Hooper Robert W
Form 4
January 19, 2011

FORM 4

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

Check this box if no longer subject to Section 16. Form 4 or Form 5 obligations may continue. *See* Instruction 1(b).

STATEMENT OF CHANGES IN BENEFICIAL OWNERSHIP OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934, Section 17(a) of the Public Utility Holding Company Act of 1935 or Section 30(h) of the Investment Company Act of 1940

OMB APPROVAL

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(Print or Type Responses)

1. Name and Address of Reporting Person *
Hooper Robert W

(Last) (First) (Middle)

C/O CELSION CORPORATION, 10220-L OLD COLUMBIA ROAD

(Street)

COLUMBIA, MD 21046

(City) (State) (Zip)

2. Issuer Name **and** Ticker or Trading Symbol
Celsion CORP [CLSN]

3. Date of Earliest Transaction (Month/Day/Year)
01/14/2011

4. If Amendment, Date Original Filed(Month/Day/Year)

5. Relationship of Reporting Person(s) to Issuer

(Check all applicable)

__X__ Director _____ 10% Owner
_____ Officer (give title below) _____ Other (specify below)

6. Individual or Joint/Group Filing(Check Applicable Line)
_X_ Form filed by One Reporting Person
___ Form filed by More than One Reporting Person

Table I - Non-Derivative Securities Acquired, Disposed of, or Beneficially Owned

1.Title of Security (Instr. 3)	2. Transaction Date (Month/Day/Year)	2A. Deemed Execution Date, if any (Month/Day/Year)	3. Transaction Code (Instr. 8)		4. Securities Acquired (A) or Disposed of (D) (Instr. 3, 4 and 5)			5. Amount of Securities Beneficially Owned Following Reported Transaction(s) (Instr. 3 and 4)	6. Ownership Form: Direct (D) or Indirect (I) (Instr. 4)	7. Nature of Indirect Beneficial Ownership (Instr. 4)
			Code	V	Amount	(A) or (D)	Price			

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

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SEC 1474 (9-02)

Table II - Derivative Securities Acquired, Disposed of, or Beneficially Owned
(*e.g.*, puts, calls, warrants, options, convertible securities)

1. Title of Derivative	2. Conversion	3. Transaction Date (Month/Day/Year)	3A. Deemed Execution Date, if	4. Transactio	5. Number of Derivative	6. Date Exercisable and Expiration Date	7. Title and An Underlying Sec

Security (Instr. 3)	or Exercise Price of Derivative Security		any (Month/Day/Year)	Code (Instr. 8)		Securities Acquired (A) or Disposed of (D) (Instr. 3, 4, and 5)		(Month/Day/Year)		(Instr. 3 and 4)
				Code	V	(A)	(D)	Date Exercisable	Expiration Date	Title
Series A Redeemable Convertible Preferred Stock (2)	$ 2.4 (3)	01/14/2011 (1)		P		12		01/14/2011	01/14/2013	Celsion Corporation Common Stock
Warrants to Purchase Common Stock (2)	$ 3.25 (4)	01/14/2011 (1)		P		4,999.9992		07/14/2011	07/14/2016	Celsion Corporation Common Stock

Reporting Owners

Reporting Owner Name / Address	Relationships			
	Director	10% Owner	Officer	Other
Hooper Robert W C/O CELSION CORPORATION 10220-L OLD COLUMBIA ROAD COLUMBIA, MD 21046	X			

Signatures

Timothy J Tumminello, Controller and CAO	01/19/2011
**Signature of Reporting Person	Date

Explanation of Responses:

* If the form is filed by more than one reporting person, *see* Instruction 4(b)(v).

** Intentional misstatements or omissions of facts constitute Federal Criminal Violations. *See* 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).

(1) Represents the date which the NASDAQ Stock Market LLC approved the participation of insiders in the public offering in which the securities were purchased by the reporting person and the date on which the reporting person became irrevocably committed to purchase the securities covered by this report.

(2) The securities were purchased in a public offering pursuant to Celsion Corporation's Registration Statement on Form S-3 (File No. 333-158402) that was declared effective on April 17, 2009 (the "Registration Statement") on the terms and conditions set forth in the prospectus supplements to the Registration Statement dated January 12, 2011 and January 13, 2011.

(3) Represents the conversion price per share of the Series A Convertible Preferred Stock.

(4) Represents the exercise price of the warrants per whole share of common stock.

(5) Each unit of a warrant to purchase 416.6666 shares of common stock was purchased for $0.125 per unit, which represents the value allocated to the unit in accordance with the NASDAQ Stock Market Rules.

(6) Represents the at-the-market purchase price per share of Series A Convertible Preferred Stock allocated to each such share in accordance with the NASDAQ Stock Market Rules.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *see* Instruction 6 for procedure.

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59.9

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44.5

In addition to the valuation allowance recorded with respect to deferred tax assets associated with disallowed interest expense deductions, the Company released a valuation allowance of $5.5 million for a subsidiary in China that had accumulated net operating losses. The Company utilized these net operating loss carryforwards in 2018 to offset current earnings.

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

Unrecognized Tax Benefits

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

	December 31, 2018	2017	2016
(Dollars in millions)			
Balance at beginning of year	$8.7	$9.7	$7.7
Additions based on tax provisions related to the current year	0.1	0.1	0.9
Additions for tax provisions of prior years	0.0	2.7	1.5
Reductions of tax provisions of prior years	(1.5)	(3.4)	0.0
Reductions resulting from a lapse in the statute of limitations	(0.3)	(0.4)	(0.4)
Balance at end of year	$7.0	$8.7	$9.7

As of December 31, 2018 and 2017, the total amount of unrecognized tax benefits that, if recognized, would affect the effective tax rate, was approximately $3.7 million and $4.4 million, respectively.

The Company recognizes interest expense (income) and any related penalties from unrecognized tax benefits in income tax expense. For the years ended December 31, 2018, 2017, and 2016, the Company recognized $(1.4) million, $(0.6) million and $1.2 million, respectively, in interest and penalties. As of December 31, 2018 and 2017, the Company had accrued interest and penalties of approximately $2.2 million and $3.6 million, respectively.

The Company believes that it is reasonably possible that the amount of unrecognized tax benefits will decrease in the next twelve months by approximately $3.5 million due to the expirations of certain limitations and potential audit resolutions. The Company does not anticipate significant increases to the amount of unrecognized tax benefits within the next twelve months.

The Company 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, the Company is no longer subject to U.S. federal, U.S. state, or non-U.S. income tax examinations by tax authorities for years before 2014.

11. Inventories

Inventories as of December 31, 2018 and 2017 were as follows:

	December 31, 2018	2017
(Dollars in millions)		
Raw materials	$199.5	$173.6
Work in process	16.0	11.2
Finished goods	128.1	98.4
	343.6	283.2

Less revaluation to LIFO	58.9	46.3
Net	$284.7	$236.9

12. Fair Value Measurements

Carrying amounts and the related estimated fair values of the Company’s financial instruments as of December 31, 2018 and 2017 are as follows:

	December 31, 2018		December 31, 2017	
(Dollars in millions)	Fair Value	Carrying Value	Fair Value	Carrying Value
Financial assets:				
Cash and cash equivalents, including restricted cash	$40.6	$40.6	$60.3	$ 60.3
Investments and other assets	1.2	1.2	1.1	1.1
Financial liabilities:				
Long-term debt (including current portion)	$945.3	$1,002.6	$706.9	$ 688.7

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

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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 the Company's long-term debt is estimated based on the market prices for the same or similar issuances or on the current rates offered to the Company for debt of the same remaining maturities (Level 2). The fair value of the Company's Revolving 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, 2018 and 2017 were as follows:

	December 31,	
	2018	2017
(Dollars in millions)		
Land	$17.5	$17.6
Buildings	65.1	63.4
Machinery and equipment	800.9	756.6
	883.5	$837.6
Less accumulated depreciation	465.6	509.6
Net	$417.9	$328.0

Depreciation expense, including impairment charges, for the years ended December 31, 2018, 2017 and 2016 amounted to $31.6 million, $37.5 million and $41.6 million, respectively.

