in effect under the Agreement:

- A. Affiliate means any entity that, directly or through one or more intermediaries, is controlled by the Corporation, and any entity in which the Corporation has a significant equity interest as determined by the Plan Administrator.
- B. Agreement shall mean this Restricted Stock Unit Issuance Agreement.
- C. Award shall mean the award of restricted stock units made to Participant pursuant to the terms of this Agreement.
- D. Award Date shall mean the date the restricted stock units are awarded to Participant pursuant to the Agreement and shall be the date indicated in Paragraph 1 of the Agreement.
- E. Board shall mean the Corporation's Board of Directors.
- F. Change in Control of the Corporation shall have occurred in the event that:
- (i) a person, partnership, joint venture, corporation or other entity, or two or more of any of the foregoing acting as a "person" within the meaning of Sections 13(d)(3) of the 1934 Act, other than the Corporation, a majority-owned subsidiary of the Corporation or an employee benefit plan of the Corporation or such subsidiary (or such plan's related trust), become(s) the "beneficial owner" (as defined in Rule 13d-3 under the Act) of fifty percent (50%) or more of the then outstanding voting stock of the Corporation;
  - (ii) during any period of two consecutive years, individuals who at the beginning of such period constitute the Board (together with any new Board member whose election by the Corporation's Board or whose nomination for election by the Corporation's stockholders, was approved by a vote of at least two-thirds of the Board members then still in office who either were Board members at the beginning of such period or whose election or nomination for election was previously so approved) cease for any reason to constitute a majority of the Board members then in office;
  - (iii) all or substantially all of the business of the Corporation is disposed of pursuant to a merger, consolidation or other transaction in which the Corporation is not the surviving corporation or the Corporation combines with another company and is the surviving corporation (unless the Corporation's stockholders immediately following such merger, consolidation, combination, or other transaction beneficially own, directly or indirectly, more than fifty percent (50%) of the aggregate voting stock or other ownership interests of (x) the entity or entities, if any, that succeed to the business of the Corporation or (y) the combined company);
  - (iv) the closing of the sale of all or substantially all of the assets of the Corporation or a liquidation or dissolution of the Corporation; or

(v) the acquisition, directly or indirectly, by any person or related group of persons (other than the Corporation or a person that directly or indirectly controls, is controlled by, or is under common control with, the Corporation of beneficial ownership (within the meaning of Rule 13d-3 of the Act) of securities possessing more than twenty percent (20%) of the total combined voting power of the Corporation's outstanding securities pursuant to a tender or exchange offer made directly to the Corporation's stockholders which the Board does not recommend such stockholders to accept.

G. Code shall mean the Internal Revenue Code of 1986, as amended.

H. Common Stock shall mean shares of the Corporation's common stock.

I. Competing Business shall mean: any person, corporation, partnership, joint venture, association or other entity engaged in the development or offering or attempting to offer any service, product, chemical formulation or other material which: (i) is a direct or indirect product of the extraction or distillation of coal tar; (ii) is utilized in the distillation, impregnation or treatment of materials with coal tar, petroleum pitch or their respective by-products or distillates; (iii) constitutes or is utilized in conjunction with railroad track joints, ties, mounting hardware, bridge timbers, bridge crossings or bridging assemblies; (iv) constitutes or is utilized in conjunction with utility poles (including components thereof) or marine pilings; (v) is utilized for the preservation or recovery of wood materials or (vi) constitutes any product or service which was in the process of being developed by the Corporation within the last year prior to termination of Participant's employment with the Corporation.

J. Confidential Information shall mean any proprietary or confidential information of the Corporation, including but not limited to any trade secrets, confidential or secret designs, technologies, content, processes, formulae, plans, manuals, devices, machines, know-how, methods, compositions, ideas, improvements, financial and marketing information, costs, pricing, sales, sales volume, methods and proposals, customer and prospective customer lists, identity of key personnel in the employ of customers and prospective customers, amount or kind of customer's purchases from the Corporation, system documentation, hardware, engineering and configuration information, computer programs, source and object codes (whether or not patented, patentable, copyrighted or copyrightable), related software development information, inventions or other confidential or proprietary information belonging to the Corporation or directly or indirectly relating to the Corporation's business and affairs.

