

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

FORM 10-Q

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the quarterly period ended September 30, 2019

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from _____ to _____
Commission file number 001-12019

QUAKER CHEMICAL CORPORATION
(Exact name of Registrant as specified in its charter)

Pennsylvania
(State or other jurisdiction of
incorporation or organization)

23-0993790
(I.R.S. Employer
Identification No.)

One Quaker Park, 901 E. Hector Street,
Conshohocken, Pennsylvania
(Address of principal executive offices)

19428 - 2380
(Zip Code)

Registrant's telephone number, including area code: 610-832-4000

Not Applicable

Former name, former address and former fiscal year, if changed since last report.

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

Title of each class
Common Stock, \$1 par value

Trading Symbol(s)
KWR

Name of each exchange on which registered
New York Stock Exchange

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

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

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

Large accelerated filer
Non-accelerated filer
Emerging growth company

Accelerated filer
Smaller reporting company

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

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

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Number of Shares of Common Stock
Outstanding on October 31, 2019

17,732,310

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**PART I
FINANCIAL INFORMATION**

Item 1. Financial Statements (Unaudited).

Quaker Chemical Corporation
Condensed Consolidated Statements of Operations
(Dollars in thousands, except per share data)

	Unaudited					
	Three Months Ended September 30,			Nine Months Ended September 30,		
	2019	2018	2019	2018	2019	2018
Net sales	\$ 325,130	\$ 222,022	\$ 742,209	\$ 656,039		
Cost of goods sold	220,073	140,929	486,224	418,562		
Gross profit	105,057	81,093	255,985	237,477		
Selling, general and administrative expenses	80,812	53,270	182,293	157,360		
Restructuring and related activities	24,045	—	24,045	—		
Combination and other acquisition-related expenses	14,702	2,904	23,789	12,404		
Operating (loss) income	(14,502)	24,919	25,858	67,713		
Other income (expense), net	203	(523)	(389)	(631)		
Interest expense, net	(6,102)	(989)	(7,611)	(3,223)		
(Loss) income before taxes and equity in net income of associated companies	(20,401)	23,407	17,858	63,859		
Taxes on (loss) income before equity in net income of associated companies	(5,633)	4,330	4,096	13,554		
(Loss) income before equity in net income of associated companies	(14,768)	19,077	13,762	50,305		
Equity in net income of associated companies	1,787	694	2,806	1,623		
Net (loss) income	(12,981)	19,771	16,568	51,928		
Less: Net income attributable to noncontrolling interest	72	81	186	260		
Net (loss) income attributable to Quaker Chemical Corporation	\$ (13,053)	\$ 19,690	\$ 16,382	\$ 51,668		
Per share data:						
Net (loss) income attributable to Quaker Chemical Corporation common shareholders – basic	\$ (0.80)	\$ 1.48	\$ 1.15	\$ 3.88		
Net (loss) income attributable to Quaker Chemical Corporation common shareholders – diluted	\$ (0.80)	\$ 1.47	\$ 1.14	\$ 3.87		

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

Quaker Chemical Corporation
Condensed Consolidated Statements of Comprehensive (Loss) Income
(Dollars in thousands)

	Unaudited			
	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Net (loss) income	\$ (12,981)	\$ 19,771	\$ 16,568	\$ 51,928
Other comprehensive (loss) income, net of tax				
Currency translation adjustments	(28,305)	(6,859)	(29,256)	(17,111)
Defined benefit retirement plans	1,126	678	2,354	2,258
Unrealized (loss) gain on available-for-sale securities	(81)	162	1,499	(493)
Other comprehensive loss	(27,260)	(6,019)	(25,403)	(15,346)
Comprehensive (loss) income	(40,241)	13,752	(8,835)	36,582
Less: Comprehensive loss (income) attributable to noncontrolling interest	22	(43)	(115)	(146)
Comprehensive (loss) income attributable to Quaker Chemical Corporation	\$ (40,219)	\$ 13,709	\$ (8,950)	\$ 36,436

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

Quaker Chemical Corporation
Condensed Consolidated Balance Sheets
(Dollars in thousands, except par value and share amounts)

	Unaudited	
	September 30, 2019	December 31, 2018
ASSETS		
Current assets		
Cash and cash equivalents	\$ 128,161	\$ 104,147
Accounts receivable, net	370,725	202,139
Inventories		
Raw materials and supplies	82,254	48,134
Work-in-process and finished goods	92,132	45,956
Prepaid expenses and other current assets	51,290	18,134
Total current assets	724,562	418,510
Property, plant and equipment, at cost	380,480	254,237
Less accumulated depreciation	(176,371)	(170,314)
Property, plant and equipment, net	204,109	83,923
Right of use lease assets	33,789	—
Goodwill	557,323	83,333
Other intangible assets, net	1,064,048	63,582
Investments in associated companies	91,937	21,316
Non-current deferred tax assets	5,415	6,946
Other non-current assets	43,313	32,055
Total assets	\$ 2,724,496	\$ 709,665
LIABILITIES AND EQUITY		
Current liabilities		
Short-term borrowings and current portion of long-term debt	\$ 36,535	\$ 670
Accounts and other payables	173,722	92,754
Accrued compensation	41,714	25,727
Accrued restructuring	19,320	—
Other current liabilities	74,469	32,319
Total current liabilities	345,760	151,470
Long-term debt	826,503	35,934
Long-term lease liabilities	24,259	—
Non-current deferred tax liabilities	212,673	10,003
Other non-current liabilities	111,851	75,889
Total liabilities	1,521,046	273,296
Commitments and contingencies (Note 18)		
Equity		
Common stock, \$1 par value; authorized 30,000,000 shares; issued and outstanding 2019 – 17,730,728 shares; 2018 – 13,338,026 shares	17,731	13,338
Capital in excess of par value	885,765	97,304
Retained earnings	404,569	405,125
Accumulated other comprehensive loss	(106,047)	(80,715)
Total Quaker shareholders' equity	1,202,018	435,052
Noncontrolling interest	1,432	1,317
Total equity	1,203,450	436,369
Total liabilities and equity	\$ 2,724,496	\$ 709,665

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

Quaker Chemical Corporation
Condensed Consolidated Statements of Cash Flows
(Dollars in thousands)

	Unaudited	
	Nine Months Ended	
	September 30,	
	2019	2018
Cash flows from operating activities		
Net income	\$ 16,568	\$ 51,928
Adjustments to reconcile net income to net cash provided by operating activities:		
Amortization of debt issuance costs	792	—
Depreciation and amortization	23,868	14,911
Equity in undistributed earnings of associated companies, net of dividends	(129)	2,658
Acquisition-related fair value adjustments related to inventory	10,214	
Deferred compensation, deferred taxes and other, net	(17,204)	(898)
Share-based compensation	3,042	2,847
Gain on disposal of property, plant, equipment and other assets	(111)	(680)
Insurance settlement realized	(624)	(680)
Combination and other acquisition-related expenses, net of payments	(14,218)	(349)
Restructuring and related activities	24,045	—
Pension and other postretirement benefits	434	(1,113)
Increase (decrease) in cash from changes in current assets and current liabilities, net of acquisitions:		
Accounts receivable	2,655	(14,029)
Inventories	1,376	(12,719)
Prepaid expenses and other current assets	(10,931)	2,196
Restructuring liabilities	(4,645)	—
Accounts payable and accrued liabilities	344	6,824
Net cash provided by operating activities	<u>35,476</u>	<u>50,896</u>
Cash flows from investing activities		
Investments in property, plant and equipment	(10,112)	(8,815)
Payments related to acquisitions, net of cash acquired	(798,064)	(500)
Proceeds from disposition of assets	75	803
Insurance settlement interest earned	185	102
Net cash used in investing activities	<u>(807,916)</u>	<u>(8,410)</u>
Cash flows from financing activities		
Proceeds from term loan debt	750,000	—
Borrowings (repayments) on revolving credit facilities, net	85,966	(11,040)
Borrowings (repayments) on other long-term debt, net	415	(478)
Financing-related debt issuance costs	(23,747)	—
Dividends paid	(15,003)	(14,385)
Stock options exercised, other	733	(227)
Distributions to noncontrolling affiliate shareholders	—	(834)
Net cash provided by (used in) financing activities	<u>798,364</u>	<u>(26,964)</u>
Effect of foreign exchange rate changes on cash	(1,889)	(6,168)
Net increase in cash, cash equivalents and restricted cash	24,035	9,354
Cash, cash equivalents and restricted cash at the beginning of the period	124,425	111,050
Cash, cash equivalents and restricted cash at the end of the period	<u>\$ 148,460</u>	<u>\$ 120,404</u>

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

Quaker Chemical Corporation
Notes to Condensed Consolidated Financial Statements
(Dollars in thousands, except share and per share amounts, unless otherwise stated)
(Unaudited)

Note 1 – Condensed Financial Information

As used in these Notes to Condensed Consolidated Financial Statements, the terms “Quaker”, “Quaker Houghton”, the “Company”, “we” and “our” refer to Quaker Chemical Corporation (doing business as Quaker Houghton), its subsidiaries, and associated companies, unless the context otherwise requires. As used in these Notes to Condensed Consolidated Financial Statements, the term Legacy Quaker refers to the Company prior to closing of its combination with Houghton International, Inc. (“Houghton”) (herein referred to as the “Combination”). The condensed consolidated financial statements included herein are unaudited and have been prepared in accordance with generally accepted accounting principles in the United States (“U.S. GAAP”) for interim financial reporting and the United States Securities and Exchange Commission (“SEC”) regulations. Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to such rules and regulations. In the opinion of management, the financial statements reflect all adjustments which are of a normal and recurring nature and are necessary for a fair statement of the financial position, results of operations and cash flows for the interim periods. The results for the three and nine months ended September 30, 2019, respectively, are not necessarily indicative of the results to be expected for the full year. These financial statements should be read in conjunction with the Company’s Annual Report filed on Form 10-K, as amended by the Company’s Form 10-K/A, for the year ended December 31, 2018.

Hyper-inflationary economies

Economies that have a cumulative three-year rate of inflation exceeding 100% are considered hyper-inflationary under U.S. GAAP. A legal entity that operates within an economy deemed to be hyper-inflationary is required to remeasure its monetary assets and liabilities to the applicable published exchange rates and record the associated gains or losses resulting from the remeasurement directly to the Condensed Consolidated Statements of Operations. The Company has a 50-50 joint venture in a Venezuelan affiliate, Kelko Quaker Chemical, S.A. Venezuela’s economy has been considered hyper-inflationary under U.S. GAAP since 2010. During the three and nine months ended September 30, 2018, the Company recorded remeasurement losses of less than \$0.1 million and \$0.3 million, respectively, associated with the applicable currency conversions related to Venezuela. These losses were recorded within equity in net income of associated companies in the Company’s Condensed Consolidated Statements of Operations. Due to heightened foreign exchange controls and restrictions currently present within Venezuela, during the third quarter of 2018 the Company concluded that it no longer had significant influence over this affiliate. Prior to this determination, the Company historically accounted for this affiliate under the equity method. As of September 30, 2019 and December 31, 2018, the Company has no remaining carrying value for its investment in Kelko Venezuela.

Based on various indices or index compilations currently being used to monitor inflation in Argentina as well as recent economic instability, effective July 1, 2018, Argentina’s economy was considered hyper-inflationary under U.S. GAAP. As a result, the Company began applying hyper-inflationary accounting with respect to the Company’s wholly owned Argentine subsidiary beginning July 1, 2018. In addition, Houghton has an Argentine subsidiary to which hyper-inflationary accounting also is applied. As of, and for the nine months ended September 30, 2019, the Company’s Argentine subsidiaries represented less than 1% of the Company’s consolidated total assets and net sales, respectively. During the three and nine months ended September 30, 2019, the Company recorded \$0.7 million and \$0.9 million, respectively, of remeasurement losses associated with the applicable currency conversions related to Argentina. Comparatively, during each of the three and nine months ended September 30, 2018, the Company recorded approximately \$0.5 million of remeasurement losses associated with the applicable currency conversion related to Argentina. These losses were recorded within foreign exchange gains (losses), net, which is a component of other income (expense), net, in the Company’s Condensed Consolidated Statements of Operations.

Note 2 – Business Combinations

Houghton

On August 1, 2019, the Company completed the Combination with Houghton, whereby the Company acquired all of the issued and outstanding shares of Houghton from Gulf Houghton Lubricants, Ltd. and certain other selling shareholders in exchange for a combination of cash and shares of the Company’s common stock in accordance with the share purchase agreement dated April 4, 2017. Houghton is a leading global provider of specialty chemicals and technical services for metalworking and other industrial applications. Combining Quaker and Houghton’s product and service offerings will allow Quaker Houghton to better serve its customers in its various end markets.

The Combination was subject to certain regulatory and shareholder approvals. At a shareholder meeting held during 2017, the Company’s shareholders approved the issuance of new shares of the Company’s common stock at closing of the Combination. Also in 2017, the Company received regulatory approvals for the Combination from China and Australia. The Company received regulatory approvals from the European Commission (“EC”) during the second quarter of 2019 and the U.S. Federal Trade Commission (“FTC”) in July 2019. The approvals from the FTC and the EC required the concurrent divestiture of certain steel and aluminum related product lines of Houghton, which were sold by Houghton on August 1, 2019 for approximately \$37 million in cash. The final remedy agreed with the EC and the FTC was consistent with the Company’s previous expectation that the total divested product lines would be approximately 3% of the combined company’s net sales.

Quaker Chemical Corporation
Notes to Condensed Consolidated Financial Statements - Continued
(Dollars in thousands, except share and per share amounts, unless otherwise stated)
(Unaudited)

The following table summarizes the fair value of consideration transferred in the Combination:

Cash transferred to Houghton shareholders (a)	\$	170,829
Cash paid to extinguish Houghton debt obligations		702,556
Fair value of common stock issued as consideration (b)		789,080
Total fair value of consideration transferred	\$	<u>1,662,465</u>

(a) A portion is held in escrow by a third party, subject to indemnification rights that lapse upon the achievement of certain milestones.

(b) Amount was determined based on 4.3 million shares, comprising 24.5% of the common stock of the Company at closing, and the closing price per share of Quaker Chemical Corporation common stock of \$182.27 on August 1, 2019.

The Company accounted for the Combination under the acquisition method of accounting. This method requires the recording of acquired assets, including separately identifiable intangible assets, at their fair value on the acquisition date. Any excess of the purchase price over the estimated fair value of the identifiable net assets acquired is recorded as goodwill. The determination of the estimated fair value of assets acquired requires management's judgment and often involves the use of significant estimates and assumptions, including assumptions with respect to future cash inflows and outflows, discount rates, royalty rates, asset lives and market multiples, among other items. Fair values were determined by management, using a variety of methodologies and resources, including external independent valuation experts. The valuation methods consisted of physical appraisals, discounted cash flow analyses, excess earnings, relief from royalty, and other appropriate valuation techniques to determine the fair value of assets acquired and liabilities assumed.

The following table presents the preliminary estimated fair values of Houghton net assets acquired:

Cash and cash equivalents	\$	75,821
Accounts receivable, net		179,745
Inventories, net		95,193
Prepaid expenses and other assets		11,373
Deferred tax assets		8,703
Property, plant and equipment		125,099
Right of use lease assets		10,747
Investments in associated companies		69,683
Other non-current assets		1,368
Intangible assets		1,022,500
Goodwill		<u>483,921</u>
Total assets purchased		2,084,153
Short-term borrowings, not refinanced at closing		9,297
Accounts payable, accrued expenses and other current liabilities		152,829
Deferred tax liabilities		213,779
Long-term lease liabilities		6,655
Other non-current liabilities		<u>39,128</u>
Total liabilities assumed		421,688
Total consideration paid for Houghton		1,662,465
Less: cash acquired		75,821
Less: fair value of common stock issued as consideration		<u>789,080</u>
Net cash paid for Houghton	\$	<u>797,564</u>

Investments in associated companies presented in the table above represents the Company's initial fair value estimate of its 50% interest in a Houghton joint venture in Korea. The Company accounts for this interest under the equity method of accounting. The Company allocated \$1,022.5 million of the purchase price to intangible assets, comprised of \$242.0 million of trademarks and formulations, to which management has assigned indefinite lives; \$671.4 million of customer relationships, to be amortized over 16 to 18 years; and \$109.1 million of existing product technology, to be amortized over 20 years. In addition, the Company recorded \$483.9 million of goodwill related to expected value not allocated to other acquired assets, none of which will be tax deductible. Factors contributing to the purchase price that resulted in goodwill included the acquisition of management, technology, intellectual property, business processes and personnel that will allow Quaker Houghton to better serve its customers. The expanded portfolio is expected to generate significant cross-selling opportunities and allow further expansion into growth markets such as India, Korea, Brazil and Mexico.

Quaker Chemical Corporation
Notes to Condensed Consolidated Financial Statements - Continued
(Dollars in thousands, except share and per share amounts, unless otherwise stated)
(Unaudited)

As of September 30, 2019, the allocation of the purchase price for the Combination has not been finalized and the one-year measurement period has not ended. Further adjustments may be necessary as a result of the Company's on-going assessment of additional information related to the fair value of assets acquired and liabilities assumed.

Commencing August 1, 2019, the Company's Condensed Consolidated Statements of Operations included the results of Houghton. Net sales of Houghton subsequent to closing of the Combination and included in the Company's Condensed Consolidated Statements of Operations were \$119.5 million. The following unaudited pro forma consolidated financial information has been prepared as if the Combination had taken place on January 1, 2018. The unaudited pro forma results include certain adjustments to each company's historical actual results, including: (i) additional depreciation and amortization expense based on the initial estimates of fair value step up and estimated useful lives of depreciable fixed assets, definite-lived intangible assets and investment in associated companies acquired; (ii) adoption of required accounting guidance and alignment of related accounting policies, (iii) elimination of transactions between Quaker and Houghton; (iv) elimination of results associated with the divested product lines; (v) adjustment to interest expense, net, to reflect the impact of the financing and capital structure of the combined Company; and (vi) adjustment for certain Combination and other acquisition-related costs to reflect such costs as if they were incurred in the period immediately following the pro-forma closing of the Combination on January 1, 2018. The adjustments described in (vi) include an expense recorded in costs of goods sold ("COGS") associated with selling inventory acquired in the Combination which was adjusted to fair value as part of purchase accounting, restructuring expense incurred associated with the Company's global restructuring program initiated post-closing of the Combination and certain other integration costs incurred post-closing included in combination and other acquisition-related expenses. These costs have been presented in the pro forma results as if they were incurred during the nine months ended September 30, 2018. Pro forma results are not necessarily indicative of the results that would have occurred if the acquisition had occurred on the date indicated, or that may result in the future for various reasons, including the potential impact of revenue and cost synergies on the business.

<i>Unaudited Pro Forma</i> <i>(as if the Combination occurred on January 1, 2018)</i>	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Net sales	\$ 386,396	\$ 417,460	\$ 1,170,981	\$ 1,255,242
Net income attributable to Quaker Chemical Corporation	22,491	28,459	70,533	41,322

Combination and other acquisition-related expenses have been and are expected to continue to be significant. The Company incurred total costs of \$15.1 million and \$25.9 million during the three and nine months ended September 30, 2019, and \$3.8 million and \$14.4 million during the three and nine months ended September 30, 2018, respectively, related to the Combination and other acquisition-related activities. These costs included certain legal, financial and other advisory and consultant costs related to due diligence, regulatory approvals and integration planning as well as professional fees associated with closing the Combination. These costs also include interest costs to maintain the bank commitment ("ticking fees") for the Combination during each of three and nine months ended September 30, 2019 and 2018, and specifically during the nine months ended September 30, 2018, a gain on the sale of an available-for-sale asset. As of September 30, 2019 and December 31, 2018, the Company had current liabilities related to the Combination and other acquisition-related activities of \$6.8 million and \$8.2 million, respectively, primarily recorded within other current liabilities on its Condensed Consolidated Balance Sheets.

Norman Hay

On October 1, 2019, the Company completed its acquisition of the operating divisions of Norman Hay plc, a private U.K. company that provides specialty chemicals, operating equipment, and services to industrial end markets, for a purchase price of 80.0 million GBP or approximately \$98 million, subject to certain normal and routine post-closing adjustments. The results of operations of the acquired operating divisions of Norman Hay plc are not included in the Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2019, because the date of closing was after September 30, 2019. Transaction expenses associated with this acquisition that were incurred during the three and nine months ended September 30, 2019 are included in Combination and other acquisition-related expenses in the Company's Condensed Consolidated Statements of Operations. A preliminary purchase price allocation of assets acquired and liabilities assumed has not been presented as that information is not available as of the date of these Condensed Consolidated Financial Statements.

Other Acquisitions

In March 2018, the Company purchased certain formulations and product technology for the mining industry for \$1.0 million. The Company allocated the entire purchase price to intangible assets representing formulations and product technology, to be amortized over 10 years. In accordance with the terms of the applicable purchase agreement, \$0.5 million of the purchase price was paid at signing, and the remaining \$0.5 million of the purchase price was paid during the first quarter of 2019.

Note 3 – Recently Issued Accounting Standards

The Financial Accounting Standards Board (“FASB”) issued an accounting standard update in August 2018 that modifies certain disclosure requirements for employers that sponsor defined benefit pension or other postretirement plans. The amendments in this accounting standard update remove disclosures that are no longer considered cost beneficial, clarify the specific requirements of certain disclosures, and add new disclosure requirements as relevant. The guidance within this accounting standard update is effective for annual periods beginning after December 15, 2020, and should be applied retrospectively to all periods presented. Early adoption is permitted. The Company has not early adopted the guidance and is currently evaluating its implementation.

The FASB also issued an accounting standard update in August 2018 that clarifies the accounting for implementation costs incurred in a cloud computing arrangement under a service contract. This guidance generally aligns the requirements for capitalizing implementation costs incurred in a hosting arrangement under a service contract with the requirements for capitalizing implementation costs related to internal-use software. The guidance within this accounting standard update is effective for annual periods beginning after December 15, 2019 and may be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption. Early adoption is permitted. The Company has not early adopted the guidance and is currently evaluating its implementation.

The FASB issued an additional accounting standard update in August 2018 that modifies certain disclosure requirements for fair value measurements. The guidance removes certain disclosure requirements regarding transfers between levels of the fair value hierarchy as well as certain disclosures related to the valuation processes for certain fair value measurements. Further, the guidance added certain disclosure requirements including unrealized gains and losses and significant unobservable inputs used to develop certain fair value measurements. The guidance within this accounting standard update is effective for annual and interim periods beginning after December 15, 2019, and may be applied prospectively in the initial year of adoption or retrospectively to all periods presented, depending on the amended disclosure requirement. Early adoption is permitted. The Company has not early adopted the guidance and is currently evaluating its implementation.

The FASB issued an accounting standard update in February 2018 that allows a reclassification from accumulated other comprehensive (loss) income (“AOCI”) to retained earnings for stranded tax effects resulting from the U.S. Tax Cuts and Jobs Act (“U.S. Tax Reform”) enacted in December 2017. The guidance within this accounting standard update is effective for annual and interim periods beginning after December 15, 2018, and may be applied either in the period of adoption or retrospectively to each period in which the effect of the change in the U.S. federal corporate income tax rate in U.S. Tax Reform is recognized. Early adoption was permitted. The Company adopted this guidance in the first quarter of 2019, as required, but elected not to reclassify any stranded tax effects resulting from U.S. Tax Reform, therefore adoption of this guidance did not have any impact on its financial statements.