Impairments – The Company did not incur impairment charges in 2018. Impairment charges for 2017 and 2016 were $3.7 million and $3.5 million, respectively. In 2017 and 2016, impairment charges 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 business segment for the years ended December 31, 2018 and December 31, 2017 was as follows:

(Dollars in millions)	Railroad and Utility Products and Services	Performance Chemicals	Total
Balance at December 31, 2016	$ 9.9	$ 176.5	$186.4
Currency translation	0.6	1.2	1.8
Balance at December 31, 2017	$ 10.5	$ 177.7	$188.2
Acquisitions	111.1	0.0	111.1
Currency translation	(0.5)	(2.3)	(2.8)
Balance at December 31, 2018	$ 121.1	$ 175.4	$296.5

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 and whenever events or circumstances indicate the carrying value may not be recoverable. The evaluation of goodwill impairment involves using either a qualitative or quantitative approach as outlined in ASC Topic 350. In the fourth quarters of 2018 and 2017, the Company 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, 2018 and 2017, respectively.

The Company’s identifiable intangible assets with finite lives are being amortized over their estimated useful lives and are summarized below:

			December 31, 2018			2017		
(Dollars in millions)	Estimated life in years	Weighted average remaining life in years	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Customer contracts	9 to 18	12.3	$228.8	$ 56.5	$172.3	$154.7	$ 43.9	$110.8
Technology	4 to 12	4.0	26.7	16.2	10.5	26.8	12.5	14.3
Trademarks	2 to 17	4.0	7.6	3.5	4.1	6.5	2.7	3.8
Supply contracts	10	2.2	2.4	2.1	0.3	2.5	2.0	0.5
Non-compete agreements	12	6.8	1.6	0.8	0.8	1.4	1.2	0.2
Favorable lease agreements	3	0.0	0.7	0.7	0.0	0.7	0.7	0.0
Total		11.1	$267.8	$ 79.8	$188.0	$192.6	$ 63.0	$129.6

In 2018, the gross carrying value of identifiable intangible assets increased by $75.2 million. Total amortization expense related to these identifiable intangible assets was $19.2 million, $14.6 million and $14.8 million for the years ended December 31, 2018, 2017 and 2016, respectively. Estimated amortization expense for the next five years is summarized below:

(Dollars in millions)	Estimated annual amortization
2019	$ 20.3
2020	19.3
2021	17.3
2022	14.5
2023	13.0

15. Pensions and Post-Retirement Benefit Plans

The Company and its subsidiaries maintain a number of defined benefit and defined contribution plans to provide retirement benefits for employees in the U.S., as well as employees outside the U.S. 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 U.S., 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. The Company also provides 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, the Company offered a cash lump sum or annuity buyout to its 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 its U.S. qualified defined benefit pension plan. The Company recorded a pension settlement charge of $10.0 million related to these two transactions.

In 2016, the Company offered a cash lump sum or annuity buyout to its terminated deferred vested participants in its U.S. defined benefit pension plan and recorded a pension settlement charge of $4.4 million.

Expense related to defined contribution plans totaled $7.5 million, $8.9 million and $7.8 million for the years ended December 31, 2018, 2017 and 2016, respectively.

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Net periodic pension costs for 2018, 2017 and 2016 were as follows:

	Year Ended December 31,					
	Pension Benefits			Other Benefits		
	2018	2017	2016	2018	2017	2016
(Dollars in millions)						
Service cost	$1.9	$2.0	$1.7	$0.1	$0.1	$0.1
Interest cost	7.5	9.0	11.0	0.4	0.4	0.4
Expected return on plan assets	(8.5)	(9.6)	(10.5)	0.0	0.0	0.0
Amortization of net loss (gain)	1.4	1.9	2.2	0.0	(0.2)	(0.4)
Settlements and curtailments	0.0	10.0	4.4	0.0	0.0	0.0
Net periodic benefit cost	$2.3	$13.3	$8.8	$0.5	$0.3	$0.1

The change in the funded status of the pension and postretirement plans as of December 31, 2018 and December 31, 2017 is as follows:

	Year Ended December 31,			
	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
(Dollars in millions)				
Change in benefit obligation:				
Benefit obligation at beginning of year	$219.1	$243.6	$11.1	$10.0
Service cost	1.9	2.0	0.1	0.1
Interest cost	7.5	9.0	0.4	0.4
Actuarial (gains) losses	(13.2)	7.3	(1.7)	1.5
Plan amendments	0.7	0.0	0.0	0.0
Settlements	0.0	(36.9)	0.0	0.0
Currency translation	(3.5)	5.5	0.0	0.0
Benefits paid	(10.8)	(11.4)	(0.5)	(0.9)
Benefit obligation at end of year	201.7	219.1	9.4	11.1
Change in plan assets:				
Fair value of plan assets at beginning of year	188.8	200.9	0.0	0.0
Actual return on plan assets	(8.6)	19.5	0.0	0.0
Employer contribution	4.2	11.2	0.5	0.9
Settlements	0.0	(36.9)	0.0	0.0
Currency translation	(4.0)	5.5	0.0	0.0
Benefits paid	(10.8)	(11.4)	(0.5)	(0.9)
Fair value of plan assets at end of year	169.6	188.8	0.0	0.0
Funded status of the plan	$(32.1)	$(30.3)	$(9.4)	$(11.1)

In 2018, the net actuarial gain of $13.2 million is due principally to the increase in the discount rate used to measure the benefit obligation as of December 31, 2018 compared to the prior year.

Plan Data

	Year Ended December 31,			
	Pension Benefits		Other Benefits	
	2018	2017	2018	2017
(Dollars in millions)				
Amounts recognized in the balance sheet consist of:				
Noncurrent assets	$8.9	$7.0	$0.0	$0.0
Current liabilities	1.2	1.1	1.0	1.0
Noncurrent liabilities	39.8	36.2	8.4	10.1
Pension plans with projected benefit obligations in excess of plan assets:				
Benefit obligation	$148.6	$159.9		
Fair value of plan assets	107.7	122.6		
Pension plans with accumulated benefit obligations in excess of plan assets:				
Accumulated benefit obligation	$148.4	$159.6		
Fair value of plan assets	107.7	122.6		

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, 2018 and 2017 was $201.3 million and $218.7 million, respectively.

Expected Contributions for the 2019 Fiscal Year

The expected contributions by the Company for 2019 are estimated to be $2.7 million for pension plans and $0.9 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 and reflecting future expected service as appropriate, are expected to be paid as follows:

	Pension Benefits	Other Benefits
(Dollars in millions)		
2019	$ 11.2	$ 0.9
2020	11.1	0.9
2021	11.3	0.7
2022	11.5	0.7
2023	11.6	0.6

Next five years	64.0	2.9

Weighted-Average Assumptions as of December 31

	December 31, Pension Benefits		Other Benefits	
	2018	2017	2018	2017
Discount rate	4.03%	3.51%	4.45%	3.88%
Expected return on plan assets	4.83	4.62		
Rate of compensation increase	3.41	3.50		
Initial medical trend rate			5.90	6.10

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, the Company 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 the Company’s pension plans at December 31 by asset category is as follows:

	December 31, 2018	December 31, 2017
Debt securities	72 %	64 %
Equity securities	24	30
Other	4	6
	100 %	100 %

The Company’s investment strategy for its 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. The Company’s 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, the Company targets an allocation of 30 percent to 40 percent growth seeking assets and 60 percent to 70 percent income generating assets on an overall basis. The Company utilizes investment managers to assist in identifying and monitoring investments that meet these allocation criteria. With respect to the U.S defined benefit plan, the Company has 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. The Company’s 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. 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, the Company’s pension plan assets at fair value, within the fair value hierarchy, as of December 31, 2018 and December 31, 2017:

	As of December 31, 2018			
	Quoted prices in	Significant observable	Significant unobservable	Total

(Dollars in millions)	active markets for identical assets (Level 1)	inputs (Level 2)	inputs (Level 3)	
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

	As of December 31, 2017			
(Dollars in millions)	Quoted prices in active markets for identical assets (Level 1)	Significant observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
U.S. equity securities	$18.6	$ 12.7	$ 0.0	$31.3
International equity securities	15.0	10.2	0.0	25.2
U.S. debt securities	21.4	53.0	2.5	76.9
International debt securities	7.5	34.8	1.0	43.3
Real estate and other investments	0.5	0.8	8.3	9.6
Cash and cash equivalents	0.0	2.5	0.0	2.5
	$63.0	$ 114.0	$ 11.8	$188.8

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, 2018:

	As of December 31, 2018	
(Dollars in millions)	Other Investments	Debt Securities
Balance at beginning of year	$ 8.3	$ 3.5
Purchases, sales, issuances and settlements	(4.3)	(3.4)
Realized and unrealized gains	(0.8)	(0.1)
Balance at the end of year	$ 3.2	$ 0.0
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	$ (0.1)	$ 0.0

Incentive Plan

The Company has 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 $10.3 million in 2018, $11.2 million in 2017 and $10.4 million in 2016.