K. Corporation shall mean Koppers Holdings Inc., a Pennsylvania corporation, and any successor corporation to all or substantially all of the assets or voting stock of Koppers Holdings Inc. which shall by appropriate action adopt the Plan.

L. Disparaging Statements shall have the meaning set forth in Paragraph 9(a)(vi).

M. Employee shall mean an individual who is in the employ of the Corporation (or any Parent or Subsidiary), subject to the control and direction of the employer entity as to both the work to be performed and the manner and method of performance.

N. Fair Market Value per share of Common Stock on any relevant date shall be determined in accordance with the following provisions:



(i) If the Common Stock is at the time traded on the Nasdaq Global Market, then the Fair Market Value shall be the closing selling price per share of Common Stock at the close of regular hours trading (i.e., before after-hours trading begins) on the Nasdaq Global Market on the date in question, as such price is reported by the National Association of Securities Dealers for that particular Stock Exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

(ii) If the Common Stock is at the time listed on any other Stock Exchange, then the Fair Market Value shall be the closing selling price per share of Common Stock at the close of regular hours trading (i.e., before after-hours trading begins) on the date in question on the Stock Exchange determined by the Plan Administrator to be the primary market for the Common Stock, as such price is officially quoted in the composite tape of transactions on such exchange. If there is no closing selling price for the Common Stock on the date in question, then the Fair Market Value shall be the closing selling price on the last preceding date for which such quotation exists.

O. Misconduct shall mean the commission of any act of fraud, embezzlement or dishonesty by Participant, any unauthorized use or disclosure by Participant of confidential information or trade secrets of the Corporation (or any Parent or Subsidiary), or any other intentional misconduct by Participant adversely affecting the business or affairs of the Corporation (or any Parent or Subsidiary) in a material manner. The foregoing definition shall not in any way preclude or restrict the right of the Corporation (or any Parent or Subsidiary) to discharge or dismiss Participant or any other person in the Service of the Corporation (or any Parent or Subsidiary) for any other acts or omissions, but such other acts or omissions shall not be deemed, for purposes of the Plan or this Agreement, to constitute grounds for termination for Misconduct.

P. 1934 Act shall mean the Securities Exchange Act of 1934, as amended from time to time.

Q. Participant shall mean the person to whom the Award is made pursuant to the Agreement.

R. Parent shall mean any corporation (other than the Corporation) in an unbroken chain of corporations ending with the Corporation, provided each corporation in the unbroken chain (other than the Corporation) owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

S. Permanent Disability shall mean the inability of a Participant to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which is expected to result in death or to be of continuous duration of twelve (12) months or more.

T. Plan shall mean the Corporation's 2018 Long Term Incentive Plan.

U. Plan Administrator shall mean the committee(s) designated by the Board to administer the Plan.

V. Restrictive Covenant Period shall mean the two year period following a Participant's termination of employment from the Corporation for any reason.

W. Retirement shall mean Participant's voluntary termination from Service (i) on or after his attainment of age sixty-five (65), or (ii) on or after his attainment of age 55 with at least ten (10) years of service, or involuntary termination from Service with at least thirty (30) years of service other than in connection with a termination for Misconduct. "Years of service" means Participant's total number of years of "accumulated service" as such term is defined with respect to salaried employees under the Retirement Plan for Koppers Inc. (regardless of whether Participant is eligible to receive a benefit under such plan).

X. Service shall mean Participant's performance of services for the Corporation (or any Parent or Subsidiary) in the capacity of an Employee, a non-employee member of the board of directors or a consultant or independent advisor. For purposes of this Agreement, Participant shall be deemed to cease Service immediately upon the occurrence of either of the following events: (i) Participant no longer performs services in any of the foregoing capacities for the Corporation (or any Parent or Subsidiary) or (ii) the entity for which Participant performs such services ceases to remain a Parent or Subsidiary of the Corporation, even though Participant may subsequently continue to perform services for that entity. Service shall not be deemed to cease during a period of military leave, sick leave or other personal leave approved by the Corporation; provided, however, that except to the extent otherwise required by law or expressly authorized by the Plan Administrator or by the Corporation's written policy on leaves of absence, no Service credit shall be given for vesting purposes for any period Participant is on a leave of absence.