The FASB issued an accounting standard update in June 2016 related to the accounting for and disclosure of credit losses. In May 2019, the FASB issued an accounting standard update to provide targeted transition relief to increase comparability of financial statements. The guidance introduces a new model for recognizing credit losses on financial instruments, including customer accounts receivable, based on an estimate of current expected credit losses. The guidance within this accounting standard update is effective for annual and interim periods beginning after December 15, 2019, and aspects of the guidance which may be applicable to the Company should be applied on a modified retrospective basis. Early adoption is permitted. The Company has not early adopted the guidance and is currently evaluating its implementation.

The FASB issued an accounting standard update in February 2016 regarding the accounting and disclosure for leases. During 2018 and 2019, the FASB issued a series of accounting standard updates to clarify and expand on the original 2016 implementation guidance, including providing an accounting policy election for lessors, certain targeted improvements around comparative reporting requirements and accounting for lease and non-lease components by lessors as well as other technical corrections and improvements. The amendments in these 2018 and 2019 updates did not change the core principles of the guidance previously issued in February 2016. The guidance within all of the leasing accounting standard updates were effective for annual and interim periods beginning after December 15, 2018, and should have been applied on a modified retrospective basis, applying the transition requirements either (a) at the beginning of the earliest period presented in the financial statements in the year of adoption (January 1, 2017) or (b) in the period of adoption (January 1, 2019). Early adoption was permitted.

As part of the Company’s implementation planning and its impact assessment related to the new lease accounting guidance, the Company developed a detailed project plan, identified and established a cross-functional implementation team and developed pre-adoption internal controls. In addition, the Company gathered an inventory of the Company’s outstanding leases globally, performed certain review procedures to ensure completeness of its lease population and abstracted required information from its lease population for inclusion within the Company’s leasing software. The Company performed similar implementation planning and impact assessment procedures as it relates to Houghton.

Quaker Chemical Corporation
Notes to Condensed Consolidated Financial Statements - Continued
(Dollars in thousands, except share and per share amounts, unless otherwise stated)
(Unaudited)

For legacy Quaker, the Company adopted the guidance in the first quarter of 2019, as required, electing to use a modified retrospective transition approach and applied transition requirements as of January 1, 2019, as permitted. Subsequent to the acquisition of Houghton, previously a private company, the Company adopted the guidance and elected to use a modified retrospective transition approach and applied transition requirements as of August 1, 2019. Comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods. In addition, the Company elected to apply certain of the permitted transition practical expedients within the new lease accounting related to lease identification, lease classification, and initial direct costs. The Company made certain accounting policy elections as a result of adopting the new lease accounting guidance, which include not separating lease and non-lease components, applying a portfolio approach in the development of the Company's discount rates, applying the short-term lease exemption and establishing a capitalization threshold policy.

Adoption of the lease accounting guidance did not have a material impact on the Company's reported earnings or cash flows, however, adoption did result in a material impact to the Company's balance sheet to establish the right of use lease assets and associated lease liabilities. As of January 1, 2019, legacy Quaker recorded a cumulative effect of an accounting change that resulted in an increase to its right of use lease assets of \$27.3 million, an increase of \$5.3 million of short-term lease liabilities and \$21.4 million of long-term lease liabilities, a decrease in property, plant and equipment, net of \$1.1 million, a decrease in other current liabilities of \$0.4 million and a decrease to retained earnings of less than \$0.1 million. The cumulative effect of an accounting change related to Houghton as of August 1, 2019 resulted in an increase to its right of use lease assets of \$10.7 million, and an increase of \$4.1 million of short-term lease liabilities and approximately \$6.6 million of long-term lease liabilities. See Note 6 of Notes to Condensed Consolidated Financial Statements.

Note 4 – Business Segments

The Company's reportable segments reflect the structure of the Company's internal organization, the method by which the Company's resources are allocated and the manner by which the Company assesses its performance. During the third quarter of 2019 and in connection with the Combination, the Company reorganized its executive management team to align with its new business structure, which reflects the method by which the Company assesses its performance and allocates its resources. The Company's new reportable segment structure includes four segments: (i) Americas; (ii) Europe, Middle East and Africa ("EMEA"); (iii) Asia/Pacific; and (iv) Global Specialty Businesses. The three geographic segments are composed of the net sales and operations in each respective region, excluding net sales and operations managed globally by the Global Specialty Businesses segment, which includes the Company's container, metal finishing, mining, offshore, specialty coatings and specialty grease businesses. All prior period information for legacy Quaker has been recast to reflect these four segments as the Company's new reportable segments. Prior to the Company's re-segmentation during the third quarter of 2019, the Company's historical reportable segments were four geographic regions: (i) North America; (ii) EMEA; (iii) Asia/Pacific; and (iv) South America.

Though the Company changed its reportable segments in the third quarter of 2019, the calculation of the reportable segments' measures of earnings remains otherwise generally consistent with past practices. Segment operating earnings for the Company's reportable segments are comprised of net sales less COGS and selling, general and administrative expenses ("SG&A") directly related to the respective segment's product sales. Operating expenses not directly attributable to the net sales of each respective segment are excluded from segment operating earnings, which includes certain corporate and administrative costs, Combination and other acquisition-related expenses, restructuring and related activities and COGS related to acquired Houghton inventory sold, which was adjusted to fair value as a part of purchase accounting. Other items not specifically identified with the Company's reportable segments include interest expense, net and other income (expense), net.

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The following table presents information about the performance of the Company's reportable segments for the three and nine months ended September 30, 2019 and 2018:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Net sales				
Americas	\$ 116,710	\$ 77,374	\$ 260,682	\$ 225,115
EMEA	82,468	51,346	184,280	164,753
Asia/Pacific	74,266	49,928	165,234	143,388
Global Specialty Businesses	51,686	43,374	132,013	122,783
Total net sales	\$ 325,130	\$ 222,022	\$ 742,209	\$ 656,039
Segment operating earnings				
Americas	\$ 23,880	\$ 16,998	\$ 52,235	\$ 47,877
EMEA	13,370	8,592	31,232	28,102
Asia/Pacific	20,404	14,012	45,375	39,631
Global Specialty Businesses	14,983	12,215	36,100	33,224
Total segment operating earnings	72,637	51,817	164,942	148,834
Combination and other acquisition-related expenses	(14,702)	(2,904)	(23,789)	(12,404)
Restructuring and related activities	(24,045)	—	(24,045)	—
Fair value step up of Houghton inventory sold	(10,214)	—	(10,214)	—
Non-operating and administrative expenses	(29,123)	(22,064)	(68,266)	(63,044)
Depreciation of corporate assets and amortization	(9,055)	(1,930)	(12,770)	(5,673)
Operating (loss) income	(14,502)	24,919	25,858	67,713
Other income (expense), net	203	(523)	(389)	(631)
Interest expense, net	(6,102)	(989)	(7,611)	(3,223)
(Loss) income before taxes and equity in net income of associated companies	\$ (20,401)	\$ 23,407	\$ 17,858	\$ 63,859

Inter-segment revenues for the three and nine months ended September 30, 2019 were \$2.1 million and \$4.8 million for Americas, \$5.3 million and \$15.4 million for EMEA, less than \$0.1 million and \$0.1 million for Asia/Pacific, and \$1.4 million and \$4.1 million for Global Specialty Businesses, respectively. Inter-segment revenues for the three and nine months ended September 30, 2018 were \$2.4 million and \$6.5 million for Americas, \$4.5 million and \$16.8 million for EMEA, less than \$0.1 million and \$0.5 million for Asia/Pacific, and \$1.2 million and \$3.7 million for Global Specialty Businesses, respectively. However, all inter-segment transactions have been eliminated from each reportable segment's net sales and earnings for all periods presented above.

Note 5 – Net Sales and Revenue Recognition

Business Description

The Company develops, produces, and markets a broad range of formulated chemical specialty products and offers chemical management services ("Fluidcare") for various heavy industrial and manufacturing applications throughout its four segments. The Combination increased the Company's addressable metalworking, metals and industrial end markets, which include: steel, aluminum, aerospace and defense, transportation and OEM, transportation components, offshore, architectural aluminum, fire-resistant hydraulics, die casting, tube and pipe, can and container, mining, specialty coatings and specialty greases. The Combination also strengthened the product portfolio of the combined Company. The major product lines of Quaker Houghton include metal removal and cleaning fluids, corrosion preventatives and cleaners, metal drawing and forming fluids, die cast mold releases, heat treatment and quenchants, metal forging fluids, hydraulic fluids, specialty greases, offshore control fluids, rolling lubricants, rod and wire drawing and surface treatments.

A substantial portion of the Company's sales worldwide are made directly through its own employees and its Fluidcare programs, with the balance being handled through distributors and agents. The Company's employees visit the plants of customers regularly, work on site, and, through training and experience, identify production needs which can be resolved or alleviated either by adapting the Company's existing products or by applying new formulations developed in its laboratories. The chemical specialty industry comprises many companies similar in size to the Company, as well as companies larger and smaller than Quaker Houghton. The

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offerings of many of the Company's competitors differ from those of Quaker Houghton; some offer a broad portfolio of fluids, including general lubricants, while others have a more specialized product range. All competitors provide different levels of technical services to individual customers. Competition in the industry is based primarily on the ability to provide products that meet the needs of the customer, render technical services and laboratory assistance to the customer and, to a lesser extent, on price.

As part of the Company's Fluidcare business, certain third-party product sales to customers are managed by the Company. Where the Company acts as a principal, revenues are recognized on a gross reporting basis at the selling price negotiated with its customers. Where the Company acts as an agent, revenue is recognized on a net reporting basis generally at the amount of the administrative fee earned by the Company for ordering the goods. In determining whether the Company is acting as a principal or an agent in each arrangement, the Company considers whether it is primarily responsible for the obligation to provide the specified good, has inventory risk before the specified good has been transferred to the customer and has discretion in establishing the prices for the specified goods. The Company transferred third-party products under arrangements recognized on a net reporting basis of \$13.6 million and \$34.4 million for the three and nine months ended September 30, 2019, respectively, and \$11.7 million and \$35.8 million for the three and nine months ended September 30, 2018, respectively.

A significant portion of the Company's revenues are realized from the sale of process fluids and services to manufacturers of steel, automobiles, aircraft, appliances, and durable goods, and, therefore, the Company is subject to the same business cycles as those experienced by these manufacturers and their customers. The Company's financial performance is generally correlated to the volume of global production within the industries it serves, rather than discretely related to the financial performance of such industries. Furthermore, steel customers typically have limited manufacturing locations compared to metalworking customers and generally use higher volumes of products at a single location. As previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018, during 2018 the Company's five largest customers (each composed of multiple subsidiaries or divisions with semi-autonomous purchasing authority) accounted for approximately 17% of consolidated net sales, with its largest customer accounting for approximately 8% of consolidated net sales.

Revenue Recognition Model

The Company applies the FASB's guidance on revenue recognition which requires the Company to recognize revenue in an amount that reflects the consideration to which the Company expects to be entitled in exchange for goods or services transferred to its customers. To do this, the Company applies the five-step model in the FASB's guidance, which requires the Company to: (i) identify the contract with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when, or as, the Company satisfies a performance obligation.

The Company identifies a contract with a customer when a sales agreement indicates approval and commitment of the parties; identifies the rights of the parties; identifies the payment terms; has commercial substance; and it is probable that the Company will collect the consideration to which it will be entitled in exchange for the goods or services that will be transferred to the customer. In most instances, the Company's contract with a customer is the customer's purchase order. For certain customers, the Company may also enter into a sales agreement which outlines a framework of terms and conditions which apply to all future and subsequent purchase orders for that customer. In these situations, the Company's contract with the customer includes both the sales agreement and the specific customer purchase order. Because the Company's contract with a customer is typically for a single transaction or customer purchase order, the duration of the contract is almost always one year or less. As a result, the Company has elected to apply certain practical expedients and omit certain disclosures of remaining performance obligations for contracts that have an initial term of one year or less as permitted by the FASB.

The Company identifies a performance obligation in a contract for each promised good or service that is separately identifiable from other obligations in the contract and for which the customer can benefit from the good or service either on its own or together with other resources that are readily available to the customer. The Company determines the transaction price as the amount of consideration it expects to be entitled to in exchange for fulfilling the performance obligations, including the effects of any variable consideration, significant financing elements, amounts payable to the customer or noncash consideration. For any contracts that have more than one performance obligation, the Company allocates the transaction price to each performance obligation in an amount that depicts the amount of consideration to which the Company expects to be entitled in exchange for satisfying each performance obligation.

In accordance with the last step of the FASB's guidance, the Company recognizes revenue when, or as, it satisfies the performance obligation in a contract by transferring control of a promised good or providing the service to the customer. The Company recognizes revenue over time whenever the customer simultaneously receives and consumes the benefits provided by the Company's performance; the Company's performance creates or enhances an asset that the customer controls as the asset is created or enhanced; or the Company's performance does not create an asset with an alternative use to the entity, and the entity has an

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enforceable right to payment, including a profit margin, for performance completed to date. For performance obligations not satisfied over time, the Company determines the point in time at which a customer obtains control of an asset and the Company satisfies a performance obligation by considering when the Company has a right to payment for the asset; the customer has legal title to the asset; the Company has transferred physical possession of the asset; the customer has the significant risks and rewards of ownership of the asset; or the customer has accepted the asset.

The Company typically satisfies its performance obligations and recognizes revenue at a point in time for product sales, generally when products are shipped or delivered to the customer, depending on the terms underlying each arrangement. In circumstances where the Company's products are on consignment, revenue is generally recognized upon usage or consumption by the customer. For any Fluidcare or other services provided by the Company to the customer, the Company typically satisfies its performance obligations and recognizes revenue over time, as the promised services are performed. The Company uses input methods to recognize revenue over time related to these services, including labor costs and time incurred. The Company believes that these input methods represent the most indicative measure of the Fluidcare or other service work performed by the Company.

Other Considerations

The Company does not have standard payment terms for all customers globally, however the Company's general payment terms require customers to pay for products or services provided after the performance obligation is satisfied. The Company does not have significant financing arrangements with its customers. The Company does not have significant amounts of variable consideration in its contracts with customers and where applicable, the Company's estimates of variable consideration are not constrained. The Company records certain third-party license fees in other income (expense), net, in its Condensed Consolidated Statements of Operations, which generally include sales-based royalties in exchange for the license of intellectual property. These license fees are recognized in accordance with their agreed-upon terms and when performance obligations are satisfied, which is generally when the third party has a subsequent sale.

Practical Expedients and Accounting Policy Elections

The Company has made certain accounting policy elections and elected to use certain practical expedients as permitted by the FASB in applying the guidance on revenue recognition. It is the Company's policy not to adjust the promised amount of consideration for the effects of a significant financing component because the Company expects, at contract inception, that the period between when the Company transfers a promised good or service to the customer and when the customer pays for that good or service will be one year or less. In addition, it is the Company's policy to expense costs to obtain a contract as incurred when the expected period of benefit, and therefore the amortization period, is one year or less. It is also the Company's accounting policy to exclude from the measurement of the transaction price all taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction and collected by the entity from a customer, including sales, use, value added, excise and various other taxes. Lastly, the Company has elected to account for shipping and handling activities that occur after the customer has obtained control of a good as a fulfillment cost, rather than an additional promised service.

Contract Assets and Liabilities

The Company recognizes a contract asset or receivable on its Condensed Consolidated Balance Sheet when the Company performs a service or transfers a good in advance of receiving consideration. A receivable is the Company's right to consideration that is unconditional and only the passage of time is required before payment of that consideration is due. A contract asset is the Company's right to consideration in exchange for goods or services that the Company has transferred to a customer. The Company had no material contract assets recorded on its Condensed Consolidated Balance Sheets as of September 30, 2019 or December 31, 2018.

A contract liability is recognized when the Company receives consideration, or if it has the unconditional right to receive consideration, in advance of performance. A contract liability is the Company's obligation to transfer goods or services to a customer for which the Company has received consideration, or a specified amount of consideration is due, from the customer. The Company's contract liabilities primarily represent deferred revenue recorded for customer payments received by the Company prior to the Company satisfying the associated performance obligation. Deferred revenues are presented within other current liabilities in the Company's Condensed Consolidated Balance Sheets. The Company had approximately \$2.4 million and \$1.3 million of deferred revenue as of September 30, 2019 and December 31, 2018, respectively. During the nine months ended September 30, 2019, the Company satisfied the associated performance obligations and recognized revenue of \$1.3 million related to advance customer payments.

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Disaggregated Revenue

The Company sells its various industrial process fluids, its chemical specialties and its technical expertise as a global product portfolio. The Company generally manages and evaluates its performance by segment first, and then by customer industry, rather than by individual product lines. The Company has provided annual net sales information for its product lines greater than 10% in its previously filed Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018. Those annual percentages are generally consistent with the current year's net sales by product line, excluding the Combination. Also, net sales of each of the Company's major product lines are generally spread throughout all three of the Company's geographic segments, and in most cases, approximately proportionate to the level of total sales in each region.

The following tables disaggregate the Company's net sales by segment, region, customer industry, and timing of revenue recognized for the three and nine months ended September 30, 2019 and 2018. The Company has made certain reclassifications of disaggregated customer industry disclosures for the three and nine months ended September 30, 2018 to conform with the Company's current period customer industry segmentation.

Three Months Ended September 30, 2019						
	Americas		EMEA		Asia/Pacific	Consolidated Total
Customer Industries						
Metals	\$ 45,782	\$	26,440	\$	40,667	\$ 112,889
Metalworking and other	70,928		56,028		33,599	160,555
	116,710		82,468		74,266	273,444
Global Specialty Businesses	38,813		5,071		7,802	51,686
	<u>\$ 155,523</u>	\$	<u>87,539</u>	\$	<u>82,068</u>	<u>\$ 325,130</u>
Timing of Revenue Recognized						
Product sales at a point in time	\$ 150,906	\$	85,579	\$	80,362	\$ 316,847
Services transferred over time	4,617		1,960		1,706	8,283
	<u>\$ 155,523</u>	\$	<u>87,539</u>	\$	<u>82,068</u>	<u>\$ 325,130</u>

Three Months Ended September 30, 2018						
	Americas		EMEA		Asia/Pacific	Consolidated Total
Customer Industries						
Metals	\$ 42,052	\$	23,998	\$	31,553	\$ 97,603
Metalworking and other	35,322		27,348		18,375	81,045
	77,374		51,346		49,928	178,648
Global Specialty Businesses	33,392		4,153		5,829	43,374
	<u>\$ 110,766</u>	\$	<u>55,499</u>	\$	<u>55,757</u>	<u>\$ 222,022</u>
Timing of Revenue Recognized						
Product sales at a point in time	\$ 107,957	\$	55,437	\$	53,998	\$ 217,392
Services transferred over time	2,809		62		1,759	4,630
	<u>\$ 110,766</u>	\$	<u>55,499</u>	\$	<u>55,757</u>	<u>\$ 222,022</u>

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Nine Months Ended September 30, 2019

	Americas	EMEA	Asia/Pacific	Consolidated Total
Customer Industries				
Metals	\$ 126,145	\$ 75,330	\$ 98,230	\$ 299,705
Metalworking and other	134,537	108,950	67,004	310,491
	260,682	184,280	165,234	610,196
Global Specialty Businesses	102,130	12,696	17,187	132,013
	<u>\$ 362,812</u>	<u>\$ 196,976</u>	<u>\$ 182,421</u>	<u>\$ 742,209</u>
Timing of Revenue Recognized				
Product sales at a point in time	\$ 352,504	\$ 194,911	\$ 177,416	\$ 724,831
Services transferred over time	10,308	2,065	5,005	17,378
	<u>\$ 362,812</u>	<u>\$ 196,976</u>	<u>\$ 182,421</u>	<u>\$ 742,209</u>

Nine Months Ended September 30, 2018

	Americas	EMEA	Asia/Pacific	Consolidated Total
Customer Industries				
Metals	\$ 123,618	\$ 77,047	\$ 90,310	\$ 290,975
Metalworking and other	101,497	87,706	53,078	242,281
	225,115	164,753	143,388	533,256
Global Specialty Businesses	93,323	12,967	16,493	122,783
	<u>\$ 318,438</u>	<u>\$ 177,720</u>	<u>\$ 159,881</u>	<u>\$ 656,039</u>
Timing of Revenue Recognized				
Product sales at a point in time	\$ 309,810	\$ 177,548	\$ 153,861	\$ 641,219
Services transferred over time	8,628	172	6,020	14,820
	<u>\$ 318,438</u>	<u>\$ 177,720</u>	<u>\$ 159,881</u>	<u>\$ 656,039</u>

Note 6 – Leases

The Company determines if an arrangement is a lease at its inception. This determination generally depends on whether the arrangement conveys the right to control the use of an identified fixed asset explicitly or implicitly for a period of time in exchange for consideration. Control of an underlying asset is conveyed if the Company obtains the rights to direct the use of, and obtains substantially all of the economic benefits from the use of, the underlying asset. Lease expense for variable leases and short-term leases is recognized when the obligation is incurred.

The Company has operating leases for certain facilities, vehicles and machinery and equipment with remaining lease terms up to 8 years. In addition, the Company has certain land use leases with remaining lease terms up to 96 years. The lease term for all of the Company's leases includes the non-cancellable period of the lease plus any additional periods covered by an option to extend the lease that the Company is reasonably certain it will exercise. Operating leases are included in right of use lease assets, other current liabilities and long-term lease liabilities on the Condensed Consolidated Balance Sheet. Right of use lease assets and liabilities are recognized at each lease's commencement date based on the present value of its lease payments over its respective lease term. The Company uses the stated borrowing rate for a lease when readily determinable. When a stated borrowing rate is not available in a lease agreement, the Company uses its incremental borrowing rate based on information available at the lease's commencement date to determine the present value of its lease payments. In determining the incremental borrowing rate used to present value each of its leases, the Company considers certain information including fully secured borrowing rates readily available to the Company and its subsidiaries. The Company has immaterial finance leases, which are included in property, plant and equipment, current portion of long-term debt and long-term debt on the Condensed Consolidated Balance Sheet.