16. Debt

Debt as of December 31, 2018 and 2017 was as follows:

	Weighted Average Interest Rate		Maturity	December 31, 2018	2017
Term Loan	5.65	%	2023	$ 92.5	$ 0.0
Revolving Credit Facility	5.65	%	2023	390.0	155.0
Construction and other loans	4.59	%	2020	20.1	33.7
Senior Notes due 2025	6.00	%	2025	500.0	500.0
Total debt				1,002.6	688.7
Less short-term debt and current maturities of long-term debt				11.6	11.4
Less unamortized debt issuance costs				12.2	11.7
Long-term debt				$ 978.8	$ 665.6

Senior Notes due 2025

The 2025 Notes are senior obligations, 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, the Company is 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.

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Revolving Credit Facility

On April 10, 2018, the Company amended its $600 million Revolving Credit Facility to enter into a new Secured Term Loan Facility. The new Secured Term Loan Facility includes the $600 million Revolving Credit Facility and a secured term loan of $100 million with a quarterly amortization of $2.5 million and a five-year maturity. In addition, the maturity date of the amended Revolving Credit Facility was extended one year to April 2023. The interest rate on the amended Revolving Credit Facility is variable and is based on LIBOR.

Borrowings under the Revolving 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 Revolving 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, 2018, the Company had $179.0 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, 2018, $31.9 million of commitments were utilized by outstanding letters of credit.

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, the Company 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 Revolving Credit Facility. Accordingly, the Company realized a loss of $3.3 million for the write-off of unamortized debt issuance costs.

Construction Loan

The Company’s 75-percent owned subsidiary, Koppers (Jiangsu) Carbon Chemical Company Limited (“KJCC”) entered into a committed loan facility agreement with a third-party bank. Borrowings under the third-party bank facility, which includes a construction loan and a working capital facility, totaled $19.7 million at December 31, 2018 and are secured by a letter of credit issued by a bank under the Revolving Credit Facility. KJCC began repaying the construction loan portion of the third-party commitment, which requires semi-annual installments every six months starting in June 2018 with a final repayment in December 2020.

Debt Maturities and Deferred Financing Costs

At December 31, 2018 the aggregate debt maturities for the next five years are as follows:

(Dollars in millions)	
2019	$11.6
2020	28.4

2021	10.0
2022	452.6
2023	0.0
Thereafter	500.0
Total debt	$1,002.6

Unamortized debt issuance costs (net of accumulated amortization of $4.2 million and $1.8 million at December 31, 2018 and 2017, respectively) were $12.2 million and $11.7 million at December 31, 2018 and 2017, respectively, and are included as a deduction from the carrying amount of long-term debt.

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17. Leases

Future minimum commitments for operating leases having non-cancelable lease terms in excess of one year are as follows:

(Dollars in millions)	
2019	$30.3
2020	23.7
2021	18.3
2022	14.9
2023	10.9
Thereafter	36.0
Total	$134.1

Operating lease expense for 2018, 2017 and 2016 was $49.4 million, $50.4 million and $50.3 million, respectively.

18. Derivative Financial Instruments

The Company utilizes derivative instruments to manage exposures to risks that have been identified and measured and are capable of being controlled. The primary risks managed by the company 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 the Company's manufacturing processes. Generally, the Company will not hedge cash flow exposures for durations longer than 30 months and the Company has hedged certain volumes of copper through December 2020. The Company enters into foreign currency forward contracts to manage foreign currency risk associated with the Company's receivable and payable balances in addition to foreign-denominated sales. Generally, the Company enters into master netting arrangements with the counterparties and offsets net derivative positions with the same counterparties. Currently, the Company's 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, the Company designates certain of its 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 (loss) 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, 2018 and December 31, 2017, the Company had outstanding copper swap contracts of the following amounts:

	Units Outstanding (in Pounds) December 31,		Net Fair Value - Asset (Liability) December 31,	
	2018	2017	2018	2017
(Amounts in millions)				
Cash flow hedges	35.5	37.8	$(6.8)	$25.5
Not designated as hedges	13.3	11.3	(2.4)	4.5
Total	48.8	49.1	$(9.2)	$30.0

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As of December 31, 2018 and December 31, 2017, the fair value of the outstanding copper swap contracts is recorded in the balance sheet as follows:

	December 31, 2018	2017
(Dollars in millions)		
Other current assets	$0.0	$21.8
Other assets	0.0	8.2
Accrued liabilities	(9.0)	0.0
Other long-term liabilities	(0.2)	0.0
Net (liability) asset on balance sheet	$(9.2)	$30.0
Accumulated other comprehensive (loss) gain, net of tax	$(5.3)	$15.8

In the next twelve months the Company estimates that $4.0 million of unrealized losses, net of tax, related to commodity price hedging will be reclassified from other comprehensive (loss) income into earnings.

See the consolidated statement of comprehensive (loss) income 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, 2018 and 2017, the following amounts were recognized in earnings related to copper swap contracts:

	Year Ended December 31, 2018	2017
(Dollars in millions)		
Gain from ineffectiveness of cash flow hedges	$0.0	$5.6
(Loss) gain from contracts not designated as hedges	(6.9)	3.5
Net	$(6.9)	$9.1

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, 2018 and December 31, 2017, the fair value of outstanding foreign currency forward contracts is recorded in the balance sheet as follows:

	December 31, 2018	2017
(Dollars in millions)		
Other current assets	$0.9	$0.3
Accrued liabilities	(1.0)	(0.2)
Net (liability) asset on balance sheet	$(0.1)	$0.1

As of December 31, 2018 and 2017, the net currency units outstanding were:

December 31,

	2018	2017
(In millions)		
British Pounds	GBP 5.7	GBP 7.0
New Zealand Dollars	NZD 16.0	NZD 15.5
United States Dollars	USD 6.0	USD 12.5
Canadian Dollars	CAD 0.0	CAD 2.5
Euro	EUR 1.2	EUR 0.0

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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, 2018 are as follows:

	December 31,		
	2018	2017	2016
(Shares in thousands)			
Senior Convertible Preferred Stock:			
Balance at beginning and end of year	0	0	0
Common Stock:			
Balance at beginning of year	22,384	22,141	22,016
Issued for employee stock plans	645	243	125
Balance at end of year	23,029	22,384	22,141
Treasury Stock:			
Balance at beginning of year	(1,606)	(1,476)	(1,459)
Shares repurchased	(874)	(130)	(17)
Balance at end of year	(2,480)	(1,606)	(1,476)

20. Commitments and Contingent Liabilities

The Company and its subsidiaries 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 the Company or its subsidiaries fail to prevail in any of these legal matters or should several of these legal matters be resolved against the Company or its subsidiaries 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 65 plaintiffs in 35 cases pending as of December 31, 2018, compared to 87 plaintiffs in 48 cases pending as of December 31, 2017. As of December 31, 2018, there were 34 cases pending in state court in Pennsylvania, and one case pending in state court in Tennessee.

The plaintiffs in all 35 pending cases seek to recover compensatory damages. Plaintiffs in 30 of those cases also seek to recover punitive damages. The plaintiffs in the 34 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.

Pavement Sealer Cases. Koppers Inc. is one of seven defendants in separate federal lawsuits recently filed by nine municipalities in the state of Minnesota. These lawsuits were filed in December 2018 and January 2019 in federal district court in Minnesota. Each of the complaints allege that contamination caused by coal tar-based pavement sealer products has impacted their stormwater retention ponds resulting in substantially increased disposal costs when the ponds are periodically dredged. The plaintiffs seek 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.

The Company has not provided a reserve for the coal tar pitch or pavement sealer lawsuits because, at this time, the Company 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 the Company's business, financial condition, cash flows and results of operations.