Y. Stock Exchange shall mean the Nasdaq Global Market, the New York Stock Exchange or such other stock exchange on which the Common Stock is listed.

Z. Subsidiary shall mean any corporation (other than the Corporation) in an unbroken chain of corporations beginning with the Corporation, provided each corporation (other than the last corporation) in the unbroken chain owns, at the time of the determination, stock possessing fifty percent (50%) or more of the total combined voting power of all classes of stock in one of the other corporations in such chain.

AA. Withholding Taxes shall mean the federal, state and local income and employment taxes required to be withheld by the Corporation in connection with the vesting and concurrent issuance of the shares of Common Stock under the Award, including any additional shares resulting from the dividend equivalent right provisions of the Award.

**KOPPERS HOLDINGS INC.  
SUBSIDIARIES OF THE COMPANY**

<b><u>Name*</u></b>	<b><u>Jurisdiction of Incorporation/Formation</u></b>
Koppers Inc.	Pennsylvania
Koppers Asia LLC	Delaware
Cox Wood of Alabama, LLC	Alabama
Koppers Delaware, Inc.	Delaware
Koppers World-Wide Ventures Corporation	Delaware
Koppers Ventures Inc.	Delaware
Koppers Railroad Structures Inc.	Delaware
Koppers Recovery Resources LLC	Kansas
Koppers Performance Chemicals Inc.	New York
Carolina Pole Leland, Inc.	North Carolina
Cove City Wood Preserving, Inc.	North Carolina
Leland Land, LLC	North Carolina
Structural Woods Preserving Company	North Carolina
Koppers Assurance, Inc.	South Carolina
Atlantic Pole-Georgia, LLC	South Carolina
Atlantic Pole-Virginia, LLC	South Carolina
Carolina Pole, Inc.	South Carolina
Cox Recovery Services, LLC	South Carolina
Cox Wood Preserving Company	South Carolina
Koppers Utility and Industrial Products Inc.	South Carolina
National Wood Sourcing, LLC	South Carolina
North-South Wood Preserving Company, Inc.	South Carolina
Ruby's Corner, LLC	South Carolina
Sustainable Management Systems, LLC	South Carolina
Sweetwater Wood Holdings, LLC	South Carolina
Continental Carbon Australia Pty Ltd	Australia
Koppers Australia Holding Company Pty Ltd	Australia
Koppers Australia Pty Limited	Australia
Koppers Carbon Materials & Chemicals Pty Ltd	Australia
Koppers Wood Products Pty Ltd	Australia
Koppers Ashcroft Inc.	British Columbia, Canada
Koppers (China) Carbon & Chemical Company Limited	Peoples Republic of China
Koppers (Jiangsu) Carbon Chemical Company Ltd	Peoples Republic of China
Koppers (Tianjin) Trading Co., Ltd.	Peoples Republic of China
Koppers Mauritius	Republic of Mauritius
Koppers Europe ApS	Denmark
Koppers Denmark ApS	Denmark
Koppers European Holdings ApS	Denmark
Koppers Tar Tech International ApS	Denmark