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Operating lease expense is recognized on a straight-line basis over the lease term. Operating lease expense for the three and nine months ended September 30, 2019 was \$2.5 million and \$6.0 million, respectively. Short-term lease expense for the three and nine months ended September 30, 2019 was \$0.5 million and \$0.8 million, respectively. The Company has no material variable lease costs or sublease income for the three or nine months ended September 30, 2019. Cash paid for operating leases during the nine months ended September 30, 2019 was \$5.9 million. Subsequent to the Company's adoption of the new lease accounting guidance, the Company recorded new right of use lease assets and associated lease liabilities of \$1.4 million during the nine months ended September 30, 2019. Supplemental balance sheet information related to the Company's leases is as follows:

	September 30, 2019
Right of use lease assets	\$ 33,789
Other current liabilities	9,056
Long-term lease liabilities	24,259
Total operating lease liabilities	\$ 33,315
Weighted average remaining lease term (years)	4.9
Weighted average discount rate	4.31%

Maturities of operating lease liabilities as of September 30, 2019 were as follows:

	September 30, 2019
For the remainder of 2019	\$ 2,713
For the year ended December 31, 2020	9,845
For the year ended December 31, 2021	7,892
For the year ended December 31, 2022	4,943
For the year ended December 31, 2023	3,358
For the year ended December 31, 2024 and beyond	8,642
Total lease payments	37,393
Less: imputed interest	(4,078)
Present value of lease liabilities	\$ 33,315

Pursuant to the Company's adoption of the new lease accounting guidance using a modified retrospective transition approach, as permitted, comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods. As previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018, the following table presents the Company's future minimum rental commitments under operating leases as of December 31, 2018:

For the year ended 2019	\$ 7,068
For the year ended 2020	5,635
For the year ended 2021	4,509
For the year ended 2022	3,523
For the year ended 2023	2,659
For the year ended 2024 and beyond	7,779

Note 7 – Restructuring and Related Activities

During the third quarter of 2019, the Company's management approved and the Company initiated a global restructuring plan (the "QH Program") as part of its plan to realize certain cost synergies associated with the Combination. The QH Program will include restructuring and associated severance costs to reduce total headcount by approximately 275 people globally and plans for the closure of certain manufacturing and non-manufacturing facilities. The exact timing and total costs associated with the QH Program will depend on a number of factors and is subject to change, however, the Company currently expects reduction in headcount and site closures to occur over the next two years under the QH Program and estimates that total costs related to the QH Program will approximate one-time the anticipated cost synergies realized. Employee separation benefits will vary depending on local regulations within certain foreign countries and will include severance and other benefits.

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Activity in the Company's accrual for restructuring under the QH Program for the nine months ended September 30, 2019 is as follows:

	QH Program
Accrued restructuring as of December 31, 2018	\$ —
Restructuring expense	24,045
Cash payments	(4,645)
Currency translation adjustments	(80)
Accrued restructuring as of September 30, 2019	\$ 19,320

There were no QH Program accrued restructuring liabilities as of December 31, 2018 and no restructuring expense during the nine months ended September 30, 2018.

Note 8 – Share-Based Compensation

The Company recognized the following share-based compensation expense in SG&A in its Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2019 and 2018:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Stock options	\$ 455	\$ 267	\$ 888	\$ 785
Nonvested stock awards and restricted stock units	867	550	2,005	1,901
Employee stock purchase plan	21	24	68	68
Director stock ownership plan	27	31	81	93
Total share-based compensation expense	\$ 1,370	\$ 872	\$ 3,042	\$ 2,847

During the third quarter of 2019, the Company granted stock options under its long-term incentive plan ("LTIP") that are subject only to time-based vesting over up to a three-year period. For the purposes of determining the fair value of stock option awards, the Company used the Black-Scholes option pricing model and the assumptions set forth in the table below:

Number of options granted	51,610
Dividend yield	1.12 %
Expected volatility	26.29 %
Risk-free interest rate	1.52 %
Expected term (years)	4.0

The fair value of these options is amortized on a straight-line basis over the vesting period. As of September 30, 2019, unrecognized compensation expense related to all options granted was \$2.0 million, to be recognized over a weighted average remaining period of 1.4 years.

During the first nine months of 2019, the Company granted 40,382 nonvested restricted shares and 6,060 nonvested restricted stock units under its long-term incentive plan, subject only to time-based vesting, generally over a one to three-year period. The fair value for these grants is based on the trading price of the Company's common stock on the date of grant. The Company adjusts the grant date fair value of these awards for expected forfeitures based on historical experience. As of September 30, 2019, unrecognized compensation expense related to the nonvested restricted shares was \$6.5 million, to be recognized over a weighted average remaining period of 2.1 years, and unrecognized compensation expense related to nonvested restricted stock units was \$0.9 million, to be recognized over a weighted average remaining period of 2.0 years.

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Note 9 – Pension and Other Postretirement Benefits

The components of net periodic benefit cost for the three and nine months ended September 30, 2019 and 2018 are as follows:

	Three Months Ended September 30,				Nine Months Ended September 30,			
	Pension Benefits		Other Postretirement Benefits		Pension Benefits		Other Postretirement Benefits	
	2019	2018	2019	2018	2019	2018	2019	2018
Service cost	\$ 993	\$ 938	\$ 2	\$ —	\$ 2,956	\$ 2,886	\$ 5	\$ 5
Interest cost	1,852	1,015	36	31	4,068	3,096	107	97
Expected return on plan assets	(2,140)	(1,229)	—	—	(4,102)	(3,793)	—	—
Actuarial loss amortization	799	782	—	2	2,348	2,375	—	31
Prior service cost amortization	(34)	(28)	—	—	(117)	(88)	—	—
Net periodic benefit cost	<u>\$ 1,470</u>	<u>\$ 1,478</u>	<u>\$ 38</u>	<u>\$ 33</u>	<u>\$ 5,153</u>	<u>\$ 4,476</u>	<u>\$ 112</u>	<u>\$ 133</u>

The Company previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018 that the Company began the process of terminating Quaker's primary non-contributory U.S. pension plan (the "U.S. Pension Plan") during the fourth quarter of 2018. As part of this process, and considering the fully funded status of the U.S. Pension Plan, the asset allocation of the U.S. Pension Plan was adjusted modeling a glide path that is more heavily allocated to fixed income securities with lengthened durations to match the projected liabilities. As a result, the expected return on plan assets declined during the three and nine months ended September 30, 2019 compared to the three and nine months ended September 30, 2018. In order to terminate the U.S. Pension Plan in accordance with Internal Revenue Service ("I.R.S.") and Pension Benefit Guaranty Corporation requirements, the Company will be required to fully fund the U.S. Pension Plan on a termination basis and will commit to contribute additional assets if necessary, to do so. The amount necessary to do so is not yet known but is currently estimated to be between \$0 and \$10 million. In addition, the Company expects to record a non-cash pension settlement charge at plan termination. This settlement charge will include the immediate recognition into expense of the related unrecognized losses within AOCI on the balance sheet as of the plan termination date. The Company does not have a current estimate for this future settlement charge, however, the gross AOCI related to the U.S. Pension Plan was approximately \$18.5 million as of September 30, 2019. During the third quarter of 2019, the Company received a favorable termination determination letter from the I.R.S. and has amended the Plan to comply with final regulations of the Internal Revenue Code. The Company currently estimates that the U.S. Pension Plan termination will be completed during 2020.

Employer Contributions

The Company previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018 that it expected to make minimum cash contributions of approximately \$6 million to its legacy Quaker pension and other postretirement benefit plans in 2019. As of September 30, 2019, approximately \$4 million of contributions have been made to the Company's legacy Quaker pension and other postretirement benefit plans.

Houghton Pension Plans

In connection with the Combination, the Company assumed all of Houghton's defined benefit pension plans. The pension plans cover certain U.S. salaried and hourly employees ("Houghton U.S. Plans") as well as certain employees in the U.K., France and Germany ("Non-U.S. Plans"). The Houghton U.S. Plans provide benefits based on an employee's years of service and compensation received for the highest five consecutive years of earnings. Houghton management made the decision to freeze benefits for non-union employees as of March 31, 2009 for the Houghton U.S. Plans. The Non-U.S. Plans provide benefits based on a formula of years of service and a percentage of compensation which varies among the Non-U.S. Plans. Houghton management made the decision to freeze its U.K. Non-U.S. plan benefits as of May 1, 2013. Subsequent to closing the Combination, during the nine months ended September 30, 2019, the Company made approximately \$1 million of contributions to the Houghton U.S. and Non-U.S. Plans, and expects to contribute an additional approximately \$1 million to these plans over the remainder of 2019. As of September 30, 2019, the acquired pension balance for these plans was \$24.1 million, which is recorded within other current and other non-current liabilities on the Company's Condensed Consolidated Balance Sheet.

In connection with the Combination, the Company now contributes to a multiemployer defined benefit pension plan under terms of a collective bargaining union contract (the Cleveland Bakers and Teamsters Pension Fund). The expiration date of the collective bargaining contract is May 1, 2022. As of January 1, 2018, the last valuation date available for the multiemployer plan, total plan liabilities were approximately \$592 million. As of December 31, 2018, the multiemployer pension plan had total plan assets of approximately \$315 million. The Company's contribution rate to the multiemployer pension plan is specified in the collective

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bargaining union contract and contributions are made to the plan based on its union employee payroll. The Company contributed less than \$0.1 million during the three and nine months ended September 30, 2019. While the Company may also have additional liabilities imposed by law as a result of its participation in the multiemployer defined benefit pension plan, there is no liability as of September 30, 2019. The Employee Retirement Income Security Act of 1974, as amended by the Multi-Employer Pension Plan Amendments Act of 1980, imposes certain contingent liabilities upon an employer who is a contributor to a multiemployer pension plan if the employer withdraws from the plan or the plan is terminated or experiences a mass withdrawal.

The Pension Protection Act of 2006 (the "PPA") also added special funding and operational rules generally applicable to plan years beginning after 2007 for multiemployer plans with certain classifications based on a multitude of factors (including, for example, the plan's funded percentage, cash flow position and whether the plan is projected to experience a minimum funding deficiency). The plan to which the Company contributes is in "critical" status. Plans in the "critical" status classification must adopt measures to improve their funded status through a funding improvement or rehabilitation plan which may require additional contributions from employers (which may take the form of a surcharge on benefit contributions) and/or modifications to retiree benefits. The amount of additional funds that the Company may be obligated to contribute to the plan in the future cannot be estimated as such amounts will be likely based on future levels of work that require the specific use of those union employees covered by the plan, and the amount of that future work and the number of affected employees that may be needed is not reasonably estimable.

Note 10 – Other Income (Expense), Net

The components of other income (expense), net, for the three and nine months ended September 30, 2019 and 2018 are as follows:

	Three Months Ended September 30,		September 30,		Nine Months Ended September 30,		September 30,	
	2019	2018	2019	2018	2019	2018	2019	2018
Income from third party license fees	\$ 242	\$ 144	\$ 655	\$ 583				
Foreign exchange gains (losses), net	376	(285)	(5)	(1,007)				
Gain on fixed asset disposals, net	72	81	111	680				
Non-income tax refunds and other related credits	82	127	1,047	668				
Pension and postretirement benefit costs, non-service components	(513)	(568)	(2,304)	(1,713)				
Other non-operating income	113	115	335	374				
Other non-operating expense	(169)	(137)	(228)	(216)				
Total other income (expense), net	\$ 203	\$ (523)	\$ (389)	\$ (631)				

Gain on fixed asset disposals, net, during the nine months ended September 30, 2018 includes a \$0.6 million gain on the sale of an available-for-sale asset related to the Combination. Foreign exchange gains (losses), net during the three and nine months ended September 30, 2018 include a foreign currency transaction gain of approximately \$0.4 million related to the liquidation of an inactive legal entity. In addition, foreign exchange gains (losses), net, in all periods includes losses related to hyper-inflationary accounting with respect to the Company's Argentine subsidiaries. See Note 1 of Notes to Condensed Consolidated Financial Statements.

Note 11 – Income Taxes and Uncertain Income Tax Positions

The Company's effective tax rate for the three and nine months ended September 30, 2019 was 27.6% and 22.9%, respectively, compared to 18.5% and 21.2%, respectively, for the three and nine months ended September 30, 2018. These effective tax rates include the impacts of certain Combination and other acquisition-related non-deductible costs in all periods presented. In addition, these effective tax rates include certain tax adjustments recorded to decrease the Company's fourth quarter of 2017 initial estimate of the one-time charge on deemed repatriation of undistributed earnings as part of the U.S. Tax Reform. The Company's effective tax rate for the three months ended September 30, 2019 includes the cumulative year-to-date tax benefit recorded during the third quarter of 2019 as a result of one of its subsidiaries receiving approval for the renewal of a concessionary 15% tax rate compared to its 25% statutory tax rate. The concessionary tax rate was available to the Company's subsidiary during all quarters of 2018. In addition, the effective tax rates in the three and nine months ended September 30, 2019 also include incremental withholding tax expense associated with the assumed repatriation of previously untaxed current earnings and profits of certain of the Company's foreign subsidiaries, partially offset by favorable return to provision adjustments in the current year and certain share-based compensation-related tax benefits for deductions in excess of compensation cost associated with stock option exercises.

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As previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018, the Company recognized a deferred tax liability of \$7.9 million in the fourth quarter of 2018 related to the Company's estimate of non-U.S. taxes it will incur when distributing the unremitted earnings of certain foreign subsidiaries. The Company incurred withholding cash tax payments related to the repatriation of a portion of these foreign earnings during the first nine months of 2019 and reduced this deferred tax liability by approximately \$3.6 million. The deferred tax liability on unremitted earnings as of September 30, 2019 is \$11.7 million, which reflects an increase as a result of recording a \$8.1 million deferred tax liability on certain foreign unremitted earnings assumed in connection with the Combination. As of September 30, 2019, the Company's cumulative liability for gross unrecognized tax benefits was \$13.4 million. As of December 31, 2018, the Company's cumulative liability for gross unrecognized tax benefits was \$7.1 million. Pursuant to the Combination, the Company acquired gross unrecognized tax benefits of \$9.1 million.

The Company continues to recognize interest and penalties associated with uncertain tax positions as a component of taxes on income before equity in net income of associated companies in its Condensed Consolidated Statements of Operations. The Company recognized an expense for interest of \$0.1 million and \$0.4 million for the three and nine months ended September 30, 2019, respectively, and an expense for penalties of less than \$0.1 million and \$0.1 million for the three and nine months ended September 30, 2019, respectively. Comparatively, the Company recognized an expense of less than \$0.1 million and \$0.1 million for interest, and a credit of \$0.2 million and an expense of \$0.1 million for penalties in its Condensed Consolidated Statements of Operations for the three and nine months ended September 30, 2018, respectively. As of September 30, 2019, the Company had accrued \$1.9 million for cumulative interest and \$2.4 million for cumulative penalties in its Condensed Consolidated Balance Sheet, compared to \$0.6 million for cumulative interest and \$0.8 million for cumulative penalties accrued at December 31, 2018.

During the nine months ended September 30, 2019 and 2018, the Company recognized a decrease of \$1.5 million and \$0.7 million, respectively, in its cumulative liability for gross unrecognized tax benefits due to the expiration of the applicable statutes of limitations for certain tax years.

The Company estimates that during the year ending December 31, 2019 it will reduce its cumulative liability for gross unrecognized tax benefits by approximately \$1.9 million due to the expiration of the statute of limitations with regard to certain tax positions. This estimated reduction in the cumulative liability for unrecognized tax benefits does not consider any increase in liability for unrecognized tax benefits with regard to existing tax positions or any increase in cumulative liability for unrecognized tax benefits with regard to new tax positions for the year ending December 31, 2019.

The Company and its subsidiaries are subject to U.S. Federal income tax, as well as the income tax of various state and foreign tax jurisdictions. Tax years that remain subject to examination by major tax jurisdictions include Brazil from 2000, Italy from 2006, China from 2009, Canada from 2010, the Netherlands from 2013, Mexico and the United Kingdom from 2014, Spain from 2015, the U.S. and Germany from 2016, India from fiscal year beginning April 1, 2016 and ending March 31, 2017, and various U.S. state tax jurisdictions from 2009.

As a result of the closing of the Combination and subsequent purchase accounting, as described in Note 2 of Notes to Condensed Consolidated Financial Statements, the Company has recorded initial estimates for certain acquired tax assets and liabilities. These initial estimates included: (i) deferred tax liabilities of approximately \$187 million related to the fair value step-up for certain intangible assets, property, plant and equipment, and inventory; (ii) deferred tax assets of approximately \$38 million related to foreign tax credit carry-forwards, net of applicable valuation allowances related to these foreign tax credit carry-forwards to reflect the forecasted expiration of unutilized credits; (iii) deferred tax liabilities of approximately \$8 million related to non-U.S. taxes it will incur when distributing unremitted foreign earnings of certain Houghton subsidiaries; (iv) deferred tax liabilities of approximately \$8 million related to the Company's outside basis difference in its Korean joint venture and (v) as it relates to uncertain tax positions, an approximately \$12 million reserve primarily related to the deductibility of expenses at certain Houghton subsidiaries.

As previously reported, the Italian tax authorities have assessed additional tax due from the Company's subsidiary, Quaker Italia S.r.l., relating to the tax years 2007 through 2013. The Company has filed for competent authority relief from these assessments under the Mutual Agreement Procedures ("MAP") of the Organization for Economic Co-Operation and Development for all years except 2007. During 2018, the Italian tax authorities assessed additional tax due from Quaker Italia, S.r.l., relating to the tax years 2014 and 2015. The Company met with the Italian tax authorities in the fourth quarter of 2018 and second quarter of 2019 to discuss these assessments and no resolution was agreed upon, so the Company filed for competent authority relief from these assessments under MAP in the second quarter of 2019, consistent with the Company's previous filings for 2008 through 2013. During the third quarter of 2019, the Italian and Spanish tax authorities proposed a settlement relating to the Company's competent authority requests for tax years 2007 through 2010. The Company is currently reviewing the settlement proposal and considering its available options. Tax years 2011 through 2015 are still pending competent authority review. As of September 30, 2019, the Company believes it has adequate reserves for uncertain tax positions with respect to these and all other audits.

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During the third quarter of 2019, Houghton's Italian subsidiary received a tax assessment related to the 2014 tax year. In addition, tax years 2015 through 2017 are also under audit. The Company is still assessing the technical merits of the 2014 assessment and, therefore, has not recorded a reserve for this jeopardy tax assessment as of September 30, 2019.

Note 12 – Earnings Per Share

The following table summarizes earnings per share calculations for the three and nine months ended September 30, 2019 and 2018:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Basic (loss) earnings per common share				
Net (loss) income attributable to Quaker Chemical Corporation	\$ (13,053)	\$ 19,690	\$ 16,382	\$ 51,668
Less: loss (income) allocated to participating securities	46	(77)	(40)	(226)
Net (loss) income available to common shareholders	\$ (13,007)	\$ 19,613	\$ 16,342	\$ 51,442
Basic weighted average common shares outstanding	16,185,724	13,278,259	14,271,121	13,263,417
Basic (loss) earnings per common share	\$ (0.80)	\$ 1.48	\$ 1.15	\$ 3.88
Diluted (loss) earnings per common share				
Net (loss) income attributable to Quaker Chemical Corporation	\$ (13,053)	\$ 19,690	\$ 16,382	\$ 51,668
Less: loss (income) allocated to participating securities	46	(77)	(40)	(226)
Net (loss) income available to common shareholders	\$ (13,007)	\$ 19,613	\$ 16,342	\$ 51,442
Basic weighted average common shares outstanding	16,185,724	13,278,259	14,271,121	13,263,417
Effect of dilutive securities	—	37,282	42,850	33,928
Diluted weighted average common shares outstanding	16,185,724	13,315,541	14,313,971	13,297,345
Diluted (loss) earnings per common share	\$ (0.80)	\$ 1.47	\$ 1.14	\$ 3.87

The Company's calculation of (loss) earnings per diluted share attributable to Quaker Chemical Corporation common shareholders for the three and nine months ended September 30, 2019 was impacted by the 4.3 million share issuance in connection with closing the Combination, comprising approximately 24.5% of the common stock of the Company as of September 30, 2019, as well as the variability of its reported earnings. Therefore, the per diluted share result for each of the first three quarters of 2019, as reported on a standalone basis, may not sum to the per diluted share result for the nine months ended September 30, 2019. Certain stock options and restricted stock units are not included in the diluted (loss) earnings per share calculation because the effect would have been anti-dilutive. All of the Company's potentially dilutive shares for the three months ended September 30, 2019 are anti-dilutive and not included in the dilutive (loss) earnings per share calculation because of the Company's net loss for this period. The calculated amount of anti-dilutive shares not included in the diluted (loss) earnings per common share calculation was 1,905 for the three months ended September 30, 2019. There were no anti-dilutive shares for the nine months ended September 30, 2019. Comparatively, the calculated amount of anti-dilutive shares not included in the diluted earnings per share calculation was 718 and 3,480 for the three and nine months ended September 30, 2018, respectively.

Note 13 – Restricted Cash

The Company has restricted cash recorded in other assets related to proceeds from an inactive subsidiary of the Company which previously executed separate settlement and release agreements with two of its insurance carriers for an original total value of \$35.0 million. The proceeds of both settlements are restricted and can only be used to pay claims and costs of defense associated with the subsidiary's asbestos litigation. The proceeds of the settlement and release agreements have been deposited into interest bearing accounts that earned \$0.2 million in the nine months ended September 30, 2019 compared to \$0.1 in the nine months ended September 30, 2018. The interest was offset by \$0.6 million of payments during the nine months ended September 30, 2019 compared to \$0.7 million in the nine months ended September 30, 2018. Due to the restricted nature of the proceeds, a corresponding deferred credit was established in other non-current liabilities for an equal and offsetting amount, and will remain until the restrictions lapse or the funds are exhausted via payments of claims and costs of defense.

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The following table provides a reconciliation of cash, cash equivalents and restricted cash as of September 30, 2019 and 2018 and December 31, 2018 and 2017:

	September 30,		December 31,	
	2019	2018	2018	2017
Cash and cash equivalents	\$ 128,161	\$ 99,810	\$ 104,147	\$ 89,879
Restricted cash included in other current assets	460	—	—	—
Restricted cash included in other assets	19,839	20,594	20,278	21,171
Cash, cash equivalents and restricted cash	<u>\$ 148,460</u>	<u>\$ 120,404</u>	<u>\$ 124,425</u>	<u>\$ 111,050</u>

Note 14 – Goodwill and Other Intangible Assets

The Company completes its annual impairment test during the fourth quarter of each year, or more frequently if triggering events indicate a possible impairment in one or more of its reporting units. As described in Note 4 of Notes to Condensed Consolidated Financial Statements, during the third quarter of 2019, the Company changed its reportable segments and associated reporting units. In connection with this change, the Company performed a qualitative assessment and concluded that there was no evidence of events or circumstances that would indicate a material change from the Company's prior year quantitative impairment assessment. The Company has recorded no impairment charges in its past and continually evaluates financial performance, economic conditions and other relevant developments in assessing if an interim period impairment test for one or more of its reporting units is necessary.