Environmental and Other Litigation Matters

The Company and its subsidiaries 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. The Company's subsidiaries expect to incur substantial costs for ongoing compliance with such laws and regulations. The Company’s subsidiaries 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. The Company accrues 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. The Company’s subsidiaries have agreements with former owners of certain of their operating locations under which the former owners retained, assumed and/or agreed to indemnify such subsidiaries 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 through July 2019. As consideration for the amendment, Koppers Inc. paid Beazer East a total of $7.0 million and agreed to share toxic tort litigation defense costs arising from any sites acquired from Beazer East. 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. 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. If the third-party claims described in sections (i) and (ii) above are not made by July 2019, Beazer East will not be required to pay the costs arising from such claims under the Indemnity. However, with respect to any such claims which are made by July 2019, Beazer East will continue to be responsible for such claims under the Indemnity beyond July 2019. 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 the Company’s subsidiaries. One site currently owned and operated by Koppers Inc. in the United States is listed on the National Priorities List promulgated under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (“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 the Company against the liabilities referred to above, including Beazer East, have performed their obligations in all material respects. The Company believes that, for the last three years ended December 31, 2018, amounts paid by Beazer East as a result of its environmental remediation obligations under the Indemnity have averaged, in total, approximately $11 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 the Company or its subsidiaries are held liable for or otherwise required to pay all or part of such liabilities without reimbursement, the imposition of such liabilities on the Company or its subsidiaries could have a material adverse

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effect on its business, financial condition, cash flows and results of operations. Furthermore, the Company could be required to record a contingent liability on its balance sheet with respect to such matters, which could result in a negative impact to the Company's 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 the Company's 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. The Company continues to meet and correspond with the EPA to discuss and present relevant information related to the allegations. The Company currently cannot estimate the potential penalties, fines or other expenditures, if any, that may result from any EPA actions relating to the alleged potential violations and, therefore, the Company cannot determine if the ultimate outcome of this matter will have a material impact on the Company's financial position, results of operations or cash flows.

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 Environmental Protection Agency ("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, the Company 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. The Yakama Nation case has been stayed by the court 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.

The Company has 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, 2018. 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 the Company's business, financial condition, cash flows and results of operations.

There are two plant sites in the United States related to the Performance Chemicals business where the Company has recorded an environmental remediation liability for soil and groundwater contamination which occurred prior to the Company's acquisition of the business. As of December 31, 2018, the Company's estimated environmental remediation liability for these acquired sites totals $3.1 million.

There is one plant site in the United States related to the Utility and Industrial Products business where the Company has recorded an environmental remediation liability for soil and groundwater contamination which occurred prior to the Company's acquisition of the business. As of December 31, 2018, the Company's estimated environmental remediation liability for the acquired site totals $1.9 million.

Foreign Environmental Matters. There is one plant site related to the Performance Chemicals business located in Australia where the Company has recorded an environmental remediation liability for soil and groundwater contamination which occurred prior to the acquisition of the business. As of December 31, 2018, the Company's estimated environmental remediation liability for the acquired site totals $1.5 million.

In December 2011, the Company ceased manufacturing operations at its Continental Carbon facility located in Kurnell, Australia. As of December 31, 2018, the Company believes it has fully satisfied all site remediation responsibilities resulting from the closure.

Environmental Reserves Rollforward. The following table reflects changes in the accrued liability for environmental matters, of which $3.5 million and $5.1 million are classified as current liabilities at December 31, 2018 and 2017:

	December 31,	
	2018	2017
(Dollars in millions)		
Balance at beginning of year	$13.9	$12.9
Expense	0.9	3.2
Revision of reserves	(2.4)	(0.7)
Cash expenditures	(3.8)	(1.8)
Acquisition	1.9	0.0
Currency translation	(0.4)	0.3
Balance at end of period	$10.1	$13.9

21. Selected Quarterly Financial Data (Unaudited)

The following is a summary of the quarterly results of operations for the years ended December 31, 2018 and 2017:

	Year Ended December 31, 2018				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Fiscal Year
(Dollars in millions, except per share amounts)					
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 [a]	23.8	0.5	6.9	(2.4)	28.8
Net income (loss) [a]	23.7	1.0	6.9	(2.4)	29.2
Net income (loss) attributable to Koppers [a]	17.8	0.6	7.6	(2.6)	23.4
Common stock data:					
Earnings (loss) per common share attributable to Koppers common shareholders: [a][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

	Year Ended December 31, 2017				
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Fiscal Year
(Dollars in millions, except per share amounts)					
Statement of operations data:					
Net sales	$346.6	$378.0	$384.8	$366.1	$1,475.50
Operating profit (c)	28.1	38.1	43.8	13.6	123.6
Income (loss) from continuing operations	4.7	20.9	20.0	(14.3)	31.3
Net income (loss)	4.6	19.8	19.9	(13.8)	30.5
Net income (loss) attributable to Koppers	4.4	19.7	19.8	(14.8)	29.1
Common stock data:					
Earnings (loss) per common share attributable to Koppers common shareholders: (b)					
Basic –					
Continuing operations	$0.21	$1.00	$0.96	$(0.73)	$1.44
Discontinued operations	0.00	(0.06)	0.00	0.02	(0.04)
Earnings (loss) per basic common share	$0.21	$0.94	$0.96	$(0.71)	$1.40
Diluted –					
Continuing operations	$0.20	$0.95	$0.91	$(0.73)	$1.36
Discontinued operations	0.00	(0.05)	0.00	0.02	(0.04)
Earnings (loss) per diluted common share	$0.20	$0.90	$0.91	$(0.71)	$1.32

(a) Income tax expense for the fourth quarter of 2017 was increased by $20.5 million due to the impact of the Tax Cuts and Jobs Act which was signed into law on December 22, 2017.

(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.

(c) Operating profit for the third quarter of 2017 was increased by $8.8 million due to the impact of reclassifying the loss on pension settlement to below the operating profit line item in connection with adopting ASU No. 2017-07, “Compensation – Retirement Benefits (Topic 715)” in 2018.

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22. Subsidiary Guarantor Information for Koppers Inc. Shelf Registration

Shelf Registration

Under a registration statement on Form S-3, Koppers Holdings may sell a combination of securities, including common stock, debt securities, preferred stock, depository shares, warrants, purchase contracts and units, from time to time in one or more offerings. In addition, Koppers Inc. may sell debt securities from time to time under the registration statement. Debt securities may be fully and unconditionally guaranteed, on a joint and several basis, by Koppers Holdings, Koppers Inc. and/or each of Koppers Inc.'s 100 percent-owned material domestic subsidiaries other than Koppers Assurance, Inc. The domestic guarantor subsidiaries are the same as those which guarantee the 2025 Notes. Non-guarantor subsidiaries are owned directly or indirectly by Koppers Inc. or are owned directly or indirectly by Koppers World-Wide Ventures Corporation. The guarantor subsidiaries that issue guarantees, if any, will be determined when a debt offering actually occurs under the registration statement and accordingly, the condensed consolidating financial information for subsidiary guarantors will be revised to identify the subsidiaries that actually provided guarantees. These guarantees will be governed pursuant to a supplemental indenture which the trustee and the issuing company would enter into concurrently with the debt offering.

Reliance of Koppers Holdings on Earnings of Koppers Inc. and its Subsidiaries

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 Revolving 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 2025 Notes, (2) no event of default or potential default has occurred or is continuing under the credit agreement, 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 restrict 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 applicable indenture is not able to incur additional indebtedness (as defined in the applicable indenture), and (3) the sum of all restricted payments (as defined in the applicable indenture) have exceeded the permitted amount (which we refer to as the "basket") at such point in time.

The Koppers Inc. Revolving Credit Facility agreement provides for a revolving credit facility at variable rates. Borrowings under the Revolving Credit Facility are secured by a first priority lien on substantially all of the assets of Koppers Inc. and its material domestic subsidiaries. The revolving credit facility agreement 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, 2018, Koppers Inc.'s assets exceeded its liabilities by $56.6 million. The amount of restricted net assets unavailable for distribution to Koppers Holdings Inc. by Koppers Inc. totals $36.8 million as of December 31, 2018. Cash dividends paid to Koppers Holdings Inc. by its subsidiaries totaled $31.8 million, $3.8 million and $1.2 million for the years ended December 31, 2018, 2017 and 2016, respectively.