Koppers India Carbon Materials and Chemicals Private Limited	India
Koppers International B.V.	Netherlands
Koppers Global B.V.	Netherlands
Koppers Netherlands B.V.	Netherlands
Tankrederij J.A. van Seumeren B.V.	Netherlands
Koppers Australasian B.V.	Netherlands
Koppers Poland Sp. z o.o	Poland
Koppers UK Holding Limited	United Kingdom
Koppers UK Limited	United Kingdom
Koppers UK Transport Limited	United Kingdom
Koppers UK Investments Ltd.	United Kingdom
Koppers Railroad Structures Canada Inc.	British Columbia, Canada
Wood Protection Management LLC	Nevada
Wood Protection LP	Texas
Koppers-Nevada Limited Liability Company	Nevada
Timber Specialties Limited	Ontario, Canada
Protim Solignum Ltd.	United Kingdom
Protim Ltd.	Ireland
Koppers Chemicals Spain S.L.U.	Spain
Protim Solignum South Africa Pty. Ltd.	South Africa
Koppers Sweden AB	Sweden
Koppers Performance Chemicals Denmark ApS	Denmark
Oy Koppers Finland Ab	Finland
Koppers Deutschland GmbH	Germany
Koppers Norway AS	Norway
Koppers Latvia SIA	Latvia
Koppers NZ LLC	New York
Koppers Performance Chemicals Australia Pty Ltd	Australia
Koppers Performance Chemicals New Zealand	New Zealand
Koppers Thailand Ltd.	Thailand
Comercial KPC Chile Limitada	Chile
Koppers Performance Chemicals Brasil Comercio de Preservantes Ltda.	Brazil
Koppers NZ Holdings	New Zealand
Protim Abrasives Ltd.	Ireland
Retratar Espana S.L.	Spain

**Consent of Independent Registered Public Accounting Firm**

The Board of Directors  
Koppers Holdings Inc.:

We consent to the incorporation by reference in the registration statements (Nos. 333-135449, 333-200144, 333-211957, 333-219655 and 333-224658) on Form S-8 of Koppers Holdings Inc. (the Company) of our reports dated February 27, 2020, with respect to the consolidated balance sheets of Koppers Holdings Inc. as of December 31, 2019 and 2018, the related consolidated statements of operations, comprehensive income (loss), cash flows, and shareholders' equity for each of the years in the three-year period ended December 31, 2019, and the related notes and financial statement schedule listed in the Index at Item 15(a)2, and the effectiveness of internal control over financial reporting as of December 31, 2019, which reports appear in the December 31, 2019 annual report on Form 10-K of Koppers Holdings Inc.

Our report on the consolidated financial statements refers to a change in the Company's method of accounting for leases.

/s/ KPMG LLP

Pittsburgh, Pennsylvania  
February 27, 2020

KOPPERS HOLDINGS INC.  
POWER OF ATTORNEY  
(10-K)

I, Stephen R. Tritch, a Director of Koppers Holdings Inc. (the "Corporation"), a Pennsylvania corporation, hereby constitute and appoint Leroy M. Ball, Jr., Michael J. Zugay and Bradley A. Pearce, or any of them, my true and lawful attorneys or attorneys-in-fact, with the full power of substitution and revocation,

(i) to sign, in my name and on my behalf as a Director of the Corporation, the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, to be filed with the Securities and Exchange Commission, Washington, DC,

(ii) to sign, in my name and on my behalf as a Director of the Corporation any amendment to the Annual Report referred to in (i) above, or to any previously filed Annual Report on Form 10-K for any prior fiscal year, and

(iii) to file the documents described in (i) and (ii) above and all exhibits thereto and any and all other documents in connection therewith,

granting unto each said attorney or attorney-in-fact full power and authority to do and perform every act and thing requisite, necessary or desirable to be done in connection therewith, as fully to all intents and purposes as I might or could do in person, hereby ratifying and confirming all that said attorneys and attorneys-in-fact, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Witness my hand this 27th day of February, 2020.