In connection with the change in its reportable segments, noted above, the Company reallocated existing goodwill to each of the new reportable segments and associated reporting units, based on management's estimate of the relative fair value of each reporting unit. The result of this reallocation of goodwill has been recast to the following disclosure of goodwill, by reportable segment, as of December 31, 2018. Changes in the carrying amount of goodwill for the nine months ended September 30, 2019 were as follows:

	Americas	EMEA	Asia/Pacific	Global Specialty Businesses	Total
Balance as of December 31, 2018	\$ 28,464	\$ 17,423	\$ 13,149	\$ 24,297	\$ 83,333
Goodwill acquired	233,301	99,894	138,372	12,354	483,921
Currency translation adjustments	(1,407)	(2,711)	(4,946)	(867)	(9,931)
Balance as of September 30, 2019	<u>\$ 260,358</u>	<u>\$ 114,606</u>	<u>\$ 146,575</u>	<u>\$ 35,784</u>	<u>\$ 557,323</u>

Gross carrying amounts and accumulated amortization for definite-lived intangible assets as of September 30, 2019 and December 31, 2018 were as follows:

	Gross Carrying Amount		Accumulated Amortization	
	2019	2018	2019	2018
Customer lists and rights to sell	\$ 735,760	\$ 74,989	\$ 37,850	\$ 29,587
Trademarks, formulations and product technology	141,908	33,275	18,943	16,469
Other	5,780	5,840	5,707	5,566
Total definite-lived intangible assets	<u>\$ 883,448</u>	<u>\$ 114,104</u>	<u>\$ 62,500</u>	<u>\$ 51,622</u>

The Company recorded \$9.2 million and \$12.8 million of amortization expense for the three and nine months ended September 30, 2019, respectively. Comparatively, the Company recorded \$1.8 million and \$5.5 million of amortization expense for the three and nine months ended September 30, 2018, respectively. Estimated annual aggregate amortization expense for the current year and subsequent five years is as follows:

For the year ended December 31, 2019	\$ 18,261
For the year ended December 31, 2020	51,141
For the year ended December 31, 2021	50,805
For the year ended December 31, 2022	50,654
For the year ended December 31, 2023	50,441
For the year ended December 31, 2024	50,015

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The Company has three indefinite-lived intangible assets totaling \$243.1 million as of September 30, 2019, including \$242.0 million of indefinite-lived intangible assets for trademarks and tradenames associated with the Houghton Combination. Comparatively, the Company had two indefinite-lived intangible assets totaling \$1.1 million as of December 31, 2018.

Note 15 – Debt

The Company's indebtedness as of September 30, 2019 and December 31, 2018 includes the following:

	As of September 30, 2019		As of December 31, 2018	
	Interest Rate	Outstanding Balance	Interest Rate	Outstanding Balance
Credit Facilities:				
Revolver	3.60%	\$ 110,000	1.00%	\$ 24,034
U.S. Term Loan	3.60%	600,000	N/A	—
EURO Term Loan	1.50%	147,162	N/A	—
Industrial development bonds	5.26%	10,000	5.26%	10,000
Bank lines of credit and other debt obligations	Various	10,846	Various	2,570
Total debt		\$ 878,008		\$ 36,604
Less: debt issuance costs		(14,970)		—
Less: short-term and current portion of long-term debts		(36,535)		(670)
Total long-term debt		\$ 826,503		\$ 35,934

Credit facilities

As previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018, in connection with the Combination, the Company initially secured \$1.15 billion in commitments from Bank of America Merrill Lynch and Deutsche Bank to fund the purchase consideration and to provide additional liquidity, which was replaced with a syndicated bank agreement (the "New Credit Facility") with a group of lenders. Prior to closing the Combination, during July 2019, the Company amended and extended the bank commitment to August 30, 2019. The New Credit Facility was contingent upon and was not effective until the closing of the Combination. Concurrent with the closing of the Combination on August 1, 2019, the New Credit Facility is in full effect and is the Company's primary borrowing facility, replacing the Company's previous revolving credit facility (the "Old Credit Facility").

The New Credit Facility is comprised of a \$400.0 million multicurrency revolver ("Revolver"), a \$600.0 million U.S. dollar denominated term loan ("U.S. Term Loan"), each with the Company as borrower, and a \$150.0 million (euro equivalent) euro denominated term loan ("EURO Term Loan") with Quaker Chemical B.V., a Dutch subsidiary of the Company as borrower (collectively with the U.S. Term Loan, the "Term Loans"), each with a five-year term maturing in August 2024. The maximum amount available under the New Credit Facility can be increased by \$300.0 million at the Company's option if the lenders agree and the Company has satisfied certain conditions. Borrowings under the New Credit Facility bear interest at a base rate or LIBOR plus an applicable margin based upon the Company's consolidated net leverage ratio. Interest cost incurred on the outstanding borrowings under the New Credit Facility post-closing of the Combination was approximately 3.3%. In addition to paying interest on outstanding principal under the New Credit Facility, the Company is required to pay a 0.25% commitment fee to the lenders under the Revolver in respect of the unutilized commitments thereunder. The Company has unused capacity under the Revolver of approximately \$281 million, net of bank letters of credit of approximately \$9 million, as of September 30, 2019. Until closing of the Combination, the Company incurred certain interest costs to maintain the bank commitment ("ticking fees"), which began to accrue on September 29, 2017 and bore an interest rate of 0.30% per annum. Concurrent with closing of the Combination and executing the New Credit Facility, the Company paid approximately \$6.3 million of ticking fees.

The New Credit Facility is subject to certain financial and other covenants, including covenants that the Company's initial consolidated net debt to consolidated adjusted EBITDA ratio cannot exceed 4.25 to 1 and the Company's consolidated adjusted EBITDA to interest expense ratio cannot be less than 3.0 to 1 (as such covenants are defined therein). At the closing of the Combination and as of September 30, 2019, the Company was in compliance with all of the New Credit Facility covenants. The Term Loans have quarterly principal amortization during their respective five-year maturities, with 5.0% amortization of the principal balance due in years 1 and 2, 7.5% in year 3, and 10.0% in years 4 and 5, with the remaining principal amount due at maturity. The New Credit Facility is guaranteed by certain of the Company's domestic subsidiaries and is secured by first priority liens on substantially all of the assets of the Company and the domestic subsidiary guarantors, subject to certain customary exclusions, and the obligations of the Dutch borrower only are guaranteed by certain foreign subsidiaries on an unsecured basis.

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The New Credit Facility required the Company fix at least 20% of the variable interest rates on its Term Loans. In November 2019, the Company entered into \$170.0 million notional amounts of three-year interest rate swaps at a fixed rate of approximately 3.1% to satisfy this requirement of the New Credit Facility as well as to manage the Company's exposure to variable interest rate risk associated with the New Credit Facility. The Company anticipates that these interest rate swaps will be designated and will qualify as cash flow hedges.

The Company capitalized \$23.7 million of certain third-party debt issuance costs in connection with executing the New Credit Facility. Approximately \$15.5 million of the capitalized costs was attributed to the Term Loans and was recorded as a direct reduction of long-term debt on the Company's Condensed Consolidated Balance Sheet. Approximately \$8.3 million was attributed to the Revolver and recorded within other assets on the Company's Condensed Consolidated Balance Sheet. These capitalized costs will be amortized into interest expense over the five-year term of the New Credit Facility. The Old Credit Facility was a \$300.0 million syndicated multicurrency, unsecured revolving credit facility with a group of lenders. The maximum amount available under the Old Credit Facility could have been increased to \$400.0 million at the Company's option if the lenders agreed and the Company satisfied certain conditions. Borrowings under the Old Credit Facility generally bore interest at a base rate or LIBOR rate plus a margin. The Old Credit Facility had certain financial and other covenants, with the key financial covenant requiring that the Company's consolidated total debt to adjusted EBITDA ratio could not exceed 3.50 to 1. At the date the Old Credit Facility was replaced, the Company was in compliance with all of its covenants. During July 2019, the Old Credit Facility was amended and restated to extend the maturity date to August 31, 2020, and was subsequently replaced by the New Credit Facility as of August 1, 2019.

Industrial development bonds

As of September 30, 2019 and December 31, 2018, the Company had fixed rate, industrial development authority bonds due in 2028. These bonds have similar covenants to the credit facilities noted above.

Bank lines of credit and other debt obligations

In connection with the Combination, the Company assumed certain unsecured bank lines of credit and discounting facilities in one of its foreign subsidiaries. The bank lines of credit are not collateralized. Total unused capacity under these arrangements as of September 30, 2019 was approximately \$10 million. The Company's other debt obligations primarily consist of certain domestic and foreign low interest rate or interest-free municipality-related loans, local credit facilities of certain foreign subsidiaries and capital lease obligations.

In addition to the bank letters of credit described in the Credit facilities section above, the Company's only other off-balance sheet arrangements include financial guarantees. The Company's total bank letters of credit and guarantees outstanding as of September 30, 2019 were approximately \$15 million.

At September 30, 2019, annual maturities on long-term borrowings maturing in the next five fiscal years and thereafter (excluding the reduction to long-term debt attributed to capitalized and unamortized debt issuance costs) are as follows:

2020	\$	45,876
2021		35,276
2022		49,556
2023		60,590
2024		676,271

The Company incurred the following debt related expenses included within Interest expense, net, on the Condensed Consolidated Statements of Operations:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Interest expense	\$ 5,761	\$ 1,510	\$ 8,258	\$ 4,804
Amortization of debt issuance costs	792	—	792	—
Total	\$ 6,553	\$ 1,510	\$ 9,050	\$ 4,804

Based on the variable interest rates associated the New Credit Facility and Old Credit Facility, as of September 30, 2019 and December 31, 2018, the amounts at which the Company's total debt were recorded are not materially different from their fair market value.

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Note 16 – Equity

The following tables present the changes in equity, net of tax, for the three and nine months ended September 30, 2019 and 2018:

	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Loss	Noncontrolling Interest	Total
Balance at June 30, 2019	\$ 13,338	\$ 97,602	\$ 424,448	\$ (78,881)	\$ 1,454	\$ 457,961
Net (loss) income	—	—	(13,053)	—	72	(12,981)
Amounts reported in other comprehensive loss	—	—	—	(27,166)	(94)	(27,260)
Dividends (\$0.385 per share)	—	—	(6,826)	—	—	(6,826)
Shares issued related to the Combination	4,329	784,751	—	—	—	789,080
Share issuance and equity-based compensation plans	64	3,412	—	—	—	3,476
Balance at September 30, 2019	<u>\$ 17,731</u>	<u>\$ 885,765</u>	<u>\$ 404,569</u>	<u>\$ (106,047)</u>	<u>\$ 1,432</u>	<u>\$ 1,203,450</u>
Balance at June 30, 2018	\$ 13,331	\$ 94,984	\$ 387,498	\$ (74,351)	\$ 1,215	\$ 422,677
Net income	—	—	19,690	—	81	19,771
Amounts reported in other comprehensive loss	—	—	—	(5,981)	(38)	(6,019)
Dividends (\$0.37 per share)	—	—	(4,933)	—	—	(4,933)
Share issuance and equity-based compensation plans	3	1,137	—	—	—	1,140
Balance at September 30, 2018	<u>\$ 13,334</u>	<u>\$ 96,121</u>	<u>\$ 402,255</u>	<u>\$ (80,332)</u>	<u>\$ 1,258</u>	<u>\$ 432,636</u>

Quaker Chemical Corporation
Notes to Condensed Consolidated Financial Statements - Continued
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(Unaudited)

	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Loss	Noncontrolling Interest	Total
Balance at December 31, 2018	\$ 13,338	\$ 97,304	\$ 405,125	\$ (80,715)	\$ 1,317	\$ 436,369
Cumulative effect of an accounting change	—	—	(44)	—	—	(44)
Balance at January 1, 2019	13,338	97,304	405,081	(80,715)	1,317	436,325
Net income	—	—	16,382	—	186	16,568
Amounts reported in other comprehensive loss	—	—	—	(25,332)	(71)	(25,403)
Dividends (\$1.140 per share)	—	—	(16,894)	—	—	(16,894)
Shares issued related to the Combination	4,329	784,751	—	—	—	789,080
Share issuance and equity-based compensation plans	64	3,710	—	—	—	3,774
Balance at September 30, 2019	<u>\$ 17,731</u>	<u>\$ 885,765</u>	<u>\$ 404,569</u>	<u>\$ (106,047)</u>	<u>\$ 1,432</u>	<u>\$ 1,203,450</u>
Balance at December 31, 2017	\$ 13,308	\$ 93,528	\$ 365,936	\$ (65,100)	\$ 1,946	\$ 409,618
Cumulative effect of an accounting change	—	—	(754)	—	—	(754)
Balance at January 1, 2018	13,308	93,528	365,182	(65,100)	1,946	408,864
Net income	—	—	51,668	—	260	51,928
Amounts reported in other comprehensive loss	—	—	—	(15,232)	(114)	(15,346)
Dividends (\$1.095 per share)	—	—	(14,595)	—	—	(14,595)
Distributions to noncontrolling affiliate	—	—	—	—	(834)	(834)
Share issuance and equity-based compensation plans	26	2,593	—	—	—	2,619
Balance at September 30, 2018	<u>\$ 13,334</u>	<u>\$ 96,121</u>	<u>\$ 402,255</u>	<u>\$ (80,332)</u>	<u>\$ 1,258</u>	<u>\$ 432,636</u>

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Notes to Condensed Consolidated Financial Statements - Continued
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The following tables show the reclassifications from and resulting balances of AOCI for the three and nine months ended September 30, 2019 and 2018:

	Currency Translation Adjustments	Defined Benefit Pension Plans	Unrealized Gain (Loss) in Available-for- Sale Securities	Total
Balance at June 30, 2019	\$ (50,296)	\$ (29,323)	\$ 738	\$ (78,881)
Other comprehensive (loss) income before reclassifications				
reclassifications	(28,211)	679	(6)	(27,538)
Amounts reclassified from AOCI	—	728	(96)	632
Current period other comprehensive (loss) income	(28,211)	1,407	(102)	(26,906)
Related tax amounts	—	(281)	21	(260)
Net current period other comprehensive (loss) income	(28,211)	1,126	(81)	(27,166)
Balance at September 30, 2019	\$ (78,507)	\$ (28,197)	\$ 657	\$ (106,047)
Balance at June 30, 2018	\$ (42,069)	\$ (32,513)	\$ 231	\$ (74,351)
Other comprehensive (loss) income before reclassifications				
reclassifications	(6,821)	99	274	(6,448)
Amounts reclassified from AOCI	—	756	(69)	687
Current period other comprehensive (loss) income	(6,821)	855	205	(5,761)
Related tax amounts	—	(177)	(43)	(220)
Net current period other comprehensive (loss) income	(6,821)	678	162	(5,981)
Balance at September 30, 2018	\$ (48,890)	\$ (31,835)	\$ 393	\$ (80,332)
	Currency Translation Adjustments	Defined Benefit Pension Plans	Unrealized (Loss) Gain in Available-for- Sale Securities	Total
Balance at December 31, 2018	\$ (49,322)	\$ (30,551)	\$ (842)	\$ (80,715)
Other comprehensive (loss) income before reclassifications				
reclassifications	(29,185)	760	2,133	(26,292)
Amounts reclassified from AOCI	—	2,192	(235)	1,957
Current period other comprehensive (loss) income	(29,185)	2,952	1,898	(24,335)
Related tax amounts	—	(598)	(399)	(997)
Net current period other comprehensive (loss) income	(29,185)	2,354	1,499	(25,332)
Balance at September 30, 2019	\$ (78,507)	\$ (28,197)	\$ 657	\$ (106,047)
Balance at December 31, 2017	\$ (31,893)	\$ (34,093)	\$ 886	\$ (65,100)
Other comprehensive (loss) income before reclassifications				
reclassifications	(16,997)	563	(1,064)	(17,498)
Amounts reclassified from AOCI	—	2,318	440	2,758
Current period other comprehensive (loss) income	(16,997)	2,881	(624)	(14,740)
Related tax amounts	—	(623)	131	(492)
Net current period other comprehensive (loss) income	(16,997)	2,258	(493)	(15,232)
Balance at September 30, 2018	\$ (48,890)	\$ (31,835)	\$ 393	\$ (80,332)

All reclassifications related to unrealized gain (loss) in available-for-sale securities relate to the Company's equity interest in a captive insurance company and are recorded in equity in net income of associated companies. The amounts reported in other comprehensive income for non-controlling interest are related to currency translation adjustments.

Quaker Chemical Corporation
Notes to Condensed Consolidated Financial Statements - Continued
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Note 17 – Fair Value Measurements

The Company has valued its company-owned life insurance policies at fair value. These assets are subject to fair value measurement as follows:

Assets	Total Fair Value	Fair Value Measurements at September 30, 2019		
		Using Fair Value Hierarchy		
		Level 1	Level 2	Level 3
Company-owned life insurance	\$ 1,697	\$ —	\$ 1,697	\$ —
Total	<u>\$ 1,697</u>	<u>\$ —</u>	<u>\$ 1,697</u>	<u>\$ —</u>

Assets	Total Fair Value	Fair Value Measurements at December 31, 2018		
		Using Fair Value Hierarchy		
		Level 1	Level 2	Level 3
Company-owned life insurance	\$ 1,491	\$ —	\$ 1,491	\$ —
Total	<u>\$ 1,491</u>	<u>\$ —</u>	<u>\$ 1,491</u>	<u>\$ —</u>

The fair values of Company-owned life insurance assets are based on quotes for like instruments with similar credit ratings and terms. The Company did not hold any Level 3 investments as of September 30, 2019 or December 31, 2018, respectively, so related disclosures have not been included.

Note 18 – Commitments and Contingencies

The Company previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018 that AC Products, Inc. (“ACP”), a wholly owned subsidiary, has been operating a groundwater treatment system to hydraulically contain groundwater contamination emanating from ACP’s site, the principal contaminant of which is perchloroethylene. As of September 30, 2019, ACP believes it is close to meeting the conditions for closure of the groundwater treatment system, but continues to operate this system while in discussions with the relevant authorities. As of September 30, 2019, the Company believes that the range of potential-known liabilities associated with the balance of the ACP water remediation program is approximately \$0.1 million to \$1.0 million. The low and high ends of the range are based on the length of operation of the treatment system as determined by groundwater modeling. Costs of operation include the operation and maintenance of the extraction well, groundwater monitoring and program management.

The Company previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018 that an inactive subsidiary of the Company that was acquired in 1978 sold certain products containing asbestos, primarily on an installed basis, and is among the defendants in numerous lawsuits alleging injury due to exposure to asbestos. During the nine months ended September 30, 2019, there have been no significant changes to the facts or circumstances of this previously disclosed matter, aside from on-going claims and routine payments associated with this litigation. Based on a continued analysis of the existing and anticipated future claims against this subsidiary, it is currently projected that the subsidiary’s total liability over the next 50 years for these claims is approximately \$1.7 million (excluding costs of defense).

As a result of the closing of the Combination on August 1, 2019, the Company is now party to Houghton environmental matters related to certain domestic and foreign properties currently or previously owned, described below. The Company continually evaluates its obligations related to such matters and has estimated the range of costs for all of the Houghton environmental matters to be between approximately \$4 million and \$5 million as of September 30, 2019, for which \$4.8 million is accrued within other current liabilities on the Company’s Condensed Consolidated Balance Sheets as of September 30, 2019.

Houghton’s Sao Paulo, Brazil site was required under Brazilian environmental, health and safety regulations to perform an environmental assessment as a part of a permit renewal process. The site has conducted a multi-year soil and groundwater investigation and corresponding risk assessments based on the result of the investigations. Initial investigations identified soil and ground water contamination in select areas of the site. In 2017, the site had to submit a new 5-year permit renewal request and was asked to complete additional investigations to further delineate the site based on review of the technical data by the local regulatory agency, Companhia Ambiental do Estado de São Paulo (“CETESB”). Based on review of the updated investigation data, CETESB issued a Technical Opinion regarding the investigation and remedial action taken to date. The site developed an action plan and submitted to CETESB in 2018 based on CETESB requirements. The site intervention plan primarily requires the site, amongst other actions, to conduct periodic monitoring for methane in soil vapors, source zone delineation, groundwater plume delineation, bedrock aquifer assessment, update the human health risk assessment, develop a current site conceptual model and conduct a remedial feasibility study and provide a revised intervention plan. In December 2019, the site is required to submit a report on the activities

Quaker Chemical Corporation
Notes to Condensed Consolidated Financial Statements - Continued
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completed including the revised site conceptual model and results of the remedial feasibility study and recommended remedial strategy for the site.

Other Houghton environmental matters the Company is now party to include participation in certain payments in connection with four currently active environmental consent orders related to certain hazardous waste cleanup activities under the U.S. Federal Superfund statute where Houghton has been designated a potentially responsible party ("PRP") by the Environmental Protection Agency along with a certain number of other PRPs depending on the site, and other obligations to perform cleanup activities at certain other foreign subsidiaries. These environmental matters primarily require the Company to perform long-term monitoring as well as operating and maintenance at each of the applicable sites.

The Company believes, although there can be no assurance regarding the outcome of other unrelated environmental or other litigation matters, that it has made adequate accruals regarding matters of which it is aware. Approximately \$0.2 million was accrued at September 30, 2019 and December 31, 2018, respectively, to provide for such anticipated future environmental assessments, remediation costs and other litigation matters. The Company believes that where it is party to other litigation, it will not have a material adverse effect on the Company's results of operations, cash flows or financial condition.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

As used in this Report, the terms "Quaker Houghton", the "Company", "we" and "our" refer to Quaker Chemical Corporation, its subsidiaries, and associated companies, unless the context otherwise requires.

Executive Summary

On August 1, 2019, Quaker Chemical Corporation completed its combination with Houghton International, Inc. ("Houghton") (herein referred to as "the Combination"). As a result, two months of operations of Houghton post-closing of the Combination are included in the Company's results described below. Quaker Houghton is a global leader in industrial process fluids. With a robust presence around the world, including operations in over 25 countries, our customers include thousands of the world's most advanced and specialized steel, aluminum, automotive, aerospace, offshore, can, mining, and metalworking companies. Our high-performing, innovative and sustainable solutions are backed by best-in-class technology, deep process knowledge, and customized services. Quaker Houghton is headquartered in Conshohocken, Pennsylvania, located near Philadelphia in the United States.

The Company's third quarter of 2019 operating performance was the result of a mix of both positive and negative financial impacts. Specifically, the Company benefited from the inclusion of the Houghton business post closing of the Combination, but this was partially offset by increases in Combination-related costs, restructuring expenses and overall challenging end-market conditions and negative effects from foreign currency translation. Specifically, net sales of \$325.1 million in the third quarter of 2019 increased 46% compared to \$222.0 million in the third quarter of 2018, due primarily to \$119.5 million of Houghton net sales. Excluding Houghton net sales, the Company's net sales would have decreased 7% quarter-over-quarter, primarily driven by lower volumes of approximately 4% and a negative impact from foreign currency translation of 2%. The Company's gross profit in the third quarter of 2019 included the benefit of Houghton as well as the impact of a \$10.2 million expense associated with the sale of Houghton inventory that was adjusted to its fair value in accordance with purchase accounting. Without this increase to costs of goods sold ("COGS"), the Company's gross margin would have been 35.5% in the current quarter compared to 36.5% in the third quarter of 2018, reflecting the impact of price and product mix due to lower gross margins in the Houghton business. The Company's selling, general and administrative expenses ("SG&A") in the third quarter of 2019 were higher compared to the prior year due to the inclusion of the Houghton SG&A, partially offset by positive impacts due to foreign currency translation and the initial benefits of realized cost savings associated with the Combination. In addition, the Company initiated a restructuring program and recorded restructuring expense of approximately \$24.0 million during the third quarter of 2019, as part of its plan to realize integration cost synergies associated with the Combination. Finally, during the third quarter of 2019 the Company recorded a cumulative year-to-date tax benefit as a result of one of its subsidiaries receiving approval for a 15% concessionary tax rate, compared to its 25% statutory tax rate. This concessionary tax rate was available to the Company's subsidiary in each quarter of 2018. Further details of the Company's consolidated operating performance are discussed in the Company's Consolidated Operations Review, in the Operations section of this Item, below.