Condensed Consolidating Statement of Comprehensive (Loss) Income

For the Year Ended December 31, 2018

(Dollars in millions)	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated
Net sales	$0.0	$569.6	$ 350.2	$ 874.4	$ (84.0)	$ 1,710.2
Cost of sales including depreciation, amortization and restructuring	0.0	530.8	272.0	711.3	(84.2)	1,429.9
Gain on sale of assets	0.0	6.2	0.0	2.1	0.0	8.3
Selling, general and administrative	2.4	52.2	46.4	60.6	0.0	161.6
Operating profit (loss)	(2.4)	(19.6)	31.8	100.4	0.2	110.4
Other income (loss)	0.0	(4.0)	1.5	3.2	0.0	0.7
Equity income of subsidiaries	25.3	88.4	82.4	0.0	(196.1)	0.0
Interest expense (income)	0.0	53.9	(0.1)	2.5	0.0	56.3
Income taxes	(0.5)	(14.4)	24.0	16.9	0.0	26.0
Income (loss) from continuing operations	23.4	25.3	91.8	84.2	(195.9)	28.8
Discontinued operations	0.0	0.0	0.0	0.4	0.0	0.4
Noncontrolling interests	0.0	0.0	0.0	5.8	0.0	5.8
Net income (loss) attributable to Koppers	$23.4	$25.3	$ 91.8	$ 78.8	$ (195.9)	$ 23.4
Comprehensive (loss) income attributable to Koppers	$(27.4)	$(25.4)	$ 41.0	$ 52.9	$ (68.5)	$ (27.4)

Condensed Consolidating Statement of Comprehensive (Loss) Income

For the Year Ended December 31, 2017

	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated

(Dollars in millions)						
Net sales	$ 0.0	$ 590.6	$ 344.9	$ 623.3	$ (83.3)	$ 1,475.5
Cost of sales including depreciation and amortization	0.0	570.2	235.0	496.3	(82.1)	1,219.4
Selling, general and administrative	1.9	46.9	43.3	40.4	0.0	132.5
Operating profit (loss)	(1.9)	(26.5)	66.6	86.6	(1.2)	123.6
Other income (loss)	0.0	(1.0)	2.4	2.3	(1.2)	2.5
Equity income of subsidiaries	30.3	103.8	64.7	0.0	(198.8)	0.0
Interest expense	0.0	39.0	0.0	4.7	(1.2)	42.5
Loss on pension settlement	0.0	10.0	0.0	0.0	0.0	10.0
Loss on extinguishment of debt	0.0	13.3	0.0	0.0	0.0	13.3
Income taxes	(0.7)	(16.4)	30.0	16.2	(0.1)	29.0
Income (loss) from continuing operations	29.1	30.4	103.7	68.0	(199.9)	31.3
Discontinued operations	0.0	0.0	0.0	(0.8)	0.0	(0.8)
Noncontrolling interests	0.0	0.0	0.0	1.4	0.0	1.4
Net income (loss) attributable to Koppers	$ 29.1	$ 30.4	$ 103.7	$ 65.8	$ (199.9)	$ 29.1
Comprehensive income (loss) attributable to Koppers	$ 60.7	$ 61.8	$ 132.8	$ 89.2	$ (283.8)	$ 60.7

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Explanation of Responses:

Condensed Consolidating Statement of Comprehensive (Loss) Income

For the Year Ended December 31, 2016

(Dollars in millions)	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated
Net sales	$ 0.0	$ 660.7	$ 350.6	$ 504.7	$ (99.8)	$ 1,416.2
Cost of sales including depreciation and amortization	0.0	635.7	252.3	412.4	(101.2)	1,199.2
Gain on sale of assets	0.0	0.0	0.0	(2.1)	0.0	(2.1)
Selling, general and administrative	1.9	42.4	38.2	43.2	0.0	125.7
Operating profit (loss)	(1.9)	(17.4)	60.1	51.2	1.4	93.4
Other income (loss)	0.0	(2.3)	4.1	0.3	(1.8)	0.3
Equity income of subsidiaries	30.6	79.1	35.9	0.0	(145.6)	0.0
Interest expense	0.0	47.6	0.0	5.0	(1.8)	50.8
Loss on pension settlement	0.0	4.4	0.0	0.0	0.0	4.4
Income taxes	(0.6)	(23.2)	22.2	13.0	0.0	11.4
Income (loss) from continuing operations	29.3	30.6	77.9	33.5	(144.2)	27.1
Discontinued operations	0.0	0.0	0.0	0.6	0.0	0.6
Noncontrolling interests	0.0	0.0	0.0	(1.6)	0.0	(1.6)
Net income (loss) attributable to Koppers	$ 29.3	$ 30.6	$ 77.9	$ 35.7	$ (144.2)	$ 29.3
Comprehensive income (loss) attributable to Koppers	$ 40.5	$ 41.3	$ 85.0	$ 29.6	$ (155.9)	$ 40.5

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Condensed Consolidating Balance Sheet

December 31, 2018

(Dollars in millions)	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated
ASSETS						
Cash and cash equivalents	$ 0.0	$ 2.1	$ 0.0	$ 38.5	$ 0.0	$ 40.6
Receivables, net	0.0	57.8	28.5	106.2	0.0	192.5
Affiliated receivables	0.5	69.2	16.6	3.1	(89.4)	0.0
Inventories, net	0.0	105.6	30.2	150.8	(1.9)	284.7
Other current assets	0.0	3.8	2.2	16.3	0.2	22.5
Total current assets	0.5	238.5	77.5	314.9	(91.1)	540.3
Equity investments	55.7	984.4	333.1	0.0	(1,373.2)	0.0
Property, plant and equipment, net	0.0	212.0	51.4	154.5	0.0	417.9
Goodwill	0.0	0.8	153.1	142.6	0.0	296.5
Intangible assets, net	0.0	6.5	86.5	95.0	0.0	188.0
Deferred tax assets	0.0	20.5	(7.3)	2.3	0.0	15.5
Affiliated loan receivables	0.0	27.2	148.3	18.4	(193.9)	0.0
Other assets	0.0	4.8	4.7	12.2	0.0	21.7
Total assets	$ 56.2	$ 1,494.7	$ 847.3	$ 739.9	$ (1,658.2)	$ 1,479.9
LIABILITIES AND EQUITY						
Accounts payable	$ 0.0	$ 76.9	$ 43.0	$ 57.3	$ 0.0	$ 177.2
Affiliated payables	0.0	81.4	0.4	7.6	(89.4)	0.0
Accrued liabilities	0.0	53.9	22.4	33.6	0.0	109.9
Current maturities of long-term debt	0.0	10.0	0.1	1.5	0.0	11.6
Total current liabilities	0.0	222.2	65.9	100.0	(89.4)	298.7
Long-term debt	0.0	960.3	0.1	18.4	0.0	978.8
Affiliated debt	0.0	166.7	18.7	8.5	(193.9)	0.0
Other long-term liabilities	0.0	88.9	8.6	37.9	0.0	135.4
Total liabilities	0.0	1,438.1	93.3	164.8	(283.3)	1,412.9
Koppers shareholders’ equity	56.2	56.6	754.0	564.3	(1,374.9)	56.2
Noncontrolling interests	0.0	0.0	0.0	10.8	0.0	10.8
Total liabilities and equity	$ 56.2	$ 1,494.7	$ 847.3	$ 739.9	$ (1,658.2)	$ 1,479.9