/s/ Stephen R. Tritch

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Stephen R. Tritch

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KOPPERS HOLDINGS INC.  
POWER OF ATTORNEY  
(10-K)

I, Louis L. Testoni, a Director of Koppers Holdings Inc. (the "Corporation"), a Pennsylvania corporation, hereby constitute and appoint Leroy M. Ball, Jr., Michael J. Zugay and Bradley A. Pearce, or any of them, my true and lawful attorneys or attorneys-in-fact, with the full power of substitution and revocation,

(i) to sign, in my name and on my behalf as a Director of the Corporation, the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, to be filed with the Securities and Exchange Commission, Washington, DC,

(ii) to sign, in my name and on my behalf as a Director of the Corporation any amendment to the Annual Report referred to in (i) above, or to any previously filed Annual Report on Form 10-K for any prior fiscal year, and

(iii) to file the documents described in (i) and (ii) above and all exhibits thereto and any and all other documents in connection therewith,

granting unto each said attorney or attorney-in-fact full power and authority to do and perform every act and thing requisite, necessary or desirable to be done in connection therewith, as fully to all intents and purposes as I might or could do in person, hereby ratifying and confirming all that said attorneys and attorneys-in-fact, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Witness my hand this 27th day of February, 2020.

/s/ Louis L. Testoni

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Louis L. Testoni

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KOPPERS HOLDINGS INC.  
POWER OF ATTORNEY  
(10-K)

I, Albert J. Neupaver, a Director of Koppers Holdings Inc. (the "Corporation"), a Pennsylvania corporation, hereby constitute and appoint Leroy M. Ball, Jr., Michael J. Zugay and Bradley A. Pearce, or any of them, my true and lawful attorneys or attorneys-in-fact, with the full power of substitution and revocation,

(i) to sign, in my name and on my behalf as a Director of the Corporation, the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, to be filed with the Securities and Exchange Commission, Washington, DC,

(ii) to sign, in my name and on my behalf as a Director of the Corporation any amendment to the Annual Report referred to in (i) above, or to any previously filed Annual Report on Form 10-K for any prior fiscal year, and

(iii) to file the documents described in (i) and (ii) above and all exhibits thereto and any and all other documents in connection therewith,

granting unto each said attorney or attorney-in-fact full power and authority to do and perform every act and thing requisite, necessary or desirable to be done in connection therewith, as fully to all intents and purposes as I might or could do in person, hereby ratifying and confirming all that said attorneys and attorneys-in-fact, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Witness my hand this 27th day of February, 2020.

/s/ Albert J. Neupaver

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Albert J. Neupaver

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KOPPERS HOLDINGS INC.  
POWER OF ATTORNEY  
(10-K)

I, Xudong Feng, Ph.D., a Director of Koppers Holdings Inc. (the "Corporation"), a Pennsylvania corporation, hereby constitute and appoint Leroy M. Ball, Jr., Michael J. Zugay and Bradley A. Pearce, or any of them, my true and lawful attorneys or attorneys-in-fact, with the full power of substitution and revocation,

(i) to sign, in my name and on my behalf as a Director of the Corporation, the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, to be filed with the Securities and Exchange Commission, Washington, DC,

(ii) to sign, in my name and on my behalf as a Director of the Corporation any amendment to the Annual Report referred to in (i) above, or to any previously filed Annual Report on Form 10-K for any prior fiscal year, and

(iii) to file the documents described in (i) and (ii) above and all exhibits thereto and any and all other documents in connection therewith,

granting unto each said attorney or attorney-in-fact full power and authority to do and perform every act and thing requisite, necessary or desirable to be done in connection therewith, as fully to all intents and purposes as I might or could do in person, hereby ratifying and confirming all that said attorneys and attorneys-in-fact, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Witness my hand this 27th day of February, 2020.

/s/ Xudong Feng, Ph.D.

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Xudong Feng, Ph.D.

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KOPPERS HOLDINGS INC.

POWER OF ATTORNEY

(10-K)

I, Traci Jensen, a Director of Koppers Holdings Inc. (the "Corporation"), a Pennsylvania corporation, hereby constitute and appoint Leroy M. Ball, Jr., Michael J. Zugay and Bradley A. Pearce, or any of them, my true and lawful attorneys or attorneys-in-fact, with the full power of substitution and revocation,

(i) to sign, in my name and on my behalf as a Director of the Corporation, the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, to be filed with the Securities and Exchange Commission, Washington, DC,

(ii) to sign, in my name and on my behalf as a Director of the Corporation any amendment to the Annual Report referred to in (i) above, or to any previously filed Annual Report on Form 10-K for any prior fiscal year, and

(iii) to file the documents described in (i) and (ii) above and all exhibits thereto and any and all other documents in connection therewith,

granting unto each said attorney or attorney-in-fact full power and authority to do and perform every act and thing requisite, necessary or desirable to be done in connection therewith, as fully to all intents and purposes as I might or could do in person, hereby ratifying and confirming all that said attorneys and attorneys-in-fact, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Witness my hand this 27th day of February, 2020.