The Company's third quarter of 2019 net loss and loss per diluted share were \$13.1 million and \$0.80, respectively, compared to net earnings of \$19.7 million and \$1.47 per diluted share, respectively, in the third quarter of 2018. The Company's third quarter of 2019 reported net loss was driven by the significant one-time impacts of the Combination, including \$14.7 million of Combination and other acquisition-related expenses, a \$24.0 million restructuring charge and a \$10.2 million expense associated with the sale of Houghton inventory adjusted to its fair value. Excluding all one-time costs associated with the Combination and other non-core items in each period, the Company's current quarter non-GAAP net income and earnings per diluted share were \$25.3 million and \$1.56, respectively, compared to \$21.8 million and \$1.63, respectively, in the third quarter of 2018. The Company's current quarter adjusted EBITDA of \$51.4 million increased 56% compared to the \$33.0 million in the third quarter of 2018. See the Non-GAAP Measures section of this Item, below.

During the third quarter of 2019 and in connection with the Combination, the Company established a new reportable segment structure, which now includes four segments: (i) Americas; (ii) Europe, Middle East and Africa ("EMEA"); (iii) Asia/Pacific; and (iv) Global Specialty Businesses. The Company's third quarter of 2019 operating performance reflected the positive impact of two months of Houghton's performance in all of its segments. Without the inclusion of Houghton, net sales were lower over all segments compared to the prior year, primarily driven by declines in volumes due to compounding conditions of a weak automotive market, a generally weaker overall industrial environment and some customer inventory corrections in certain segments. In addition, foreign currency translation also negatively impacted all segments in the third quarter of 2019. As reported, segment operating earnings were higher in all segments compared to the third quarter of 2018, reflecting the benefit of Houghton net sales and gross profit, partially offset by higher SG&A as a result of the Combination. Additional details of each segment's operating performance are further discussed in the Company's Reportable Segments Review, in the Operations section of this Item, below.

The Company generated net operating cash flow of \$13.1 million in the third quarter of 2019, compared with \$31.2 million in the third quarter of 2018, resulting in a \$15.4 million or 30% decrease in its current year-to-date net operating cash flow to \$35.5 million compared to \$50.9 million in the first nine months of 2018. The decrease in net operating cash flow year-over-year was primarily due to higher Combination-related payments, including those expenditures prior to close of the Combination related to integration planning, legal and other professional fees, various advisory fee payments triggered by the closing of the Combination, and payments after closing related to integration activities as well as restructuring cash payments. These higher cash outflows were partially offset by increased cash from working capital. The key drivers of the Company's operating cash flow and overall liquidity are further discussed in the Company's Liquidity and Capital Resources section of this Item, below.

Despite weaker end market conditions and more significant foreign exchange headwinds in the third quarter of 2019 than originally anticipated, the Company continued to take share in its markets, achieved its targeted gross margin and SG&A levels as a Combined company, is effectively implementing its integration plan and is on track to achieve its planned integration cost synergies. While compounding conditions of a weak global automotive market, a generally weaker industrial environment in most parts of the world, and the continued strength of the U.S. dollar are expected to persist in the fourth quarter of 2019, the Company remains confident in its future as Quaker Houghton and expects the combined company will deliver above market growth on a consistent basis.

Liquidity and Capital Resources

At September 30, 2019, the Company had cash, cash equivalents and restricted cash of \$148.5 million, including \$20.3 million of restricted cash. Total cash, cash equivalents and restricted cash was \$124.4 million at December 31, 2018, which included \$20.3 million of restricted cash. The approximately \$24.1 million increase in cash, cash equivalents and restricted cash was the net result of \$35.5 million of cash provided by operating activities and \$798.4 million of cash provided by financing activities, partially offset by \$807.9 million of cash used in investing activities and a \$1.9 million negative impact due to the effect of foreign currency translation on cash.

Net cash provided by operating activities was \$35.5 million in the first nine months of 2019 compared to \$50.9 million in the first nine months of 2018. The \$15.4 million decrease in net cash flows provided by operating activities year-over-year was primarily the result of higher payments related to the Combination, including payments for costs prior to closing related to integration planning and legal and other professional fees, various payments triggered by the closing such as certain executive and non-executive compensation packages and advisory fees, and payments after closing related to integration activities. In addition, the Company had higher operating cash outflows associated with cash tax payments in the first nine months of 2019, including withholding taxes previously reserved for and related to the repatriation of certain foreign earnings during 2019. The Company also had lower cash dividends received from the Company's captive insurance company in the first nine months of 2019 compared to the prior year period. Excluding the impact of acquired assets and liabilities as a result of the closing of the Combination, partially offsetting these decreases in operating cash flows were lower amounts of cash invested in working capital for legacy Quaker in the current year, primarily due to a reduction in inventory, as the Company restocked an unusually low level at the end of 2017 throughout 2018, as well as higher collections of accounts receivable in the current year, due primarily to lower sales compared to the third quarter of 2018. In addition, the first nine months of 2018 working capital was impacted by lower receipts on accounts receivable due to an uncommon significant collection from a certain customer during the fourth quarter of 2017. Cash flow from operating activities also benefited from lower pension cash outflows resulting from the Company's fourth quarter of 2018 decision to begin the process of terminating its primary non-contributory U.S. pension plan (the "U.S. Pension Plan"), also described below.

Net cash used in investing activities increased from \$8.4 million in the first nine months of 2018 to \$807.9 million in the first nine months of 2019. The Company paid cash of approximately \$797.6 million, net of cash acquired, to close the Combination with Houghton in the third quarter of 2019, described below. In addition, during both the first nine months of 2019 and 2018 the Company paid \$0.5 million for certain formulations and product technology in the mining industry in accordance with the terms of the asset purchase agreement. Cash used for investments in property, plant and equipment increased in the first nine months of 2019 compared to the prior year primarily due to capital spending for certain integration related projects for the Combination. Cash proceeds from dispositions of assets declined from the first nine months of 2018 to the first nine months of 2019, primarily as a result of \$0.6 million of cash proceeds received during the second quarter of 2018 related to the sale of an available-for-sale asset.

Net cash provided by financing activities was \$798.4 million in the first nine months of 2019 compared to cash used in financing activities of \$27.0 million in the first nine months of 2018. The year-over-year change was primarily a result of borrowing funds to close the Combination and replacing its previous revolving credit facility (the "Old Credit Facility") with a new syndicated and secured credit facility (the "New Credit Facility"), which resulted in cash paid for financing-related debt issuance costs during the third quarter of 2019 in connection with executing the New Credit Facility, described below. The Company paid cash dividends of \$15.0 million during the first nine months of 2019, a \$0.6 million or 4% increase in cash dividends compared to the prior year. Finally, during the first nine months of 2018, one of the Company's less than 100% owned consolidated affiliates made a distribution to the noncontrolling affiliate shareholder of approximately \$0.8 million. There were no similar distributions during the first nine months of 2019.

On August 1, 2019, the Company completed its combination with Houghton, whereby the Company acquired all of the issued and outstanding shares of Houghton from Gulf Houghton Lubricants, Ltd. in accordance with the share purchase agreement dated April 4, 2017. The final purchase consideration was comprised of: (i) \$170.8 million in cash; (ii) the issuance of 4.3 million shares of common stock of the Company with par value of \$1.00, comprising 24.5% of the common stock of the Company at closing; and (iii) the Company's refinancing of \$702.6 million of Houghton's indebtedness at closing. Cash acquired in the Combination was \$75.8 million.

The Combination was subject to certain regulatory and shareholder approvals. At a shareholder meeting held during 2017, the Company's shareholders approved the issuance of the new shares of the Company's common stock at closing of the Combination. Also in 2017, the Company received regulatory approvals for the Combination from China and Australia. The Company received regulatory approvals from the European Commission ("EC") during the second quarter of 2019 and the U.S. Federal Trade Commission ("FTC") in July 2019. The approvals from the FTC and the EC required the concurrent divestiture of certain steel and aluminum related product lines of Houghton, which were sold by Houghton on August 1, 2019 for approximately \$37 million in cash. This cash is included in the \$75.8 million of cash acquired on the date of close. The final remedy agreed with the EC and the FTC was consistent with the Company's previous expectation that the total divested product lines would be approximately 3% of the combined company's net sales.

As previously disclosed in its Annual Report filed on Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018, in connection with the Combination, the Company initially secured \$1.15 billion in commitments from Bank of America Merrill Lynch and Deutsche Bank to fund the purchase consideration and to provide additional liquidity, which was replaced with a syndicated bank agreement (the "New Credit Facility") with a group of lenders. Prior to closing the Combination, during July 2019, the Company amended and extended the bank commitment to August 30, 2019. The New Credit Facility was contingent upon and was not effective until the closing of the Combination. Concurrent with closing the Combination on August 1, 2019, the New Credit Facility is in full effect and is the Company's primary borrowing facility, replacing the Company's Old Credit Facility.

The New Credit Facility is comprised of a \$400.0 million multicurrency revolver ("Revolver"), a \$600.0 million U.S. dollar denominated term loan ("U.S. Term Loan") each with the Company as borrower, and a \$150.0 million (euro equivalent) euro denominated term loan ("EURO Term Loan") with Quaker Chemical B.V., a Dutch subsidiary of the Company as borrower (collectively with the U.S. Term Loan, the "Term Loans"), each with a five-year term maturing in August 2024. The maximum amount available under the New Credit Facility can be increased by \$300.0 million at the Company's option if the lenders agree and the Company has satisfied certain conditions. Borrowings under the New Credit Facility bear interest at a base rate or LIBOR plus an applicable margin based upon the Company's consolidated net leverage ratio. The interest rate applied on outstanding borrowings under the New Credit Facility post-closing of the Combination was approximately 3.3%. In addition to paying interest on outstanding principal under the New Credit Facility, the Company is required to pay a 0.25% commitment fee to the lenders under the Revolver in respect of the unutilized commitments thereunder. The Company has unused capacity under the Revolver of approximately \$281 million, net of bank letters of credit of approximately \$9 million, as of September 30, 2019. Until closing of the Combination, the Company incurred certain interest costs to maintain the bank commitment ("ticking fees"), which began to accrue on September 29, 2017 and bore an interest rate of 0.30% per annum. Concurrent with closing of the Combination and executing the New Credit Facility, the Company paid approximately \$6.3 million of ticking fees.

The New Credit Facility is subject to certain financial and other covenants, including covenants that the Company's initial consolidated net debt to consolidated adjusted EBITDA ratio cannot exceed 4.25 to 1 and the Company's consolidated adjusted EBITDA to interest expense ratio cannot be less than 3.0 to 1. At the closing of the Combination and as of September 30, 2019, the Company was in compliance with all of the New Credit Facility covenants. The Term Loans have quarterly principal amortization during their respective five-year maturities, with 5.0% amortization of the principal balance due in years 1 and 2, 7.5% in year 3, and 10.0% in years 4 and 5, with the remaining principal amount due at maturity. The New Credit Facility is guaranteed by certain of the Company's domestic subsidiaries and is secured by first priority liens on substantially all of the assets of the Company and the domestic subsidiary guarantors, subject to certain customary exclusions, and the obligations of the Dutch borrower only are guaranteed by certain foreign subsidiaries on an unsecured basis.

The New Credit Facility required the Company to fix at least 20% of the variable interest rates on its Term Loans. In November 2019, the Company entered into \$170.0 million notional amounts of three-year interest rate swaps at a fixed rate of approximately 3.1% to satisfy the requirement of the New Credit Facility as well as to manage the Company's exposure to variable interest rate risk associated with the New Credit Facility. The Company anticipates that these interest rate swaps will be designated and will qualify as cash flow hedges.

The Company capitalized \$23.7 million of certain third-party debt issuance costs in connection with executing the New Credit Facility. Approximately \$15.5 million was attributed to the Term Loans and recorded as a direct reduction to long-term debt on the Company's Condensed Consolidated Balance Sheet. Approximately \$8.3 million was attributed to the Revolver and recorded within other assets on the Company's Condensed Consolidated Balance Sheet. These capitalized costs will be amortized into interest expense over the five-year term of the New Credit Facility.

The Old Credit Facility was a \$300.0 million syndicated multicurrency, unsecured revolving credit facility with a group of lenders. The maximum amount available under the Old Credit Facility could have been increased to \$400.0 million at the Company's option if the lenders agreed and the Company satisfied certain conditions. Borrowings under the Old Credit Facility generally bore interest at a base rate or LIBOR rate plus a margin. The Old Credit Facility had certain financial and other covenants, with the key financial covenant requiring that the Company's consolidated total debt to adjusted EBITDA ratio could not exceed 3.50 to 1. At the date the Old Credit Facility was replaced, the Company was in compliance with all of its covenants. During July 2019, the Old Credit Facility was amended and restated to extend the maturity date to August 31, 2020.

As of September 30, 2019, the Company had New Credit Facility borrowings outstanding of \$857.2 million. As of December 31, 2018, the Company had Old Credit Facility borrowings of \$24.0 million. The Company's other debt obligations are primarily industrial development bonds, bank lines of credit and municipality-related loans, which totaled \$20.8 million as of September 30, 2019 and \$12.6 million as of December 31, 2018. The Company's aggregate net indebtedness as of September 30, 2019 was \$749.8 million, excluding debt issuance costs recorded as a reduction of long-term debt.

The Company incurred \$25.9 million of total Combination and other acquisition-related expenses during the first nine months of 2019, described in the Non-GAAP Measures section of this Item below. This includes \$2.1 million of ticking fees, but excludes \$24.0 million of restructuring charges, described below. The Company had net cash outflows of \$40.1 million related to these costs, which includes cash outflows of approximately \$10.3 million for certain Combination-related liabilities assumed and paid out subsequent to the closing of the Combination. Comparatively, during the first nine months of 2018, Combination and other acquisition-related expenses totaled \$14.4 million, including \$2.6 million of ticking fees as well as a \$0.6 million gain on the sale of an available-for-sale asset, and net cash outflows related to these costs were \$14.7 million. Post close of the Combination, the Company has begun to incur and will realize significantly more costs and make associated cash payments to integrate Quaker and Houghton and to begin realizing the Combination's total anticipated cost synergies, which we currently estimate to be \$60 million once all cost savings actions are executed by the second year after close. The Company currently projects these costs and cash payments, including the restructuring program, described below, but excluding incremental capital expenditure related to the Combination, will generally approximate one times its anticipated cost synergies. The Company expects to incur these costs over a three-year period post-close, with a significant portion of these costs being front loaded in 2019 and 2020.

Quaker Houghton's management approved, and the Company initiated, a global restructuring plan (the "QH Program") in the third quarter of 2019 as part of its planned cost synergies associated with the Combination. The QH Program will include restructuring and associated severance costs to reduce total headcount by approximately 275 people globally and plans for the closure of certain manufacturing and non-manufacturing facilities. As a result of the QH Program, the Company recognized a \$24.0 million restructuring expense in the third quarter of 2019. The exact timing and total costs associated with the QH Program will depend on a number of factors and is subject to change, however, the Company currently expects reduction in headcount and site closures to occur over the next two years under the QH Program and estimates that total costs related to the QH Program will approximate one-time the anticipated cost synergies realized, as described above. The Company made cash payments related to the settlement of restructuring liabilities under the QH Program during the third quarter of 2019 of approximately \$4.6 million. Including the QH Program and other cost savings, the Company estimates that during the third quarter of 2019 it achieved approximately \$2 million in synergies related to the Combination, on a combined company pro-forma basis as compared to the prior year.

In the fourth quarter of 2018, the Company began the process of terminating the U.S. Pension Plan after receiving approval from its Board of Directors. Participants of the U.S. Pension Plan will have their benefits either converted into a lump sum cash payment or an annuity contract placed with an insurance carrier. The U.S. Pension Plan is fully-funded on a U.S. GAAP basis. In order to terminate the U.S. Pension Plan in accordance with Internal Revenue Service ("I.R.S.") and Pension Benefit Guaranty Corporation requirements, the Company will be required to fully fund the U.S. Pension Plan on a termination basis and will commit to contribute additional assets if necessary, to do so. The amount necessary to do so is not yet known but is currently estimated to be between \$0 and \$10 million. During the third quarter of 2019, the Company received a favorable termination determination letter from the I.R.S. and has amended the Plan to comply with final regulations of the Internal Revenue Code. The Company currently estimates that the U.S. Pension Plan termination will be completed during 2020.

As of September 30, 2019, the Company's gross liability for uncertain tax positions, including interest and penalties, was \$17.8 million. The Company cannot determine a reliable estimate of the timing of cash flows by period related to its uncertain tax position liability. However, should the entire liability be paid, the amount of the payment may be reduced by up to \$1.9 million as a result of offsetting benefits in other tax jurisdictions.

As previously announced, subsequent to the date of the unaudited financial statements included herein, on October 1, 2019, the Company closed its acquisition of the operating divisions of Norman Hay plc, a private U.K. company that provides specialty chemicals, operating equipment, and services to industrial end markets, for a purchase price of 80 million GBP, or approximately \$98 million, subject to post-closing adjustments.

As a result of the closing of the Combination, certain of the Company's contractual obligations as of September 30, 2019, and the effect such obligations are expected to have on its liquidity and cash flows in future periods have materially changed, as compared to the Company's contractual obligations disclosed in its Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018. Notably, the New Credit Facility has significantly increased the Company's outstanding indebtedness and associated interest obligations. For additional information regarding the annual maturities of the Company's long-term borrowings and information regarding the interest rates applicable to long-term borrowings, see Note 15 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report. In addition, as a result of the Combination, the Company assumed all of Houghton's lease obligations. For additional information regarding the Company's maturities of operating lease liabilities, see Note 6 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.

The Company believes it is capable of supporting its operating requirements and funding its business objectives, including but not limited to, payments of dividends to shareholders, costs related to the Combination, pension plan contributions, capital expenditures, other business opportunities and other potential contingencies, through internally generated funds supplemented with debt or equity as needed.

Non-GAAP Measures

The information in this Form 10-Q filing includes non-GAAP (unaudited) financial information that includes EBITDA, adjusted EBITDA, non-GAAP operating income, non-GAAP net income and non-GAAP earnings per diluted share. The Company believes these non-GAAP financial measures provide meaningful supplemental information as they enhance a reader's understanding of the financial performance of the Company, are indicative of future operating performance of the Company, and facilitate a comparison among fiscal periods, as the non-GAAP financial measures exclude items that are not considered indicative of future operating performance or not considered core to the Company's operations. Non-GAAP results are presented for supplemental informational purposes only and should not be considered a substitute for the financial information presented in accordance with GAAP.

The Company presents EBITDA which is calculated as net income attributable to the Company before depreciation and amortization, interest expense, net, and taxes on income before equity in net income of associated companies. The Company also presents adjusted EBITDA which is calculated as EBITDA plus or minus certain items that are not considered indicative of future operating performance or not considered core to the Company's operations. In addition, the Company presents non-GAAP operating income which is calculated as operating income plus or minus certain items that are not considered indicative of future operating performance or not considered core to the Company's operations. Adjusted EBITDA margin and non-GAAP operating margin are calculated as the percentage of adjusted EBITDA and non-GAAP operating income to consolidated net sales, respectively. The Company believes these non-GAAP measures provide transparent and useful information and are widely used by analysts, investors, and competitors in our industry as well as by management in assessing the operating performance of the Company on a consistent basis.

Additionally, the Company presents non-GAAP net income and non-GAAP earnings per diluted share as additional performance measures. Non-GAAP net income is calculated as adjusted EBITDA, defined above, less depreciation and amortization, interest expense, net - adjusted, and taxes on income before equity in net income of associated companies - adjusted, as applicable, for any depreciation, amortization, interest or tax impacts resulting from the non-core items identified in the reconciliation of net income attributable to the Company to adjusted EBITDA. Non-GAAP earnings per diluted share is calculated as non-GAAP net income per diluted share as accounted for under the "two-class share method." The Company believes that non-GAAP net income and non-GAAP earnings per diluted share provide transparent and useful information and are widely used by analysts, investors, and competitors in our industry as well as by management in assessing the operating performance of the Company on a consistent basis.

During the first quarter of 2019, the Company updated its calculation methodology to include the use of interest expense net of interest income in the reconciliation of EBITDA and adjusted EBITDA, compared to its historical use of only interest expense, and also to include the non-service component of the Company's pension and postretirement benefit costs in the reconciliation of adjusted EBITDA, non-GAAP net income attributable to Quaker Chemical Corporation and non-GAAP earnings per diluted share. Prior year amounts have been recast for comparability purposes and the change in calculation methodology does not produce materially different results. The Company believes these updated calculations better reflect its underlying operating performance and better aligns the Company's calculations to those commonly used by analysts, investors, and competitors in our industry.