Condensed Consolidating Balance Sheet

December 31, 2017

(Dollars in millions)	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated
ASSETS						
Cash and cash equivalents	$0.0	$0.7	$ 0.0	$ 59.6	$ 0.0	$ 60.3
Receivables, net	0.0	48.6	27.7	84.6	0.0	160.9
Affiliated receivables	0.6	19.4	(83.0)	(12.1)	75.1	0.0
Inventories, net	0.0	80.4	40.5	117.9	(1.9)	236.9
Deferred tax assets	0.0	0.0	0.0	(0.1)	0.1	0.0
Other current assets	0.0	6.6	23.0	18.8	0.2	48.6
Total current assets	0.6	155.7	8.2	268.7	73.5	506.7
Equity investments	99.3	716.3	276.8	(0.1)	(1,092.3)	0.0
Property, plant and equipment, net	0.0	155.2	47.3	125.5	0.0	328.0
Goodwill	0.0	0.8	153.1	34.3	0.0	188.2
Intangible assets, net	0.0	7.2	96.7	25.7	0.0	129.6
Deferred tax assets	0.0	29.4	(13.2)	2.2	0.0	18.4
Affiliated loan receivables	0.0	34.9	224.3	21.4	(280.6)	0.0
Other assets	0.0	4.4	15.3	9.6	0.0	29.3
Total assets	$99.9	$1,103.9	$ 808.5	$ 487.3	$ (1,299.4)	$ 1,200.2
LIABILITIES AND EQUITY						
Accounts payable	$0.0	$65.1	$ 32.4	$ 44.4	$ 0.0	$ 141.9
Affiliated payables	0.0	(90.3)	13.8	2.2	74.3	0.0
Accrued liabilities	0.0	59.9	16.4	51.6	0.0	127.9
Current maturities of long-term debt	0.0	0.1	0.0	11.3	0.0	11.4
Total current liabilities	0.0	34.8	62.6	109.5	74.3	281.2
Long-term debt	0.0	643.3	0.0	22.3	0.0	665.6
Affiliated debt	0.0	233.7	19.3	27.6	(280.6)	0.0
Other long-term liabilities	0.0	92.0	14.4	41.2	0.0	147.6
Total liabilities	0.0	1,003.8	96.3	200.6	(206.3)	1,094.4
Koppers shareholders' equity	99.9	100.1	712.2	280.8	(1,093.1)	99.9
Noncontrolling interests	0.0	0.0	0.0	5.9	0.0	5.9
Total liabilities and equity	$99.9	$1,103.9	$ 808.5	$ 487.3	$ (1,299.4)	$ 1,200.2

Koppers Holdings Inc. 2018 Annual Report

Condensed Consolidating Statement of Cash Flows

For the Year Ended December 31, 2018

(Dollars in millions)	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated
Cash provided by (used in) operating activities	$28.9	$8.9	$ 30.3	$ 42.0	$ (31.8)	$ 78.3
Cash provided by (used in) investing activities:						
Capital expenditures and acquisitions	0.0	(338.0)	(9.1)	(26.6)	0.0	(373.7)
Repayments (loans to) from affiliates	0.0	13.9	(7.2)	(14.6)	7.9	0.0
Insurance proceeds received	0.0	0.0	0.0	1.5	0.0	1.5
Net cash proceeds (payments) from divestitures and asset sales	0.0	(8.5)	0.0	4.3	0.0	(4.2)
Net cash (used in) provided by investing activities	0.0	(332.6)	(16.3)	(35.4)	7.9	(376.4)
Cash provided by (used in) financing activities:						
Borrowings (repayments) of long-term debt	0.0	327.4	(0.1)	(12.7)	0.0	314.6
Borrowings (repayments) of affiliated debt	0.0	32.4	(13.9)	(10.6)	(7.9)	0.0
Deferred financing costs	0.0	(2.9)	0.0	0.0	0.0	(2.9)
Dividends paid	0.0	(31.8)	(0.0)	(0.0)	31.8	0.0
Stock repurchased	(28.9)	0.0	0.0	0.0	0.0	(28.9)
Net cash provided by (used in) financing activities	(28.9)	325.1	(14.0)	(23.3)	23.9	282.8
Effect of exchange rates on cash	0.0	0.0	0.0	(4.4)	0.0	(4.4)

Net increase (decrease) in cash and cash equivalents	0.0	1.4	0.0	(21.1)	0.0	(19.7)
Cash and cash equivalents at beginning of year	0.0	0.7	0.0	59.6	0.0	60.3
Cash and cash equivalents at end of period	$0.0	$2.1	$ 0.0	$ 38.5	$ 0.0	$ 40.6

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Condensed Consolidating Statement of Cash Flows

For the Year Ended December 31, 2017

(Dollars in millions)	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated
Cash provided by (used in) operating activities	$ 2.5	$ 116.8	$ 39.3	$ 60.7	$ (117.5)	$ 101.8
Cash provided by (used in) investing activities:						
Capital expenditures and acquisitions	0.0	(42.2)	(13.5)	(11.8)	0.0	(67.5)
Repayments (loans to) from affiliates	0.0	(0.6)	64.2	18.1	(81.7)	0.0
Repayment of loan	0.0	0.0	0.0	9.5	0.0	9.5
Net proceeds (payments) from divestitures and asset sales	0.0	0.1	1.0	0.4	0.0	1.5
Net cash (used in) provided by investing activities	0.0	(42.7)	51.7	16.2	(81.7)	(56.5)
Cash provided by (used in) financing activities:						
Borrowings (repayments) of long-term debt	0.0	17.0	0.0	(9.3)	(0.1)	7.6
Borrowings (repayments) of affiliated debt	0.0	(75.6)	9.1	(15.2)	81.7	0.0
Deferred financing costs	0.0	(11.0)	0.0	0.0	0.0	(11.0)
Dividends paid	0.0	(3.8)	(100.1)	(13.7)	117.6	0.0
Stock repurchased	(2.5)	0.0	0.0	0.0	0.0	(2.5)
Net cash used in financing activities	(2.5)	(73.4)	(91.0)	(38.2)	199.2	(5.9)
Effect of exchange rates on cash	0.0	0.0	0.0	0.1	0.0	0.1
Net increase in cash and cash equivalents	0.0	0.7	0.0	38.8	0.0	39.5
Cash and cash equivalents at	0.0	0.0	0.0	20.8	0.0	20.8

beginning of year						
Cash and cash equivalents at end of period	$ 0.0	$ 0.7	$ 0.0	$ 59.6	$ 0.0	$ 60.3

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Koppers Holdings Inc. 2018 Annual Report

Condensed Consolidating Statement of Cash Flows

For the Year Ended December 31, 2016

(Dollars in millions)	Parent	Koppers Inc.	Domestic Guarantor Subsidiaries	Non-Guarantor Subsidiaries	Consolidating Adjustments	Consolidated
Cash (used in) provided by operating activities	$ (0.1)	$ 106.6	$ 77.0	$ 29.1	$ (93.1)	$ 119.5
Cash (used in) provided by investing activities:						
Capital expenditures and acquisitions	0.0	(30.1)	(7.1)	(12.7)	0.0	(49.9)
Repayments (loans to) from affiliates	0.0	(6.9)	16.9	9.8	(19.8)	0.0
Net proceeds (payments) from divestitures and asset sales	0.0	0.0	0.9	(4.7)	0.0	(3.8)
Net cash (used in) provided by investing activities	0.0	(37.0)	10.7	(7.6)	(19.8)	(53.7)
Cash provided by (used in) financing activities:						
(Repayments) borrowings of long-term debt	0.0	(59.9)	0.1	(1.6)	0.0	(61.4)
Borrowings (repayments) of affiliated debt	0.0	(7.2)	(6.5)	(6.1)	19.8	0.0
Deferred financing costs	0.0	(1.4)	0.0	0.0	0.0	(1.4)
Dividends paid	0.0	(1.2)	(82.0)	(9.9)	93.1	0.0
Stock repurchased	0.1	0.0	0.0	0.0	0.0	0.1
Net cash (used in) provided by financing activities	0.1	(69.7)	(88.4)	(17.6)	112.9	(62.7)
Effect of exchange rates on cash	0.0	0.0	0.0	(4.1)	0.0	(4.1)
Net decrease in cash and	0.0	(0.1)	(0.7)	(0.2)	0.0	(1.0)

cash equivalents						
Cash and cash equivalents at beginning of year	0.0	0.1	0.7	21.0	0.0	21.8
Cash and cash equivalents at end of period	$ 0.0	$ 0.0	$ 0.0	$ 20.8	$ 0.0	$ 20.8

23. Related Party Transactions and Equity Investments

During 2016, the Company sold its 30 percent interest in TKK. The Company 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 the Company recorded a gain of $1.3 million in 2017.

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.

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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 the Company’s 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, the Company’s internal control over financial reporting.

Beginning January 1, 2018, we implemented ASC 606, Revenue from Contracts with Customers. Although the new revenue standard did not have a material impact on our ongoing net income, we implemented changes to our processes related to revenue recognition and the control activities with them. These included the development of new policies based on the five-step model provided in the new revenue standard, new training, ongoing contract review requirements, and gathering of information provided for disclosures.