/s/ Traci Jensen

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Traci Jensen

KOPPERS HOLDINGS INC.

POWER OF ATTORNEY  
(10-K)

I, David L. Motley, a Director of Koppers Holdings Inc. (the "Corporation"), a Pennsylvania corporation, hereby constitute and appoint Leroy M. Ball, Jr., Michael J. Zugay and Bradley A. Pearce, or any of them, my true and lawful attorneys or attorneys-in-fact, with the full power of substitution and revocation,

(i) to sign, in my name and on my behalf as a Director of the Corporation, the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, to be filed with the Securities and Exchange Commission, Washington, DC,

(ii) to sign, in my name and on my behalf as a Director of the Corporation any amendment to the Annual Report referred to in (i) above, or to any previously filed Annual Report on Form 10-K for any prior fiscal year, and

(iii) to file the documents described in (i) and (ii) above and all exhibits thereto and any and all other documents in connection therewith,

granting unto each said attorney or attorney-in-fact full power and authority to do and perform every act and thing requisite, necessary or desirable to be done in connection therewith, as fully to all intents and purposes as I might or could do in person, hereby ratifying and confirming all that said attorneys and attorneys-in-fact, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Witness my hand this 27th day of February, 2020.

/s/ David L. Motley

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David L. Motley

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KOPPERS HOLDINGS INC.

POWER OF ATTORNEY  
(10-K)

I, Sonja M. Wilkerson, a Director of Koppers Holdings Inc. (the "Corporation"), a Pennsylvania corporation, hereby constitute and appoint Leroy M. Ball, Jr., Michael J. Zugay and Bradley A. Pearce, or any of them, my true and lawful attorneys or attorneys-in-fact, with the full power of substitution and revocation,

- (i) to sign, in my name and on my behalf as a Director of the Corporation, the Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, to be filed with the Securities and Exchange Commission, Washington, DC,
- (ii) to sign, in my name and on my behalf as a Director of the Corporation any amendment to the Annual Report referred to in (i) above, or to any previously filed Annual Report on Form 10-K for any prior fiscal year, and
- (iii) to file the documents described in (i) and (ii) above and all exhibits thereto and any and all other documents in connection therewith,

granting unto each said attorney or attorney-in-fact full power and authority to do and perform every act and thing requisite, necessary or desirable to be done in connection therewith, as fully to all intents and purposes as I might or could do in person, hereby ratifying and confirming all that said attorneys and attorneys-in-fact, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Witness my hand this 27th day of February, 2020.

/s/ Sonja M. Wilkerson

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Sonja M. Wilkerson

CERTIFICATIONS

I, Leroy M. Ball, Jr. certify that:

1. I have reviewed this annual report on Form 10-K of Koppers Holdings Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of 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 27, 2020

/s/ LEROY M. BALL, JR.

Leroy M. Ball, Jr.

President and Chief Executive Officer

CERTIFICATIONS

I, Michael J. Zugay, certify that:

1. I have reviewed this annual report on Form 10-K of Koppers Holdings Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of 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 27, 2020

/s/ MICHAEL J. ZUGAY  
Michael J. Zugay  
Chief 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 Koppers Holdings Inc. (the "Company") on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned hereby certifies in his capacity as an officer of Koppers Holdings Inc., pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 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, as amended; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

/s/ LEROY M. BALL, JR.  
Leroy M. Ball, Jr.  
President and Chief Executive Officer

February 27, 2020

/s/ MICHAEL J. ZUGAY  
Michael J. Zugay  
Chief Financial Officer

February 27, 2020