Quaker Chemical Corporation
Management's Discussion and Analysis

The following tables reconcile the Company's non-GAAP financial measures (unaudited) to their most directly comparable GAAP (unaudited) financial measures (dollars in thousands unless otherwise noted, except per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Operating (loss) income	\$ (14,502)	\$ 24,919	\$ 25,858	\$ 67,713
Fair value step up of Houghton inventory sold (a)	10,214	—	10,214	—
Houghton combination and other acquisition-related expenses (b)	14,702	2,904	23,789	12,404
Restructuring expense (c)	24,045	—	24,045	—
Charges related to the settlement of a non-core equipment sale (d)	—	—	384	—
Non-GAAP operating income	<u>\$ 34,459</u>	<u>\$ 27,823</u>	<u>\$ 84,290</u>	<u>\$ 80,117</u>
Non-GAAP operating margin (%) (l)	10.6%	12.5%	11.4%	12.2%

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Net (loss) income attributable to Quaker Chemical Corporation	\$ (13,053)	\$ 19,690	\$ 16,382	\$ 51,668
Depreciation and amortization (j)	14,312	4,883	24,014	14,911
Interest expense, net (b)	6,102	989	7,611	3,223
Taxes on income before equity in net income of associated companies (i)	(5,633)	4,330	4,096	13,554
EBITDA	1,728	29,892	52,103	83,356
Equity income in a captive insurance company (e)	(524)	(440)	(1,260)	(1,083)
Fair value step up of Houghton inventory sold (a)	10,214	—	10,214	—
Houghton combination and other acquisition-related expenses (b)	14,702	2,904	23,789	11,794
Restructuring expense (c)	24,045	—	24,045	—
Pension and postretirement benefit costs, non-service components (f)	513	568	2,304	1,713
Charges related to the settlement of a non-core equipment sale (d)	—	—	384	—
Gain on liquidation of an inactive legal entity (g)	—	(446)	—	(446)
Currency conversion impacts of hyper-inflationary economies (h)	728	520	891	764
Adjusted EBITDA	<u>\$ 51,406</u>	<u>\$ 32,998</u>	<u>\$ 112,470</u>	<u>\$ 96,098</u>
Adjusted EBITDA margin (%) (l)	15.8%	14.9%	15.2%	14.6%
Adjusted EBITDA	\$ 51,406	\$ 32,998	\$ 112,470	\$ 96,098
Less: Depreciation and amortization (j)	14,312	4,883	24,014	14,911
Less: Interest expense, net - adjusted (b)	5,747	131	5,531	637
Less: Taxes on income before equity in net income of associated companies - adjusted (i)(k)	6,086	6,223	17,913	18,650
Non-GAAP net income	<u>\$ 25,261</u>	<u>\$ 21,761</u>	<u>\$ 65,012</u>	<u>\$ 61,900</u>

Quaker Chemical Corporation
Management's Discussion and Analysis

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
GAAP (loss) earnings per diluted share attributable to				
Quaker Chemical Corporation common shareholders (n)	\$	(0.80)	\$	1.47
Equity income in a captive insurance company per diluted share (e)		(0.03)		(0.09)
Fair value step up of Houghton inventory sold per diluted share (a)		0.47		0.53
Houghton combination and other acquisition-related expenses per diluted share (b)		0.75		0.23
Restructuring expense per diluted share (c)		1.13		1.28
Transition tax adjustments per diluted share (i)		(0.03)		(0.03)
Pension and postretirement benefit costs, non-service components per diluted share (f)		0.02		0.03
Charges related to the settlement of a non-core equipment sale per diluted share (d)		—		0.02
Gain on liquidation of an inactive legal entity per diluted share (g)		—		(0.03)
Currency conversion impacts of hyper-inflationary economies per diluted share (h)		0.05		0.06
Non-GAAP earnings per diluted share (m)	\$	1.56	\$	1.63
			\$	4.53
			\$	4.63

- (a) Fair value step up of Houghton inventory sold relates to an expense associated with selling inventory acquired in the Combination during the third quarter of 2019, which was adjusted to fair value as a part of purchase accounting. This increase to COGS is not indicative of the future operating performance of the Company.
- (b) Houghton combination and other acquisition-related expenses include certain legal, financial, and other advisory and consultant costs incurred in connection with due diligence, regulatory approvals, integration planning, and closing the Combination, as well as certain one-time labor costs associated with the Company's acquisition-related activities. These costs are not indicative of the future operating performance of the Company. Approximately \$3.4 million and \$6.9 million in the three and nine months ended September 30, 2019, respectively, and \$0.8 million and \$3.5 million in the three and nine months ended September 30, 2018, respectively, of these pre-tax costs were considered non-deductible for the purpose of determining the Company's effective tax rate, and, therefore, taxes on income before equity in net income of associated companies - adjusted reflects the impact of these items. During the three and nine months ended September 30, 2019, the Company incurred \$0.4 and \$2.1 million, respectively, of ticking fees to maintain the bank commitment related to the Combination. Comparatively, during the three and nine months ended September 30, 2018, the Company incurred \$0.9 million and \$2.6 million of ticking fees. These interest costs are included in the caption Interest expense, net in the reconciliation of net income attributable to the Company to EBITDA, but are excluded from Interest expense, net - adjusted in the reconciliation of adjusted EBITDA to non-GAAP net income attributable to the Company. Also, included in the caption Houghton combination and other acquisition-related expenses for the nine months ended September 30, 2018 is a \$0.6 million gain on the sale of an available-for-sale asset. See Note 2 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (c) Restructuring expense represents the costs incurred by the Company associated with its global restructuring program which was initiated in the third quarter of 2019 as part of the Company's plan to realize cost synergies associated with the Combination. These costs are not indicative of the future operating performance of the Company. See Note 7 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (d) Charges related to the settlement of a non-core equipment sale represents the pre-tax charge related to a one-time, uncommon, customer settlement associated with a prior sale of non-core equipment. These charges are not indicative of the future operating performance of the Company.
- (e) Equity income in a captive insurance company represents the after-tax income attributable to the Company's interest in Primex, Ltd. ("Primex"), a captive insurance company. The Company holds a 33% investment in and has significant influence over Primex, and therefore accounts for this interest under the equity method of accounting. The income attributable to Primex is not indicative of the future operating performance of the Company and is not considered core to the Company's operations.

- (f) Pension and postretirement benefit costs, non-service components represent the pre-tax, non-service component of the Company's pension and postretirement net periodic benefit cost in each period. These costs are not indicative of the future operating performance of the Company. See Note 9 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (g) Gain on liquidation of an inactive legal entity represents the decrease in historical cumulative currency translation adjustments associated with an inactive legal entity which was closed during the third quarter of 2018. These cumulative currency translation adjustments were the result of remeasuring the legal entity's monetary assets and liabilities to the applicable published exchange rates and were a component of accumulated other comprehensive loss, which was included in total shareholder's equity on the Company's Condensed Consolidated Balance Sheet. As required under U.S. GAAP, when a legal entity is liquidated, any amount attributable to that legal entity and accumulated in the currency translation adjustment component of equity is required to be removed from equity and reported as part of the gain or loss on liquidation of the legal entity during the period which the liquidation occurs. This non-deductible recognized gain is not indicative of the future operating performance of the Company. See Note 10 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (h) Currency conversion impacts of hyper-inflationary economies represents the foreign currency remeasurement impacts associated with the Company's affiliates whose local economies are designated as hyper-inflationary under U.S. GAAP. An entity which operates within an economy deemed to be hyper-inflationary under U.S. GAAP is required to remeasure its monetary assets and liabilities to the applicable published exchange rates and record the associated gains or losses resulting from the remeasurement directly to the Condensed Consolidated Statements of Operations. Venezuela's economy has been considered hyper-inflationary under U.S. GAAP since 2010 while Argentina's economy has been considered hyper-inflationary beginning July 1, 2018. In addition, the Company acquired an Argentine Houghton subsidiary which also applies hyper-inflationary accounting. During the three and nine months ended September 30, 2019, the Company incurred non-deductible, pre-tax charges related to the Company's Argentine affiliates. During the three and nine months ended September 30, 2018, the Company incurred non-deductible, pre-tax charges related to the Company's Argentine affiliate as well as after-tax charges related to the Company's Venezuela affiliate. The charges incurred related to the immediate recognition of foreign currency remeasurement in the Condensed Consolidated Statements of Operations associated with these entities are not indicative of the future operating performance of the Company. See Note 1 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (i) Transition tax adjustments include certain tax adjustments recorded by the Company as a result of changes to the Company's initial fourth quarter of 2017 estimates associated with U.S. Tax Reform in December 2017. Specifically, the Company has adjusted the initial amount estimated for the one-time charge on the gross deemed repatriation on previously untaxed accumulated and current earnings and profits of certain of the Company's foreign subsidiaries. In addition, the Company has adjusted its initial estimate of the impact from certain internal revenue code changes associated with the deductibility of certain executive compensation. These adjustments were based on guidance issued during 2018 and 2019 by the I.R.S., the U.S. Treasury and various state taxing authorities and were the result of specific one-time events that are not indicative of future operating performance of the Company. Transition tax adjustments are included within Taxes on income before equity in net income of associated companies in the reconciliation of Net income attributable to Quaker Chemical Corporation to Adjusted EBITDA, but are excluded from the caption Taxes on income before equity in net income of associated companies – adjusted in the reconciliation of adjusted EBITDA to non-GAAP net income attributable to the Company. See Note 11 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.
- (j) Depreciation and amortization for both the three and nine months ended September 30, 2019 included \$0.1 million of amortization expense recorded within equity in net income of associated companies in the Company's Condensed Consolidated Statements of Operations, attributable to the amortization of the fair value step up for the Company's newly acquired 50% interest in a Houghton joint venture in Korea, as a result of required purchase accounting.
- (k) Taxes on income before equity in net income of associated companies – adjusted presents the impact of any current and deferred income tax expense (benefit), as applicable, of the reconciling items presented in the reconciliation of net (loss) income attributable to Quaker Chemical Corporation to adjusted EBITDA, which was determined utilizing the applicable rates in the taxing jurisdictions in which these adjustments occurred, subject to deductibility. Fair value step up of Houghton inventory sold described in (a) resulted in incremental taxes of \$2.6 million during both the three and nine months ended September 30, 2019. Houghton combination and other acquisition-related expenses described in (b) resulted in incremental taxes of \$2.8 million and \$4.5 million for the three and nine months ended September 30, 2019, respectively, and \$0.6 million and \$2.4 million for the three and nine months ended September 30, 2018, respectively. Restructuring charges described in (c) resulted in incremental taxes of \$5.6 million for the three and nine months ended September 30, 2019. Charges related to the settlement of a non-core equipment sale described in (d) resulted in incremental taxes of \$0.1 million for the nine months ended September 30, 2019. Pension and postretirement benefit costs, non-service components described in (f) resulted in incremental taxes of \$0.1 million and \$0.5 million for the three and nine months ended September 30, 2019, respectively, and \$0.1 million and \$0.4 million for the three and nine

months ended September 30, 2018, respectively. In addition, Transition tax adjustment described in (i) resulted in incremental taxes of \$0.4 million for both the three and nine months ended September 30, 2019 and \$1.1 million and \$2.3 million for the three and nine months ended September 30, 2018.

- (l) The Company calculates adjusted EBITDA margin and non-GAAP operating margin as the percentage of adjusted EBITDA and non-GAAP operating income to consolidated net sales.
- (m) The Company calculates non-GAAP earnings per diluted share as non-GAAP net income attributable to the Company per weighted average diluted shares outstanding using the "two-class share method" to calculate such in each given period.
- (n) The Company's calculation of GAAP and non-GAAP (loss) earnings per diluted share attributable to Quaker Chemical Corporation common shareholders for the three and nine months ended September 30, 2019 was impacted by the 4.3 million share issuance in connection with closing the Combination, comprising approximately 24.5% of the common stock of the Company as of September 30, 2019, as well as the variability of its reported earnings, which was primarily due to the non-core and one-time or non-recurring charges incurred, as described above. Therefore, the per diluted share result for each of the first three quarters of 2019, as reported on a standalone basis, may not sum to the per diluted share result for the nine months ended September 30, 2019.

Off-Balance Sheet Arrangements

The Company had no material off-balance sheet items, as defined under Item 303(a)(4) of Regulation S-K as of September 30, 2019. The Company's only off-balance sheet items outstanding as of September 30, 2019 represented approximately \$15 million of total bank letters of credit and guarantees. The bank letters of credit and guarantees are not significant to the Company's liquidity or capital resources. See also Note 15 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.

Operations

Consolidated Operations Review—Comparison of the Third Quarter of 2019 with the Third Quarter of 2018

Net sales were \$325.1 million in the third quarter of 2019 compared to \$222.0 million in the third quarter of 2018. The net sales increase of 46% quarter-over-quarter includes Houghton net sales of \$119.5 million. Without Houghton net, the Company's current quarter net sales would have declined 7%, which reflects a decrease in sales volumes of approximately 4%, a negative impact from foreign currency translation of 2% and a decline in selling price and product mix of 1%.

COGS were \$222.1 million in the third quarter of 2019 compared to \$140.9 million in the third quarter of 2018. The increase in COGS of 56% was primarily due to the impact of Houghton sales and associated COGS, as well as the Houghton inventory fair value step up charge described in the Non-GAAP Measures section of this Item, above, partially offset by lower COGS on the decline in legacy Quaker net sales, described above.

Gross profit in the third quarter of 2019 increased \$24.0 million or 30% from the third quarter of 2018, due primarily to the Houghton net sales, noted above. The Company's reported gross margin in the current quarter was 32.3%, including the Houghton inventory fair value step up charge described in the Non-GAAP Measures section of this Item, above. Excluding this increase to COGS, the Company estimates that its gross margin would have been 35.5% in the current quarter compared to 36.5% in the third quarter of 2018. The decrease in gross margin quarter-over-quarter was primarily the result of price and product mix due to lower gross margins in the Houghton business.

SG&A in the third quarter of 2019 increased \$27.5 million compared to the third quarter of 2018 due primarily to additional Houghton SG&A as well as higher labor-related costs, including annual merit increases, partially offset by lower SG&A due to foreign currency translation and initial benefits of realized cost synergies associated with the Combination.

During the third quarter of 2019, the Company incurred \$14.7 million of Combination and other acquisition-related expenses, including legal, financial, and other advisory and consultant expenses for integration planning and regulatory approvals, fees associated with closing the Combination on August 1, 2019, and initial costs associated with integration activities. Comparatively, the Company incurred \$2.9 million of expenses in the prior year third quarter, primarily for integration planning and regulatory approvals. See the Non-GAAP Measures section of this Item, above.

The Company recorded restructuring expense during the third quarter of 2019 of \$24.0 million as part of its plan to realize cost synergies associated with the Combination. There were no similar restructuring charges recorded during the third quarter of 2018. See the Non-GAAP Measures section of this Item, above.

Operating loss in the third quarter of 2019 was \$14.5 million compared to operating income of \$24.9 million in the third quarter of 2018. Excluding all of the Combination and other acquisition-related charges, restructuring costs and other non-core items, the Company's current quarter non-GAAP operating income increased to \$34.5 million compared to \$27.8 million in the prior year,

primarily due to Houghton net sales and operating income from the Combination, partially offset by the negative impact from foreign currency translation and lower sales volumes, noted above.

The Company had other income, net, of \$0.2 million in the third quarter of 2019 compared to other expense, net, of \$0.5 million in the third quarter of 2018. The quarter-over-quarter change was primarily driven by foreign currency transaction gains of \$0.4 million in the current quarter compared to losses of \$0.3 million in the third quarter of 2018. In addition to the recurring foreign currency transaction gains and losses, both the third quarter of 2019 and 2018 results also included foreign currency transaction losses related to the Company's Argentine subsidiaries and the prior year included a foreign currency transaction gain related to the liquidation of an inactive legal entity, described in the Non-GAAP Measures section of this Item, above.

Interest expense, net, increased \$5.1 million compared to the third quarter of 2018, as a result of the Company's new Term Loan and Revolver borrowings concurrent with the closing of the Combination on August 1, 2019.

The Company's effective tax rates for the third quarters of 2019 and 2018 were 27.6% and 18.5%, respectively. These effective tax rates include the impacts of certain Houghton Combination and other acquisition-related non-deductible costs in all periods presented. In addition, both the Company's third quarter of 2019 and 2018 effective tax rates include certain Transition Tax adjustments. Excluding the impact of these items as well as all other non-core items in each quarter, described in the Non-GAAP Measures section of this Item, above, the Company estimates that its third quarters of 2019 and 2018 effective tax rates would have been approximately 20% and 22%, respectively. The Company's lower current quarter effective tax rate was driven by the cumulative year-to-date tax benefit recorded during the third quarter of 2019 as a result of one of its subsidiaries receiving approval for the renewal of a concessionary 15% tax rate compared to its 25% statutory tax rate. The concessionary tax rate was available to the Company's subsidiary during all quarters of 2018. In addition, the current quarter effective tax rate was lower as a result of certain share-based compensation-related tax benefits for deductions in excess of compensation cost associated with stock option exercises, favorable changes in uncertain tax positions and a shift in earnings to entities with lower effective tax rates compared to the third quarter of 2018. These benefits to the effective tax rate quarter-over-quarter were partially offset by incremental tax expense associated with providing withholding taxes on assumed repatriation of previously untaxed current earnings and profits of certain of the Company's foreign subsidiaries. The Company expects continued volatility in its effective tax rates due to several factors, including the timing of tax audits and the expiration of applicable statutes of limitations as they relate to uncertain tax positions, the unpredictability of the timing and amount of certain incentives in various tax jurisdictions, the treatment of certain acquisition-related costs and the timing and amount of certain share-based compensation-related tax benefits, among other factors.

Equity in net income of associated companies increased \$1.1 million in the third quarter of 2019 compared to the third quarter of 2018, primarily due to earnings from the Company's newly acquired 50% interest in a Houghton joint venture in Korea and slightly higher earnings from the Company's interest in a captive insurance company. See the Non-GAAP Measures section of this Item, above.

Net income attributable to noncontrolling interest was consistent at \$0.1 million in both the third quarters of 2019 and 2018.

Foreign exchange positively impacted the Company's third quarter of 2019 earnings by approximately 1% or \$0.01 per diluted share, primarily due to the current quarter benefit of foreign exchange transaction gains compared to foreign exchange losses in the prior year, partially offset by the negative impact from foreign currency translation of approximately 1% due to the strengthening of the U.S. dollar in the current quarter.

Consolidated Operations Review – Comparison of the First Nine Months of 2019 with the First Nine Months of 2018

Net sales were \$742.2 million in the first nine months of 2019 compared to \$656.0 million in the first nine months of 2018. The net sales increase of 13% year-over-year includes Houghton net sales of \$119.5 million. Without Houghton net sales, the Company's current year net sales would have declined 5%, which reflects a negative impact from foreign currency translation of 3% and a decrease in sales volumes of 2%.

COGS in the first nine months of 2019 of \$486.2 million increased approximately \$67.7 million or 16% from \$418.6 million in the first nine months of 2018. The increase in COGS was primarily due to the impact of Houghton sales and associated COGS, as well as the Houghton fair value inventory step up charge described in the Non-GAAP Measures section of this Item, above, partially offset by lower COGS on the decline in legacy Quaker net sales, described above.

Gross profit in the first nine months of 2019 increased \$18.5 million or 8% from the first nine months of 2018, driven by the Houghton net sales, noted above. The Company's reported gross margin in the current year was 34.5%, including the Houghton fair value inventory step up charge described in the Non-GAAP Measures section of this Item, above. Excluding this increase to COGS, the Company estimates that its gross margin would have been 35.9% in the first nine months of 2019 compared to 36.2% in the first nine months of 2018. The decrease in gross margin year-over-year was primarily the result of product mix due to lower gross margins in the Houghton business, partially offset by the Company's overall pricing initiatives.

SG&A in the first nine months of 2019 increased \$24.9 million compared to the first nine months of 2018 driven by the same factors as those noted in the third quarter review, above, as well as a second quarter of 2019 non-core equipment settlement charge, described in the Non-GAAP Measures section of this Item, above.

During the first nine months of 2019, the Company incurred \$23.8 million of Combination and other acquisition-related expenses, for the same reasons as described in the third quarter review, above. Comparatively, the Company incurred \$12.4 million of Combination-related expenses during the first nine months of 2018. See the Non-GAAP Measures section of this Item, above.

As noted above in the third quarter review, the Company recorded restructuring expense during the first nine months of 2019 of \$24.0 million as part of its plan to realize cost synergies associated with the Combination. There were no similar restructuring expenses recorded during the prior year. See the Non-GAAP Measures section of this Item, above.

Operating income in the first nine months of 2019 was \$25.9 million compared to \$67.7 million in the first nine months of 2018. Excluding the Combination and other acquisition-related charges, restructuring expenses and other non-core items, the Company's current year non-GAAP operating income increased to \$84.3 million compared to \$80.1 million in the first nine months of 2018, primarily due to Houghton net sales and operating income from the Combination, partially offset by the negative impact from foreign currency translation and lower sales volumes, noted above.

The Company had other expense, net, of \$0.4 million in the first nine months of 2019 compared to \$0.6 million in the first nine months of 2018. The year-over-year change includes \$1.0 million of lower foreign currency transaction losses in the current year as well as higher receipts of local municipality-related grants in one of the Company's regions in the current year, partially offset by an increase in non-service pension and postretirement benefit costs of \$0.6 million and a prior year \$0.6 million gain on the sale of an available-for-sale asset described in the Non-GAAP Measures section of this Item, above. In addition to the recurring foreign currency transaction gains and losses, the Company also incurred foreign currency transaction losses related to the Company's Argentine subsidiaries in both the current and prior year periods as well as a foreign currency transaction gain related to the liquidation of an inactive legal entity in the first nine months of 2018, described in the Non-GAAP measures section of this Item, above.

Interest expense, net, increased \$4.4 million in the first nine months of 2019 compared to the first nine months of 2018, primarily as a result of the Company's new Term Loan and Revolver borrowings concurrent with the closing of the Combination on August 1, 2019, as described in the third quarter review, above, partially offset by lower average outstanding borrowings on the Company's Old Credit Facility year-over-year, prior to closing the Combination and executing the New Credit Facility.

The Company's effective tax rates for the first nine months of 2019 and 2018 were 22.9% and 21.2%, respectively. Similar to the third quarter of 2019 summary above, the Company's first nine months of 2019 and 2018 effective tax rates include the impacts of the Combination and other acquisition-related expenses, certain of which were non-deductible, as well as Transition tax adjustments. Excluding the impact of these expenses and all other non-core items in each period, described in the Non-GAAP Measures section of this Item, above, the Company estimates that its effective tax rates would have been approximately 22% and 23% in the first nine months of 2019 and 2018, respectively. The Company's first nine months of 2019 effective tax rate was positively impacted by a shift in earnings to entities with lower effective tax rates year-over-year as well as certain favorable return to provision tax adjustments, partially offset by incremental tax expense associated with providing withholding taxes on assumed repatriation of previously untaxed current earnings and profits of certain of the Company's foreign subsidiaries.

Equity in net income of associated companies increased \$1.2 million in the first nine months of 2019 compared to the first nine months of 2018, due to the same factors as noted in the third quarter review, above.

Net income attributable to noncontrolling interest was relatively consistent in both the first nine months of 2019 and 2018.

Foreign exchange negatively impacted the Company's first nine months of 2019 earnings by approximately 2% or \$0.09 per diluted share, primarily due to the negative impact from foreign currency translation of approximately 3% due to the strengthening of the U.S. dollar in the current year, partially offset by the current year benefit of lower foreign exchange transaction losses compared to the first nine months of 2018.

Reportable Segments Review - Comparison of the Third Quarter of 2019 with the Third Quarter of 2018

The Company's reportable segments evidence the structure of the Company's internal organization, the method by which the Company's resources are allocated and the manner by which the Company assesses its performance. During the third quarter of 2019 and in connection with the Combination, the Company reorganized its executive management team to align with its new business structure which reflects the method by which the Company assesses its performance and allocates its resources. The Company's new reportable segment structure includes four segments: (i) Americas; (ii) EMEA; (iii) Asia/Pacific; and (iv) Global Specialty Businesses. The three geographic segments are composed of the net sales and operations in each respective region, excluding net sales and operations managed globally by the Global Specialty Businesses segment, which includes the Company's container, metal finishing, mining, offshore, specialty coatings and specialty grease businesses.

Though the Company changed its reportable segments in the third quarter of 2019, the calculation of the reportable segments' measure of earnings remains otherwise generally consistent with past practices. Segment operating earnings for the Company's reportable segments are comprised of net sales less COGS and SG&A directly related to the respective segment's product sales. Operating expenses not directly attributable to the net sales of each respective segment are excluded from segment operating earnings, which includes certain corporate and administrative costs, Combination and other acquisition-related expenses, restructuring and related activities and COGS related to acquired Houghton inventory sold, which was adjusted to fair value as a part of purchase accounting. Other items not specifically identified with the Company's reportable segments include interest expense, net and other income (expense), net.

All prior period information has been recast to reflect these four segments as the Company's new reportable operating segments. See Note 4 of Notes to Condensed Consolidated Financial Statements, which appears in Item 1 of this Report.

Americas

Americas represented approximately 36% of the Company's consolidated net sales in the third quarter of 2019. The segment's net sales were \$116.7 million, an increase of \$39.3 million or 51% compared to the third quarter of 2018. The increase in net sales reflects Houghton net sales of \$45.0 million. Excluding Houghton net sales, the segments net sales decrease quarter-over-quarter of 7% was due primarily to lower volumes of 8% partially offset by a positive impact from selling price and product mix of 1%. The decline in volumes compared to the third quarter of 2018 was driven by compounding conditions of a weak automotive market, a generally weaker overall industrial environment in the region and some customer inventory corrections in their markets. This segment's operating earnings were \$23.9 million, an increase of \$6.9 million or 40% compared to the third quarter of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, partially offset by a lower gross margin and higher SG&A, including Houghton SG&A.