On April 10, 2018, the Company acquired UIP and on February 28, 2018, the Company acquired KRR. In conducting our evaluation of the effectiveness of internal control over financial reporting, we elected to exclude UIP and KRR when conducting our annual evaluation of the effectiveness of our internal control over financial reporting as permitted by applicable regulations. The Company implemented internal controls over significant processes specific to the acquisitions that management believed were appropriate in consideration of and related to the integration of operations, systems, control activities, and accounting for the acquisitions and acquisition-related transactions. As of the date of this Annual Report on Form 10-K, we are in the process of further integrating the acquired UIP and KRR operations into our overall internal controls over financial reporting.

See Management Report on page 42 for management’s annual report on internal control over financial reporting. See Report of Independent Registered Public Accounting Firm on page 43 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 2019 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 the Company’s 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 Company”.

The information required by Item 405 of Regulation S-K is included in the Proxy Statement under the caption “General Matters – Section 16(a) Beneficial Ownership Reporting Compliance” 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 Business Conduct and Ethics 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 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 Business Conduct and Ethics or Code of Ethics Applicable to Senior Officers or any waiver (implicit or explicit) from a provision of our Code of Business Conduct and Ethics 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. 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, 2018, regarding the number of shares of our common stock that may be issued under our 2018 Long Term Incentive Plan:

Plan Category:	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in first column)

Equity compensation plans approved by security holders	1,476,624(1)	$29.63(2)	1,120,288

(1) Includes shares of our common stock that may be issued pursuant to outstanding options, time-based RSUs and performance-based RSUs awarded under our LTIP.

(2) 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 41.

(a) 2. Financial Statement Schedules

“Schedule II – Valuation and Qualifying Accounts and Reserves is included on page 97. 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

ITEM 16. FORM 10-K SUMMARY

None.

EXHIBIT INDEX

Exhibit No.	Exhibit	Incorporation by Reference
1.1	Purchase Agreement, dated as of January 19, 2017, among Koppers Inc., Koppers Holdings Inc., the other guarantors party thereto, and Wells Fargo Securities, LLC, as representative of the initial purchasers named therein	Exhibit 1.1 to the Company's Current Report on Form 8-K filed on January 20, 2017 (Commission File No. 001-32737).
2.1	Joint Venture Contract for the establishment of Koppers (Jiangsu) Carbon Chemical Company Limited between Koppers International B.V. and Yizhou Group Company Limited dated September 10, 2012	Exhibit 2.1 to the Company's Quarterly Report on Form 10-Q filed on November 9, 2012 (Commission File No. 001-32737).
2.2	Asset Purchase Agreement by and between Tolko Industries Ltd., Koppers Ashcroft Inc. and Koppers Inc., dated as of January 7, 2014	Exhibit 2.2 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).
2.3	Stock Purchase Agreement by and among Osmose Holdings, Inc., Osmose, Inc., Osmose Railroad Services, Inc., and Koppers Inc., dated as of April 13, 2014	Exhibit 2.3 to the Company's Quarterly Report on Form 10-Q filed on August 7, 2014 (Commission File No. 001-32737).
2.4	Amendment No. 1 to Stock Purchase Agreement, dated as of August 15, 2014, by and among Koppers Inc., Osmose Holdings, Inc., Osmose, Inc. and Osmose Railroad Services, Inc.	Exhibit 2.4 to the Company's Quarterly Report on Form 10-Q filed on November 10, 2014 (Commission File No. 001-32737).
2.5	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	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	Amended and Restated Articles of Incorporation of the Company, as amended on May 7, 2015	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	Second Amended and Restated Bylaws of the Company, as adopted on August 2, 2017	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	Indenture, by and among Koppers Inc., Koppers Holdings Inc., the Subsidiary Guarantors party thereto and Wells Fargo Bank, National Association, dated as of December 1, 2009	Exhibit 4.1 of the Company's Annual Report on Form 10-K for the year ended December 31, 2009 filed on February 19, 2010 (Commission File No. 001-32737).

Exhibit No.	Exhibit	Incorporation by Reference
4.3	Exchange and Registration Rights Agreement by and among Koppers Inc., Koppers Holdings and the other guarantors party hereto, Goldman, Sachs & Co., Banc of America Securities LLC, RBS Securities Inc. and UBS Securities LLC, dated December 1, 2009	Exhibit 4.3 of the Company's Annual Report on Form 10-K for the year ended December 31, 2009 filed on February 19, 2010 (Commission File No. 001-32737).
4.4	Supplemental Indenture, dated as of February 25, 2010, to the Indenture dated as of December 1, 2009 among Koppers Ventures LLC, Koppers Inc., Koppers Holdings Inc., as Guarantor, each of the subsidiary guarantors party thereto and Wells Fargo Bank, National Association	Exhibit 10.96 to the Company's Quarterly Report on Form 10-Q filed on November 10, 2014 (Commission File No. 001-32737).
4.5	Second Supplemental Indenture, dated as of August 15, 2014, to the Indenture dated as of December 1, 2009 among Koppers Inc., Koppers Holdings Inc., as Guarantor, each of the subsidiary guarantors party thereto and Wells Fargo Bank, National Association, as Trustee	Exhibit 10.97 to the Company's Quarterly Report on Form 10-Q filed on November 10, 2014 (Commission File No. 001-32737).
4.6	Third Supplemental Indenture, dated as of January 19, 2017, among Koppers Inc., Koppers Holdings Inc., the subsidiary guarantors party thereto, and Wells Fargo Bank, National Association, as Trustee	Exhibit 4.1 to the Company's Current Report on Form 8-K filed on January 20, 2017 (Commission File No. 001-32737).
4.7	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	Exhibit 4.1 to the Company's Current Report on Form 8-K filed on January 25, 2017 (Commission File No. 001-32737).
4.8	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	Exhibit 4.8 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).
4.9	Second Supplemental Indenture, dated as of April 17, 2018, among the Guaranteeing Subsidiaries party thereto, the Issuer,	Exhibit 4.9 to the Company's Quarterly Report on Form 10-Q filed on May 3,

	Koppers Holdings Inc., as a Guarantor, the other Subsidiary Guarantors and Wells Fargo Bank, National Association, as trustee	2018 (Commission File No. 001-32737).
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)

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Exhibit No.	Exhibit	Incorporation by Reference
10.9*	Employment agreement with Steven R. Lacy dated April 5, 2002	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).
10.13*	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)
10.15*	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)
10.32	Amendment and Restatement to Article VII of the Asset Purchase Agreement by and between Koppers Inc. and Beazer East, Inc., dated July 15, 2004	Exhibit 10.33 to the Koppers Inc. Quarterly Report on Form 10-Q filed on August 6, 2004 (Commission File No. 001-12716).
10.34	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.)	Exhibit 10.34 to the Company's Registration Statement on Form S-4 filed on February 14, 2005 (Registration No. 333-122810).
10.37*	Koppers Holdings Inc. 2005 Long Term Incentive Plan, as Amended and Restated effective March 24, 2016	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).

10.42	Asset Purchase Agreement dated April 28, 2006 between Reilly Industries, Inc. and Koppers Inc.	Exhibit 99.1 to the Company's Current Report on Form 8-K filed on April 28, 2006 (Commission File No. 001-32737).
10.48*	Koppers Holdings Inc. Benefit Restoration Plan	Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2007 (Commission File No. 001-32737).
10.49	Purchase Agreement dated as of August 3, 2008 by and among Koppers Inc., Carbon Investments, Inc., and ArcelorMittal S.A.	Exhibit 10.49 to the Company's Quarterly Report on Form 10-Q filed on November 6, 2008 (Commission File No. 001-32737).
10.51*	Koppers Inc. Supplemental Executive Retirement Plan I	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).

Exhibit No.	Exhibit	Incorporation by Reference
10.52*	Koppers Inc. Supplemental Executive Retirement Plan II, as amended and restated	Exhibit 10.93 to the Company’s Quarterly Report on Form 10-Q filed on August 7, 2014 (Commission File No. 001-32737).
10.53*	Amendment to Employment Agreement with Steven R. Lacy effective as of January 1, 2009	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).
10.55*	Amendment to Koppers Holdings Inc. Benefit Restoration Plan effective as of January 1, 2009	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).
10.62*	Restricted Stock Unit Issuance Agreement – Time Vesting	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).
10.63*	Restricted Stock Unit Issuance Agreement – Performance Vesting	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).
10.64*	Notice of Grant of Stock Option	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).
10.66*	Form of Koppers Holdings Inc. Restricted Stock Unit Issuance Agreement Non-Employee Director –Time Vesting	Exhibit 10.66 to the Company’s Quarterly Report on Form 10-Q filed on May 5, 2011 (Commission File No. 001-32737).