EMEA

EMEA represented approximately 25% of the Company's consolidated net sales in the third quarter of 2019. The segment's net sales were \$82.5 million, an increase of \$31.1 million or 61% compared to the third quarter of 2018. The increase in net sales reflects Houghton net sales of \$35.2 million. Excluding Houghton net sales, the segments net sales decreased 8% quarter-over-quarter due to the negative impact of foreign currency translation of 4%, lower volumes of 3% and a decline in selling price and product mix of approximately 1%. The foreign exchange impact was primarily due to the weakening of the euro against the U.S. dollar as this exchange rate averaged 1.11 in the third quarter of 2019 compared to 1.16 in the third quarter of 2018. The decline in volumes compared to the third quarter of 2018 was driven by a weak automotive market and overall industrial environment in the region. This segment's operating earnings were \$13.4 million, an increase of \$4.8 million or 56% compared to the third quarter of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, and a slightly higher gross margin, partially offset by higher SG&A, including Houghton SG&A.

Asia/Pacific

Asia/Pacific represented approximately 23% of the Company's consolidated net sales in the third quarter of 2019. The segment's net sales were \$74.3 million, an increase of \$24.3 million or 49% compared to the third quarter of 2018. The increase in net sales reflects Houghton net sales of \$27.0 million. Excluding Houghton net sales, the segments net sales decreased 5% quarter-over-quarter due to lower sales volumes of 4% and the negative impact of foreign currency translation of 2%, partially offset by an increase from selling price and product mix of less than 1%. The decline in volumes compared to the third quarter of 2018 was driven by a weak automotive market and overall industrial environment in the region. The foreign exchange impact was primarily due to the weakening of the Chinese renminbi against the U.S. dollar as this exchange rate averaged 7.02 in the third quarter of 2019 compared to 6.81 in the third quarter of 2018. This segment's operating earnings were \$20.4 million, an increase of \$6.4 million or 46% compared to the third quarter of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, partially offset by a slightly lower gross margin and higher SG&A, including Houghton SG&A.

Global Specialty Businesses

Global Specialty Businesses represented approximately 16% of the Company's consolidated net sales in the third quarter of 2019. The segment's net sales were \$51.7 million, an increase of \$8.3 million or 19% compared to the third quarter of 2018. The increase in net sales reflects Houghton net sales of \$12.3 million. Excluding Houghton net sales, the segments net sales decreased 9% quarter-over-quarter due to a decline in selling price and product mix of 9% and the negative impact of foreign currency translation of 1%, partially offset by higher sales volumes of 1%. This segment's operating earnings were \$15.0 million, an increase of \$2.8 million or 23% compared to the third quarter of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, partially offset by higher SG&A, including Houghton SG&A.

Reportable Segments Review - Comparison of the First Nine Months of 2019 with the First Nine Months of 2018

Americas

Americas represented approximately 35% of the Company's consolidated net sales in the first nine months of 2019. The segment's net sales were \$260.7 million, an increase of \$35.6 million or 16% compared to the first nine months of 2018. The increase in net sales reflects Houghton net sales of \$45.0 million. Excluding Houghton net sales, the segments net sales decreased 4% year-over-year due to lower volumes of 5% and a negative impact of foreign currency translation of 1%, partially offset by an increase from selling price and product mix of 2%. The decline in volumes compared to the first nine months of 2018 was driven by the same factors noted in the third quarter of 2019 summary above. This segment's operating earnings were \$52.2 million, an increase of \$4.4 million or 9% compared to the first nine months of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, partially offset by a lower gross margin and higher SG&A, including Houghton SG&A.

EMEA

EMEA represented approximately 25% of the Company's consolidated net sales in the first nine months of 2019. The segment's net sales were \$184.3 million, an increase of \$19.5 million or 12% compared to the first nine months of 2018. The increase in net sales reflects Houghton net sales of \$35.2 million. Excluding Houghton net sales, the segments net sales declined 9% year-over-year due to the negative impact of foreign currency translation of 6%, lower volumes of 2% and a decrease from selling price and product mix of 1%. The foreign exchange impact was primarily due to the weakening of the euro against the U.S. dollar as this exchange rate averaged 1.12 in the first nine months of 2019 compared to 1.19 in the first nine months of 2018. The decline in volumes compared to the first nine months of 2018 was driven by the same factors noted in the third quarter of 2019 summary above. This segment's operating earnings were \$31.2 million, an increase of \$3.1 million or 11% compared to the first nine months of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, and a slightly higher gross margin, partially offset by higher SG&A, including Houghton SG&A.

Asia/Pacific

Asia/Pacific represented approximately 22% of the Company's consolidated net sales in the first nine months of 2019. The segment's net sales were \$165.2 million, an increase of \$21.8 million or 15% compared to the first nine months of 2018. The increase in net sales reflects Houghton net sales of \$27.0 million. Excluding Houghton net sales, the segments net sales decreased 4% year-over-year due to the negative impact of foreign currency translation of 4% and a decrease from selling price and product mix of 1%, partially offset by higher volumes of 1%. The foreign exchange impact was primarily due to the weakening of the Chinese renminbi against the U.S. dollar as this exchange rate averaged 6.86 in the first nine months of 2019 compared to 6.51 in the first nine months of 2018. This segment's operating earnings were \$45.4 million, an increase of \$5.7 million or 14% compared to the first nine months of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, partially offset by higher SG&A, including Houghton SG&A.

Global Specialty Businesses

Global Specialty Businesses represented approximately 18% of the Company's consolidated net sales in the first nine months of 2019. The segment's net sales were \$132.0 million, an increase of \$9.2 million or 8% compared to the first nine months of 2018. The increase in net sales reflects Houghton net sales of \$12.3 million. Excluding \$12.3 million of Houghton net sales, the segments net sales decreased 2% year-over-year due to a decrease from selling price and product mix of 6% and the negative impact of foreign currency translation of approximately 1%, partially offset by higher volumes of 5%. This segment's operating earnings were \$36.1 million, an increase of \$2.9 million or 9% compared to the first nine months of 2018. The increase in segment operating earnings reflects the benefit of higher net sales, including Houghton, as well as lower overall SG&A, including Houghton SG&A.

Factors That May Affect Our Future Results

(Cautionary Statements Under the Private Securities Litigation Reform Act of 1995)

Certain information included in this Report and other materials filed or to be filed by Quaker Chemical Corporation with the SEC (as well as information included in oral statements or other written statements made or to be made by us) contain or may contain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These statements can be identified by the fact that they do not relate strictly to historical or current facts. We have based these forward-looking statements on our current expectations about future events. These forward-looking statements include statements with respect to our beliefs, plans, objectives, goals, expectations, anticipations, intentions, financial condition, results of operations, future performance and business, including:

- the potential benefits of the Combination;
- our current and future results and plans; and
- statements that include the words "may," "could," "should," "would," "believe," "expect," "anticipate," "estimate," "intend," "plan" or other similar expressions.

Such statements include information relating to current and future business activities, operational matters, capital spending, and financing sources. From time to time, forward-looking statements are also included in the Company's other periodic reports on Forms 10-K, 10-Q and 8-K, press releases, and other materials released to, or statements made to, the public.

Any or all of the forward-looking statements in this Report, in the Company's Annual Report to Shareholders for 2018 and in any other public statements we make may turn out to be wrong. This can occur as a result of inaccurate assumptions or as a consequence of known or unknown risks and uncertainties. Many factors discussed in this Report will be important in determining our future performance. Consequently, actual results may differ materially from those that might be anticipated from our forward-looking statements.

We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise. However, any further disclosures made on related subjects in Quaker's subsequent reports on Forms 10-K, 10-Q, 8-K and other related filings should be consulted. A major risk is that demand for the Company's products and services is largely derived from the demand for its customers' products, which subjects the Company to uncertainties related to downturns in a customer's business and unanticipated customer production shutdowns. Other major risks and uncertainties include, but are not limited to, significant increases in raw material costs, customer financial stability, worldwide economic and political conditions, foreign currency fluctuations, significant changes in applicable tax rates and regulations, future terrorist attacks and other acts of violence. Furthermore, the Company is subject to the same business cycles as those experienced by steel, automobile, aircraft, appliance, and durable goods manufacturers. Our forward-looking statements are subject to risks, uncertainties and assumptions about the Company and its operations that are subject to change based on various important factors, some of which are beyond our control. These risks, uncertainties, and possible inaccurate assumptions relevant to our business could cause its actual results to differ materially from expected and historical results.

Other factors beyond those discussed above or elsewhere in this Report, could also adversely affect us including, but not limited to the following related to the Combination:

- potential adverse effects on the Company's business, properties or operations caused by the implementation of the Combination;
- the ability to promptly, efficiently and effectively integrate the operations of Houghton and Quaker Chemical;
- the ability to develop or modify financial reporting, information systems and other related financial tools to ensure overall financial integrity and adequacy of internal control procedures;
- the ability to identify and take advantage of potential synergies, including cost reduction opportunities, while maintaining legacy business and other related attributes, as well as, the risk that the costs to achieve synergies may be more than anticipated;
- difficulties in managing a larger, combined company, addressing differences in business culture and retaining key personnel;
- risks related to the Company's distraction from ongoing business operations due to the Combination; and,
- the outcome of any legal proceedings that may be instituted against the companies related to the Combination.

Therefore, we caution you not to place undue reliance on our forward-looking statements. For more information regarding these risks and uncertainties as well as certain additional risks that we face, refer to the Risk Factors section, which appears in Item 1A of our Form 10-K, as amended by Form 10-K/A, for the year ended December 31, 2018, as well as the proxy statement the Company filed in connection with the Combination on July 31, 2017 and in our quarterly and other reports filed from time to time with the SEC. This discussion is provided as permitted by the Private Securities Litigation Reform Act of 1995.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

As a result of the closing of the Combination, the Company's exposure to foreign currency fluctuations, changes in commodity prices and credit risk have not materially changed from the exposures for legacy Quaker, previously disclosed in Part II, Item 7A, of the Company's Annual Report on Form 10-K for the year ended December 31, 2018.

With regards to the combined Company's exposure to interest rate risk, the Company's exposure to changes in interest rates relates primarily to its borrowings under the New Credit Facility as of September 30, 2019, as opposed to the Old Credit Facility and the Company's other smaller credit facilities as of December 31, 2018. Borrowings under the New Credit Facility bear interest at a base rate or LIBOR plus an applicable margin based upon the Company's consolidated net leverage ratio. Borrowings under the Old Credit Facility and the Company's other smaller credit facilities were generally based on a base rate or LIBOR plus a spread. As a result of the variable interest rates applicable under the New Credit Facility, if interest rates rise significantly, the cost of debt to the Company will increase. This can have an adverse effect on the Company, depending on the extent of the Company's borrowings outstanding throughout a given year. As of September 30, 2019, the Company had outstanding borrowings under the New Credit Facility of approximately \$857 million. The interest rate applicable on outstanding borrowings under the New Credit Facility post-closing of the Combination was approximately 3.3%. As of December 31, 2018, the Company had \$24.0 million outstanding under its credit facilities at a weighted average borrowing rate of approximately 1.0%. If interest rates had changed by 10%, the Company's interest expense on its credit facilities for the year ended December 31, 2018 would have correspondingly increased or decreased by less than \$0.1 million. Likewise, if interest rates had changed by 10%, the Company's interest expense for the period ended September 30, 2019 on its credit facilities, including the New Credit Facility borrowings outstanding post-closing of the Combination, would have correspondingly increased or decreased by approximately \$0.7 million.

The New Credit Facility required the Company fix at least 20% of the variable interest rates on its Term Loans. In November 2019, the Company entered into \$170.0 million notional amounts of three-year interest rate swaps at a fixed rate of approximately 3.1% to satisfy this requirement of the New Credit Facility as well as to manage the Company's exposure to variable interest rate risk associated with the New Credit Facility. The Company has previously used derivative financial instruments primarily for the purposes of hedging exposures to fluctuations in interest rates. The Company anticipates that these interest rate swaps will be designated and will qualify as cash flow hedges.

Item 4. Controls and Procedures.

Evaluation of disclosure controls and procedures. As required by Rule 13a-15(b) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), our management, including our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act) as of the end of the period covered by this report. Based on that evaluation, our principal executive officer and our principal financial officer have concluded that as of the end of the period covered by this report, our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Exchange Act) were not effective because of a material weakness in internal control over financial reporting related to certain aspects of our information technology that was disclosed in the Company’s Annual Report on Form 10-K, as amended by Form 10-K/A for the year ended December 31, 2018. Management did not identify a material misstatement within its consolidated financial statements in this or any prior filed Quarterly Report on Form 10-Q or Annual Report on Form 10-K as a result of the material weakness.

Remediation Plan Activities. As previously disclosed in “Item 9A. Controls and Procedures.” in the Company’s Annual Report on Form 10-K, as amended by Form 10-K/A for the year ended December 31, 2018, the Company’s management commenced a remediation plan with the goal of remediating the material weakness as soon as possible. In carrying out our remediation plan, management modified existing controls and designed and implemented new controls to (i) ensure user access controls to adequately restrict user and privileged access to certain financial applications and data to the appropriate personnel, including ensuring appropriate segregation of duties as it relates to the preparation and review of journal entries and (ii) monitor, document, and approve system and data changes during the quarter ended September 30, 2019, and we are in the process of testing the operating effectiveness of these controls. Although the remediated controls have been effective to date, the material weakness will not be considered remediated until the applicable controls operate for a sufficient period of time for management to conclude, through testing, that such controls are operating effectively. We expect that the material weakness will be remediated before the end of 2019.

Changes in internal control over financial reporting. As required by Rule 13a-15(d) under the Exchange Act, our management, including our principal executive officer and principal financial officer, has evaluated our internal control over financial reporting to determine whether any changes to our internal control over financial reporting occurred during the quarter ended September 30, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting. Based on that evaluation, other than the changes discussed above in connection with the changes designed and implemented as a result of our remediation plan of the previously identified material weakness, there were no changes that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting during the quarter ended September 30, 2019.

PART II.
OTHER INFORMATION

Items 1A, 3, 4 and 5 of Part II are inapplicable and have been omitted.

Item 1. Legal Proceedings.

Incorporated by reference is the information in Note 18 of the Notes to the Condensed Consolidated Financial Statements in Part I, Item 1, of this Report.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

The following table sets forth information concerning shares of the Company's common stock acquired by the Company during the period covered by this report:

Period	(a) Total Number of Shares Purchased (1)	(b) Average Price Paid Per Share (2)	(c) Total Number of Shares Purchased as part of Publicly Announced Plans or Programs	(d) Approximate Dollar Value of Shares that May Yet be Purchased Under the Plans or Programs (3)
July 1 - July 30	—	\$ —	—	\$ 86,865,026
August 1 - August 31	90	\$ 158.88	—	\$ 86,865,026
September 1 - September 30	—	\$ —	—	\$ 86,865,026
Total	90	\$ 158.88	—	\$ 86,865,026

- (1) All of these shares were acquired from employees upon their surrender of Quaker Chemical Corporation shares in payment of the exercise price of employee stock options exercised or for the payment of taxes upon exercise of employee stock options or the vesting of restricted stock.
- (2) The price paid for shares acquired from employees pursuant to employee benefit and share-based compensation plans is, in each case, based on the closing price of the Company's common stock on the date of exercise or vesting as specified by the plan pursuant to which the applicable option or restricted stock was granted.
- (3) On May 6, 2015, the Board of Directors of the Company approved, and the Company announced, a new share repurchase program pursuant to which the Company is authorized to repurchase up to \$100,000,000 of Quaker Chemical Corporation common stock (the "2015 Share Repurchase Program"). The 2015 Share Repurchase Program, which replaced the Company's other share repurchase plans then in effect, has no expiration date. There were no shares acquired by the Company pursuant to the 2015 Share Repurchase Program during the quarter ended September 30, 2019.

Limitation on the Payment of Dividends

The New Credit Facility has limitations on the payment of dividends and other so-called restricted payments. Among dividends that may be paid are (a) dividends that would not exceed the greater of (x) \$50,000,000, and (y) 20% of Consolidated EBITDA of the Company in any fiscal year, so long as there is no default (as defined in the New Credit Facility) under the New Credit Facility, and (b) other dividends if the Company's consolidated leverage ratio (as defined in the New Credit Facility) is under 2.0 to 1.0 and there is no default.

Item 6. Exhibits.

(a) Exhibits

- 3.1 – [Amended and Restated Articles of Incorporation \(as amended through July 24, 2019\), Incorporated by reference to Exhibit 3.1 as filed by the Registrant with its quarterly report on Form 10-Q on August 1, 2019.](#)
- 3.2 – [By-laws \(as amended and restated, effective May 6, 2015\), Incorporated by reference to Exhibit 3.2 as filed by the Registrant with Form 8-K filed on May 8, 2015.](#)
- 4.1 – [Registration Rights, dated August 1, 2019, issued to the Management Sellers by Quaker Chemical Corporation, Incorporated by reference to Exhibit 4.5 as filed by Registrant on Form S-3 on August 29, 2019.](#)
- 10.1* – [Expatriate Agreement by and between the Registrant and Dieter Laininger, dated September 27, 2017, effective August 1, 2019.](#)
- 10.2** – [Expatriate Agreement by and between the Registrant and Adrian Steeples, dated October 12, 2017, effective August 1, 2019.](#)
- 10.3* – [Form of Memorandum of Employment by and between the Registrant and certain executive officers \(including Jeewat Bijlani, Kimberly Johnson and David Slinkman\).](#)
- 10.4* – [Form of Change of Control Agreement by and between the Registrant and certain executive officers \(including Jeewat Bijlani, Kimberly Johnson and David Slinkman\).](#)
- 10.5 – [Shareholder Agreement, dated August 1, 2019, among Quaker Chemical Corporation, Gulf Hungary Holding Korlátolt Felelősségű Társaság, Gulf Oil International, Ltd. and GOCL Corporation Limited, Inc. Incorporated by reference to Exhibit 10.1 as filed by Registrant with Form 8-K filed on August 2, 2019.](#)
- 10.6*** – [Non-Competition and Non-Solicitation Agreement, dated as of August 1, 2019, among Quaker Chemical Corporation, Gulf Houghton Lubricants Ltd., Gulf Oil International, Ltd., GOCL Corporation Limited and Gulf Oil Lubricants India, Ltd. Incorporated by reference to Exhibit 10.2 as filed by Registrant with Form 8-K filed on August 2, 2019.](#)
- 10.7*** – [Credit Agreement, dated as of August 1, 2019, among Quaker Chemical Corporation and certain of its subsidiaries, Banks of America, N.A. and each of the lenders from time to time party thereto. Incorporated by reference to Exhibit 10.3 as filed by Registrant with Form 8-K filed on August 2, 2019.](#)
- 10.9*** – [Escrow Agreement, dated August 1, 2019, among Quaker Chemical Corporation, Gulf Houghton Lubricants, Ltd. and Citibank N.A. Incorporated by reference to Exhibit 4.4 as filed by Registrant on Form S-3 on August 29, 2019.](#)
- 31.1* – [Certification of Chief Executive Officer of the Company pursuant to Rule 13a-14\(a\) of the Securities Exchange Act of 1934](#)
- 31.2* – [Certification of Chief Financial Officer of the Company pursuant to Rule 13a-14\(a\) of the Securities Exchange Act of 1934](#)
- 32.1** – [Certification of Chief Executive Officer of the Company Pursuant to 18 U.S.C. Section 1350](#)
- 32.2** – [Certification of Chief Financial Officer of the Company Pursuant to 18 U.S.C. Section 1350](#)
- 101.INS* – Inline XBRL Instance Document
- 101.SCH* – Inline XBRL Taxonomy Extension Schema Document
- 101.CAL* – Inline XBRL Taxonomy Extension Calculation Linkbase Document
- 101.DEF* – Inline XBRL Taxonomy Extension Definition Linkbase Document
- 101.LAB* – Inline XBRL Taxonomy Extension Label Linkbase Document
- 101.PRE* – Inline XBRL Taxonomy Extension Presentation Linkbase Document

- 104* – Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101.INS)

* Filed herewith.

** Furnished herewith.

*** Certain exhibits and schedules have been omitted, and the Company agrees to furnish supplementally to the Securities and Exchange commission a copy of any omitted exhibits and schedules upon request.

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

QUAKER CHEMICAL CORPORATION
(Registrant)

/s/ Mary Dean Hall

Mary Dean Hall, Senior Vice President, Chief Financial Officer and Treasurer (officer duly authorized on behalf of, and principal financial officer of, the Registrant)

Date: November 12, 2019



**Dieter Laininger
Expatriate Agreement
September 27, 2017**

The following Expatriate Agreement ("Agreement"), effective the date of Closing, is contingent on and subject to the closing of the transaction contemplated in the April 4, 2017 Share Purchase Agreement by and among Global Houghton LTD., Quaker Chemical Corporation, Gulf Houghton Lubricants LTD., the Other Sellers Parties Hereto, and Gulf Houghton Lubricants LTD. (the "Closing"). In no event shall this Agreement become effective prior to the Closing, and in the event the Closing does not occur, this Agreement shall be of no force and effect and shall be treated as if never executed. The Agreement is made a part of the Employment Agreement between Quaker ("Quaker" or the "Company") and you, dated June 1, 2011 (the "Employment Agreement"). The terms outlined in this Agreement supersede and replaces specific terms outlined in the Expatriate Agreement dated January 15, 2013.

Assignment:

Your assignment will begin within two months of Closing and is expected to run through the end of four years from the beginning of your assignment. The Company at its sole discretion may reduce the length of the assignment to less than the duration listed above. At the end of the assignment, you will be repatriated to the Quaker Europe region where every effort will be made to return you an equivalent level executive position, or if a position is not available in Quaker Europe every effort will be made to find you a comparable position in another of Quaker's regions. However, you will not be required to take a position outside of the Quaker Europe region unless mutually agreeable.

Appointment:

Quaker agrees to continue to employ you, and you agree to continue to serve as Quaker's Senior Vice President and Managing Director – Asia Pacific. You shall perform all duties consistent with such position as well as any other duties that are assigned to you from time to time by the Chief Executive Officer of Quaker. You agree that you will, during the term of this Agreement or any extension or renewal thereof, devote your knowledge, skill, and working time solely and exclusively to the business and interests of Quaker.

Compensation and Benefits:

Effective the date of Closing your base monthly salary will be increased to €22,600.00 gross (subject to all applicable withholding) which represents an annualized amount of €271,200.00. Your base monthly salary of Euro's will be converted to CNY using the FX exchange rate as of the date of Closing. This base monthly salary amount in CNY will remain unchanged unless adjusted consistent with Quaker's then current practice for reviewing executive officers' salaries and performance.

You will be eligible for your next base monthly salary increase in March, 2019, consistent with Quaker's current practice for reviewing executive officers' salaries and performance.

For your position, you are eligible to participate in the Global Annual Incentive Plan ("GAIP") with target and maximum award percentages for 2018 under the GAIP of 50% and 100%, respectively, of your base salary, dependent upon Quaker's financial results and personal objectives to be determined.

Under Quaker's Long-Term Incentive Plan, you will participate at Level 1 with the awards to be annually approved by the Compensation and Management Development Committee of the Board of Directors of Quaker. Both of the aforementioned incentive Plans may be amended by the Board of Directors at any time including eligibility to participate in any given incentive plan, the level of participation in any Quaker incentive plan, and the terms and conditions of any Quaker incentive plan. Any changes to those Plans, including participation levels, shall not affect any of the other terms and conditions hereof or of your Employment Agreement, including, without limitation, the covenants contained in the "Provisions to Protect The Company's Interests", which is attached to your Employment Agreement. Your award for the 2018-2020 performance period includes an even mix of time-based restricted stock, stock options, and a cash award. The value, at a target level, is approximately \$170,000.00 USD.