10.68*	Summary of Terms and Conditions of Employment between Mark R. McCormack and Koppers	Exhibit 10.68 to the Company's Quarterly Report on Form 10-Q filed on May 5, 2011 (Commission File No. 001-32737).
10.73*	Amendment No. 2 to Employment Agreement with Steven R. Lacy effective December 19, 2012	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).
10.80*	Form of Amended and Restated Change in Control Agreement entered into as of May 6, 2013 between the Company and the named Executive	Exhibit 10.80 to the Company's Quarterly Report on Form 10-Q filed on August 8, 2013 (Commission File No. 001-32737).

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Exhibit No.	Exhibit	Incorporation by Reference
10.81*	Amendment No. 3 to Employment Agreement with Steven R. Lacy effective August 7, 2013	Exhibit 10.81 to the Company's Quarterly Report on Form 10-Q filed on November 7, 2013 (Commission File No. 001-32737).
10.84*	2014 Restricted Stock Unit Issuance Agreement – Time Vesting	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).
10.92*	Key Employee Non-Competition Agreement, dated November 8, 2006, between Osmose Holdings, Inc. and Paul Goydan	Exhibit 10.98 to the Company's Quarterly Report on Form 10-Q filed on November 10, 2014 (Commission File No. 001-32737).
10.93*	Amendment No. 1 to Key Employee Non-Competition Agreement, dated April 2, 2012, between Osmose Holdings, Inc. and Paul Goydan	Exhibit 10.99 to the Company's Quarterly Report on Form 10-Q filed on November 10, 2014 (Commission File No. 001-32737).
10.97*	Koppers Annual Incentive Plan, as amended January 25, 2016.	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).
10.98*	Restricted Stock Unit Issuance Agreement – Time Vesting	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).
10.99*	Restricted Stock Unit Issuance Agreement – Performance Vesting	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).

10.100*	Notice of Grant of Stock Option	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).
10.105*	Restricted Stock Unit Issuance Agreement – Time Vesting for Stephen C. Reeder	Exhibit 10.105 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).
10.106*	Restricted Stock Unit Issuance Agreement – Performance Vesting for Stephen C. Reeder	Exhibit 10.106 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).

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Exhibit No.	Exhibit	Incorporation by Reference
10.107*	2016 Restricted Stock Unit Issuance Agreement – Performance Vesting	Exhibit 10.107 to the Company's Quarterly Report on Form 10-Q filed on May 6, 2016 (Commission File No. 001-32737).
10.109	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	Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 22, 2017 (Commission File No. 001-32737).
10.110*	Key Employee Non-Competition Agreement, dated November 8, 2006, by and among Osmose Holdings, Inc. and Stephen C. Reeder	Exhibit 10.110 to the Company's Quarterly Report on Form 10-Q filed on May 8, 2017 (Commission File No. 001-32737).
10.111*	Amendment No. 1 to Key Employee Non-Competition Agreement, dated April 2, 2012, by and among Osmose Holdings, Inc. and Stephen C. Reeder	Exhibit 10.111 to the Company's Quarterly Report on Form 10-Q filed on May 8, 2017 (Commission File No. 001-32737).
10.112*	Employment Letter Agreement, dated March 14, 2012, by and among Osmose, Inc. and Stephen C. Reeder	Exhibit 10.112 to the Company's Quarterly Report on Form 10-Q filed on May 8, 2017 (Commission File No. 001-32737).
10.113*	Amendment to Employment Letter Agreement, dated June 25, 2014, by and among Osmose, Inc. and Stephen C. Reeder	Exhibit 10.113 to the Company's Quarterly Report on Form 10-Q filed on May 8, 2017 (Commission File No. 001-32737).
10.114*	Amendment No. 2 to Employment Letter Agreement, entered into as of May 5, 2017, by and among Koppers Performance Chemicals, Inc. and Stephen C. Reeder	Exhibit 10.114 to the Company's Quarterly Report on Form 10-Q filed on May 8, 2017 (Commission File No. 001-32737).

10.115*	Koppers Holdings Inc. Employee Stock Purchase Plan	Appendix A to the Company's definitive proxy statement on Schedule 14A, filed on April 4, 2017 (Commission File No. 001-32737).
10.116*	2018 Restricted Stock Unit Issuance Agreement – Time Vesting for Stephen C. Reeder and Thomas D. Loadman	Exhibit 10.116 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 filed on February 27, 2018 (Commission File No. 001-32737).
10.117*	2018 Notice of Grant of Stock Option for Stephen C. Reeder and Thomas D. Loadman	Exhibit 10.117 to the Company's Annual Report on Form 10-K for the year ended December 31, 2017 filed on February 27, 2018 (Commission File No. 001-32737).
10.118	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	Exhibit 10.118 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).

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Exhibit No.	Exhibit	Incorporation by Reference
10.119	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	Exhibit 10.119 to the Company's Quarterly Report on Form 10-Q filed on May 3, 2018 (Commission File No. 001-32737).
10.120*	Koppers Holdings Inc. 2018 Long Term Incentive Plan	Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 3, 2018 (Commission File No. 001-32737).
10.121*	Form of Restricted Stock Unit Issuance Agreement Time Vesting	Exhibit 10.120 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.122*	Form of Restricted Stock Unit Issuance Agreement – Performance Vesting	Exhibit 10.121 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.123*	Form of Restricted Stock Unit Issuance Agreement Non-Employee Director – Time Vesting	Exhibit 10.122 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.124*	Form of Notice of Grant of Stock Option	Exhibit 10.123 to the Company's Quarterly Report on Form 10-Q filed on August 9, 2018 (Commission File No. 001-32737).
10.125* ***	Form of Restricted Stock Unit Issuance Agreement – Performance Vesting	
21***	List of subsidiaries of the Company.	
23.1***	Consent of Independent Registered Public Accounting Firm.	

24***	Powers of Attorney.
31.1***	Certification of Chief Executive Officer pursuant to Rule 13a-14(a).
31.2***	Certification of Chief Financial Officer pursuant to Rule 13a-14(a).
32.1***	Certification of Chief Executive Officer and Chief Financial Officer pursuant to Section 1350.

Explanation of Responses:

Exhibit No.	Exhibit	Incorporation by Reference
101.INS***	XBRL Instance Document	
101.SCH***	XBRL Taxonomy Extension Schema Document	
101.CAL***	XBRL Taxonomy Extension Calculation Linkbase Document	
101.DEF***	XBRL Taxonomy Extension Definition Linkbase Document	
101.LAB***	XBRL Taxonomy Extension Label Linkbase Document	
101.PRE***	XBRL Taxonomy Extension Presentation Linkbase Document	

* Management Contract or Compensatory Plan.

*** Filed herewith.

(P) Paper exhibits

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KOPPERS HOLDINGS INC.

SCHEDULE II – VALUATION AND QUALIFYING ACCOUNTS

For the years ended December 31, 2018, 2017 and 2016

(Dollars in millions)	Balance at Beginning of Year	Increase to Expense	Net Write-offs	Currency Translation	Balance at End of Year
2018					
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
2017					
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
2016					
Allowance for doubtful accounts	$ 6.5	$ 0.7	$ (3.40)	$ 0.0	$ 3.8
Deferred tax valuation allowance	$ 41.9	$ 0.9	$ (1.50)	$ (1.1)	$ 40.2

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 and Treasurer

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.

Signature	Capacity	Date
/s/ Leroy M. Ball, Jr. Leroy M. Ball, Jr.	Director, President and Chief Executive Officer	March 1, 2019
/s/ Michael J. Zugay Michael J. Zugay	Chief Financial Officer and Treasurer (Principal Financial and Principal Accounting Officer)	March 1, 2019
Stephen R. Tritch	Director and Non-Executive Chairman of the Board	
Cynthia A. Baldwin	Director	
X. Sharon Feng	Director	
Traci Jensen	Director	
David L. Motley	Director	By /s/ Leroy M. Ball, Jr. Leroy M. Ball, Jr. Attorney-in-Fact
Albert J. Neupaver	Director	
Louis L. Testoni	Director	
Sonja M. Wilkerson	Director	March 1, 2019
T. Michael Young	Director	

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