Payment in Lieu of Pension:

Effective the date of Closing through the final full month of your assignment, you will receive a monthly payment in the amount of €1,301.64. In addition, during your assignment you will receive an annual payment of €16,000.00 paid at the end of each October. Both of these payments are in lieu of participation in a pension plan. These payments will be converted to CNY using the FX conversion at the end of the prior business day in which the regular Quaker China's pay is processed. These payments will be subject to all normal withholdings.

Transportation:

You will be eligible for a company automobile for business and personal use consistent with Quaker – China practice applicable to such benefit as the same may be revised from time to time. You will also be eligible for a driver for business and personal use consistent with the Quaker – China practice.

Medical Coverage:

You and your eligible dependent will be eligible for the international CIGNA medical and dental benefits plans while on assignment in China.

Home Leave:

For the duration of your assignment, you and your spouse are eligible for home leave expense reimbursements of up to a combined total of €15,000.00 per assignment year, which are limited to airfare, automobile transportation, and lodging, when traveling to and from your home country. If trips are not made, no reimbursement will be paid.

Household Goods:

Quaker will provide for the shipping of your household goods by air, at the end of the assignment, each for up to a maximum of 5.5cbm gross or 78 cubic feet of goods whichever is deemed the greater. At your request, you are eligible for the cost of reasonable storage for household goods to be stored within your home country until the end of your assignment.

Personal Income Tax Filing Preparation:

Quaker will provide for the cost of your personal income tax filing preparation for Germany and China for each calendar year while on assignment.

Stock Grant:

Upon Closing and pursuant to the terms of a separate restricted stock grant agreement, Quaker will grant to you approximately \$150,000.00 USD in restricted stock, based on the closing price of Quaker's common stock as of the Closing. This award will vest three years from the Closing.

Dieter Laininger
September 27, 2017
Page Three

Cost of Living:
Effective the date of Closing through the final full month of your assignment, you will receive a cost-of-living monthly base salary adjustment of €7,900.00. This monthly payment will remain unchanged during the duration of the assignment. This payment will be converted to CNY using the FX conversion at the end of the business day on regular Quaker China's pay dates; the same dates that your regular base salary is paid. These payments will be subject to all normal withholdings.

Tax Equalization:
A tax equalization calculation will be completed for each calendar year while on assignment. Depending on the calculation, you may be eligible for a tax equalization payment.

Exchange Rate Equalization:
An exchange rate equalization calculation will be completed each January for the term of this assignment for the prior assignment year, and will be based on the rate of exchange on the pay dates of your regular monthly base pay versus the exchange rate on the date of Closing. Depending on the calculation, you may be eligible for an annual exchange rate equalization payment.

Housing:
Through the end of your assignment, you will be eligible for a housing allowance of up to 45,000.00 CNY per month. Any cost over this amount will be your responsibility.

Other than listed above, there will be no additional changes to, all other terms and conditions of the Employment Agreement and any prior amendments thereto, as well as all company rules and practices, shall remain unchanged and in full force and effect.

This Agreement may be executed in one or more counterparts, all of which will be considered one and the same Agreement and shall become effective when one or more counterparts have been signed by each of the parties and delivered (including by facsimile transmission) to the other parties hereto, it being understood that all parties need not sign the same counterpart.

We kindly request your acceptance of these terms by signing below and returning to the Vice President Human Resources in the Corporate Human Resources Department.

SIGNATURE:
I hereby accept the offer as stated in the terms described above.

_____/s/ Dieter Laininger_____
Dieter Laininger

Date: October 2, 2017

Quaker Chemical (China) Co., Ltd.

By: /s/ Michael F. Barry

Date: October 3, 2017

Quaker Chemical B.V.

By: /s/ Mary Dean Hall

Date: October 3, 2017

Acknowledged and approved

Quaker Chemical Corporation

By: /s/ Robert T. Traub



Click here to enter text.

Date: October 3, 2017



Adrian Steeples
Expatriate Agreement
October 12, 2017

The following Expatriate Agreement ("Agreement"), effective the date of Closing, is contingent on and subject to the closing of the transaction contemplated in the April 4, 2017 Share Purchase Agreement by and among Global Houghton LTD., Quaker Chemical Corporation, Gulf Houghton Lubricants LTD., the Other Sellers Parties Hereto, and Gulf Houghton Lubricants LTD. (the "Closing"). In no event shall this Agreement become effective prior to the Closing, and in the event the Closing does not occur, this Agreement shall be of no force and effect and shall be treated as if never executed. The Agreement is made a part of the Employment Agreement between Quaker ("Quaker" or the "Company") and you, dated December 7, 2010 (the "Employment Agreement"). The terms outlined in this Agreement supersede and replaces specific terms outlined in the Expatriate Agreement dated July 1, 2013.

Assignment:

Your assignment will begin within two months of Closing and is expected to run through the end of four years from the beginning of your assignment. The Company at its sole discretion may reduce the length of the assignment to less than the duration listed above. At the end of the assignment, you will be repatriated to the Quaker Europe region where every effort will be made to return you an equivalent level executive position, or if a position is not available in Quaker Europe every effort will be made to find you a comparable position in another of Quaker's regions. However, you will not be required to take a position outside of the Quaker Europe region unless mutually agreeable.

Appointment:

Quaker agrees to continue to employ you, and you agree to continue to serve as Quaker's Senior Vice President and Managing Director – EMEA. You shall perform all duties consistent with such position as well as any other duties that are assigned to you from time to time by the Chief Executive Officer of Quaker. You agree that you will, during the term of this Agreement or any extension or renewal thereof, devote your knowledge, skill, and working time solely and exclusively to the business and interests of Quaker.

Compensation and Benefits:

Effective the date of Closing your base monthly salary will be increased to £20,039.00 gross (subject to all applicable withholding) which represents an annualized amount of £240,468.00. Your base monthly salary of £20,039.00 may be paid in GBP, EUR, or a combination thereof. Initially, 80% of your monthly salary will be paid in GBP (£16,031.20) and 20% will be converted into EUR using the FX exchange rate as of the date of Closing. For the duration of the assignment, any amounts paid in EUR will be converted using the FX exchange rate as of the date of Closing. Your base monthly salary of £20,039.00 will remain unchanged unless adjusted consistent with Quaker's then current practice for reviewing executive officers' salaries and performance.

You will be eligible for your next base monthly salary increase in March, 2019, consistent with Quaker's current practice for reviewing executive officers' salaries and performance.

For your position, you are eligible to participate in the Global Annual Incentive Plan ("GAIP") with target and maximum award percentages for 2018 under the GAIP of 50% and 100%, respectively, of your base salary, dependent upon Quaker's financial results and personal objectives to be determined.

Under Quaker's Long-Term Incentive Plan, you will participate at Level 1 with the awards to be annually approved by the Compensation and Management Development Committee of the Board of Directors of Quaker. Both of the aforementioned incentive Plans may be amended by the Board of Directors at any time including eligibility to participate in any given incentive plan, the level of participation in any Quaker incentive plan, and the terms and conditions of any Quaker incentive plan. Any changes to those Plans, including participation levels, shall not affect any of the other terms and conditions hereof or of your Employment Agreement, including, without limitation, the covenants contained in the "Provisions to Protect The Company's Interests", which is attached to your Employment Agreement. Your award for the 2018-2020 performance period includes an even mix of time-based restricted stock, stock options, and a cash award. The value, at a target level, is approximately \$170,000.00 USD.

Monthly Payment in Lieu of Pension:

Effective the date of Closing through the final full month of your assignment, you will receive a monthly payment in the amount of 12.9% of your regular monthly GBP base salary as a payment in lieu of participation in a pension plan. This payment will be converted to EUR using the FX conversion at the end of the prior business day in which the regular Quaker Netherlands's pay is processed. These payments will be subject to all normal withholdings.

Transportation:

You will be eligible for a company automobile for business and personal use consistent with Quaker – Netherlands practice applicable to such benefit as the same may be revised from time to time.

Medical Coverage:

You and your eligible dependent will be eligible for the international CIGNA medical and dental benefits plans while on assignment in The Netherlands.

Household Goods:

Quaker will provide for the shipping of your household goods by air, at the end of the assignment, each for up to a maximum of 5,5cbm gross or 78 cubic feet of goods whichever is deemed the greater. At your request, you are eligible for the cost of reasonable storage for household goods to be stored within your home country until the end of your assignment.

Personal Income Tax Filing Preparation:

Quaker will provide for the cost of your personal income tax filing preparation for United Kingdom and The Netherlands for each calendar year while on assignment.

Stock Grant:

Upon Closing and pursuant to the terms of a separate restricted stock grant agreement, Quaker will grant to you approximately \$150,000.00 USD in restricted stock, based on the closing price of Quaker's common stock as of the Closing. This award will vest three years from the Closing.

Expatriate Assignment Allowance:

Effective the date of Closing through the final full month of your assignment, you will be eligible for a monthly expatriate assignment allowance of £5,300.00. This monthly amount will remain unchanged during the duration of the assignment. This amount will be converted to EUR using the FX conversion at the end of the prior business day in which the regular Quaker Netherlands' pay is processed. On a monthly basis, Quaker will pay directly to a landlord for your assignment housing accommodation. If the housing accommodation amount exceeds your converted monthly expatriate assignment allowance amount, you will be responsible for reimbursing Quaker for the difference. Any remaining portion above the housing accommodation amount will be made as a monthly payment through the regular Quaker Netherlands' pay process. Any payments made through payroll will be subject to all normal withholdings.

Exchange Rate Equalization:

An exchange rate equalization calculation will be completed each January for the term of this assignment for the prior assignment year, and will be based on the rate of exchange on the pay dates of your regular monthly base pay versus the exchange rate on the date of Closing. Depending on the calculation, you may be eligible for an annual exchange rate equalization payment.

Tax Equalization:

A tax equalization calculation will be completed for each calendar year while on assignment. Depending on the calculation, you may be eligible for a tax equalization payment.

Other than listed above, there will be no additional changes to, all other terms and conditions of the Employment Agreement and any prior amendments thereto, as well as all company rules and practices, shall remain unchanged and in full force and effect.

This Agreement may be executed in one or more counterparts, all of which will be considered one and the same Agreement and shall become effective when one or more counterparts have been signed by each of the parties and delivered (including by facsimile transmission) to the other parties hereto, it being understood that all parties need not sign the same counterpart.

We kindly request your acceptance of these terms by signing below and returning to the Vice President Human Resources in the Corporate Human Resources Department.

SIGNATURE:

I hereby accept the offer as stated in the terms described above.

_____/s/ Adrian Steeples_____
Adrian Steeples

Quaker Chemical Limited

Date: _____ October 13, 2017 _____

By: _____/s/ Wilbert Platzer_____

Date: _____ October 13, 2017 _____

Quaker Chemical B.V.

By: _____/s/ Mary Dean Hall_____

Acknowledged and approved

Date: _____ October 16, 2017 _____

Quaker Chemical Corporation

Click here to enter text.

By: /s/ Robert T. Traub

Date: October 13, 2017



MEMORANDUM OF EMPLOYMENT

[Date]

[Name]
[Address]
[City], [State] [Zip Code]

The parties to this Memorandum of Employment ("Agreement") are _____ and **Quaker Chemical Corporation**, a Pennsylvania corporation ("Quaker" or the "Company").

Effective upon the Closing (as defined in Section 9 below), and subject to Section 9, you are appointed Quaker's _____, reporting to the Chief Executive Officer, and Quaker wishes to enter into this Agreement containing certain covenants in connection with this appointment.

NOW THEREFORE in consideration of the mutual promises and covenants herein contained and intending to be legally bound hereby the parties hereto agree as follows:

1. Duties

Effective as of the Closing, Quaker agrees to continue to employ you and you agree to serve as Quaker's _____, located at our Conshohocken, PA facility. You shall perform all duties consistent with such position as well as any other duties that are assigned to you from time to time by Quaker's Chief Executive Officer. You agree that during the term of your employment with Quaker to devote your knowledge, skill, and working time solely and exclusively to the business and interests of Quaker and its subsidiaries. Upon the Closing, any and all prior employment or other agreements, with the exception of the September 21, 2017 Change of Control agreement, are hereby terminated and have no further legal effect.

2. Compensation

Your base salary will be determined from time to time by the Compensation / Management Development Committee Meeting of the Board of Directors, in consultation with the Chief Executive Officer. In addition, you will be entitled to participate, to the extent eligible, in any of Quaker's annual and long term incentive plans, retirement savings plan (401k plan), stock purchase plan, and will be entitled to vacations, paid holidays, and medical, dental, and other benefits as are made generally available by Quaker Chemical Corporation to its full-time U.S. employees. During your employment with Quaker, your salary will not be reduced by Quaker without your prior written consent.

3. Term of Employment

Your employment with Quaker may be terminated on thirty (30) days' written notice by either party, with or without cause or reason whatsoever. Within thirty (30) days after termination of your employment, you will be given an accounting of all monies due you. Notwithstanding the foregoing, Quaker has the right to terminate your employment upon less than thirty (30) days' notice for Cause (as defined below).

4. Covenant Not to Disclose

a. You acknowledge that the identity of Quaker's (and any of Quaker's affiliates') customers, the requirements of such customers, pricing and payment terms quoted and charged to such customers, the identity of Quaker's suppliers and terms of supply (and the suppliers and related terms of supply of any of Quaker's customers for which management services are being provided), information concerning the method and conduct of Quaker's (and any affiliate's) business such as formulae, formulation information, application technology, manufacturing information, marketing information, strategic and marketing plans, financial information, financial statements (audited and unaudited), budgets, corporate practices and procedures, research and development efforts, and laboratory test methods and all of Quaker's (and its affiliates') manuals, documents, notes, letters, records, and computer programs are Quaker's confidential information ("Confidential Information") and are Quaker's (and/or any of its affiliates', as the case may be) sole and exclusive property. You agree that at no time during or following your employment with Quaker will you appropriate for your own use, divulge or pass on, directly or through any other individual or entity or to any third party, any Quaker Confidential Information. Upon termination of your employment with Quaker and prior to final payment of all monies due to you under Section 2 or at any other time upon Quaker's request, you agree to surrender immediately to Quaker any and all materials in your possession or control which include or contain any Quaker Confidential Information.

b. You acknowledge that, by this Section 4(b), you have been notified in accordance with the Defend Trade Secrets Act that, notwithstanding the foregoing:

(i) You will not be held criminally or civilly liable under any federal or state trade secret law or this Agreement for the disclosure of Confidential Information that: (A) you make (1) in confidence to a federal, state, or local government official, either directly or indirectly, or to your attorney; and (2) solely for the purpose of reporting or investigating a suspected violation of law; or (B) you make in a complaint or other document that is filed under seal in a lawsuit or other proceeding.

(ii) If you file a lawsuit for retaliation by Quaker for reporting a suspected violation of law, you may disclose Confidential Information to your attorney and use the Confidential Information in the court proceeding if you: (A) file any document containing Confidential Information under seal and (B) do not disclose Confidential Information, except pursuant to court order.

c. Additionally, Quaker confirms that nothing in this Agreement is intended to or shall prevent, impede or interfere with your right, without prior notice to Quaker, to provide information to the government, participate in any government investigations, file a court or administrative complaint, testify in proceedings regarding Quaker's past or future conduct, or engage in any future activities protected under any statute administered by any government agency.

5. Covenant Not to Compete

In consideration of your new position with Quaker and the training and Confidential Information you are to receive from Quaker, you agree that during your employment with Quaker and for a period of one (1) year thereafter, regardless of the reason for your termination, you will not:

a. directly or indirectly, together or separately or with any third party, whether as an employee, individual proprietor, partner, stockholder, officer, director, or investor, or in a joint venture or any other capacity whatsoever, actively engage in business or assist anyone or any firm in business as a manufacturer, seller, or distributor of specialty chemical products which are the same, like, similar to, or which compete with Quaker's (or any of its affiliates') products or services; and

b. at the Chemical Management Services sites to which you are, have been, or will specifically ever be assigned in the future, directly or indirectly, together or separately or with any third party, whether as an employee, individual proprietor, partner, stockholder, officer, director, or investor, or in a joint venture or any other capacity whatsoever, actively engage in business or assist anyone or any firm in business as a provider of chemical management services which are the same, like, similar to, or which compete with Quaker's (or any of its affiliates') services; and

c. directly or indirectly recruit, solicit or encourage any Quaker (or any of its affiliates') employee or otherwise induce such employee to leave Quaker's (or any of its affiliates') employ, or to become an employee or otherwise be associated with you or any firm, corporation, business, or other entity with which you are or may become associated; and

d. solicit or induce any of Quaker's suppliers of products and/or services (or a supplier of products and/or services of a customer who is being provided or solicited for the provision of chemical management services by Quaker) to terminate or alter its contractual relationship with Quaker (and/or any such customer).

The parties consider these restrictions reasonable, including the period of time during which the restrictions are effective. However, if any restriction or the period of time specified should be found to be unreasonable in any court proceeding, then such restriction shall be modified or the period of time shall be shortened as is found to be reasonable so that the foregoing covenant not to compete may be enforced. You agree that in the event of a breach or threatened breach by you of the provisions of the restrictive covenants contained in Section 4 or in this Section 5, Quaker will suffer irreparable harm, and monetary damages may not be an adequate remedy. Therefore, if any breach occurs, or is threatened, in addition to all other remedies available to Quaker, at law or in

equity, Quaker shall be entitled as a matter of right to specific performance of the covenants contained herein by way of temporary or permanent injunctive relief. In the event of any breach of the restrictive covenant contained in this Section 5, the term of the restrictive covenant shall be extended by a period of time equal to that period beginning on the date such violation commenced and ending when the activities constituting such violation cease.

6. Contractual Restrictions

You represent and warrant to Quaker that: (a) there are no restrictions, agreements, or understandings to which you are a party that would prevent or make unlawful your employment with Quaker and (b) your employment by Quaker shall not constitute a breach of any contract, agreement, or understanding, oral or written, to which you are a party or by which you are bound. You further represent that you will not use any trade secret, proprietary or otherwise confidential information belonging to a prior employer or other third party in connection with your employment with Quaker.

7. Inventions

All improvements, modifications, formulations, processes, discoveries or inventions ("Inventions"), whether or not patentable, which were originated, conceived or developed by you solely or jointly with others (a) during your working hours or at Quaker's expense or at Quaker's premises or at a customer's premises or (b) during your employment with Quaker and additionally for a period of one year thereafter, and which relate to (i) Quaker's business or (ii) any research, products, processes, devices, or machines under actual or anticipated development or investigation by Quaker at the earlier of (i) that time or (ii) as the date of termination of employment, shall be Quaker's sole property. You shall promptly disclose to Quaker all Inventions that you conceive or become aware of at any time during your employment with Quaker and shall keep complete, accurate, and authentic notes, data and records of all Inventions and of all work done by you solely or jointly with others, in the manner directed by Quaker. You hereby transfer and assign to Quaker all of your right, title, and interest in and to any and all Inventions which may be conceived or developed by you solely or jointly with others during your employment with Quaker. You shall assist Quaker in applying, obtaining, and enforcing any United States Letters Patent and Foreign Letters Patent on any such Inventions and to take such other actions as may be necessary or desirable to protect Quaker's interests therein. Upon request, you shall execute any and all applications, assignments, or other documents that Quaker deems necessary and desirable for such purposes. You have attached hereto a list of unpatented inventions that you have made or conceived prior to your employment with Quaker, and it is agreed that those inventions shall be excluded from the terms of this Agreement.

8. Termination

Quaker, in its sole discretion, may terminate your employment at any time and for any reason, including Cause (as defined herein). If you incur a Separation from Service by decision and action of Quaker for any reason other than Cause, death, or Disability (as defined below), Quaker agrees to:

a. Provide you with reasonable outplacement assistance, either by providing the services in-kind, or by reimbursing reasonable expenses actually incurred by you in connection with your Separation from Service. The outplacement services must be provided during the one-year period following your Separation from Service. If any expenses are to be reimbursed, you must request the reimbursement within eighteen months of your Separation from Service and reimbursement will be made within 30 days of your request.

b. Except as provided in Section 8(c) below, pay you one year's severance in twenty-four semi-monthly installments commencing on the Payment Date and continuing on Quaker's normal semi-monthly payroll dates each month thereafter, each of which is equal to your semi-monthly base salary at the time of your Separation from Service, provided you sign a Release within 45 days of the later of the date you receive the Release or your Separation from Service. Continuation of medical and dental coverage's will be consistent with current Quaker severance program in place at the time of termination.

c. Notwithstanding Section 8(b) above, to the extent that you incur a termination of employment and are otherwise eligible for severance benefits under the existing GH Holdings, Inc. Severance and Change in Control Plan for Senior Management and Summary Plan Description, any severance or termination benefits due you will be paid under that plan (including any right to terminate for "good reason" as defined in such plan) and you will not be entitled to any additional severance or termination benefits under this Agreement in such event.

"Separation from Service" means your separation from service with Quaker and its affiliates within the meaning of Treas. Reg. §1.409A-1(h) or any successor thereto.

"Cause" means your employment with Quaker has been terminated by reason of (i) your willful and material breach of this Agreement (after having received notice thereof and a reasonable opportunity to cure or correct) or the Company's policies, (ii) dishonesty, fraud, willful malfeasance, gross negligence, or other gross misconduct, in each case relating to the performance of your duties hereunder which is materially injurious to Quaker, or (iii) conviction of or plea of guilty or nolo contendere to a felony.

"Payment Date" means (x) the 60th day after your Separation from Service or (y) if you are a specified employee (as defined in Treas. Reg. §1.409A-1(i)) as of the date of your Separation from Service, and the severance described in subsection (b) is deferred compensation subject to section 409A of the Code, the first business day of the seventh month following the month in which your Separation from Service occurs. If the Payment Date is described in clause (y), the amount paid on the Payment Date shall include all monthly installments that would have been paid earlier had clause (y) not been applicable, plus interest at the Wall Street Journal Prime Rate published in the Wall Street Journal on the date of your Separation from Service (or the previous business day if such day is not a business day), for the period from the date payment would have been made had clause (y) not been applicable through the date payment is made.

“**Release**” means a release (in a form satisfactory to Quaker) of any and all claims against Quaker and all related parties with respect to all matters arising out of your employment with Quaker, or the termination thereof (other than for claims for any entitlements under the terms of this Agreement or any plans or programs of Quaker under which you have accrued a benefit) that Quaker provides to you no later than ten days after your Separation from Service. If a release is not provided to you within this time period, the severance shall be paid even if you do not sign a release.

“**Disability**” means total and permanent disability as defined in the long-term disability plan maintained by Quaker for employees generally or, if Quaker does not maintain such a plan, the long-term disability plan most recently maintained by Quaker for employees generally.

9. Contingency

This Agreement is in all respects contingent on and subject to the closing of the transaction contemplated in the April 4, 2017 Share Purchase Agreement by and among Global Houghton LTD., Quaker Chemical Corporation, Gulf Houghton Lubricants LTD., the Other Sellers Parties Hereto, and Gulf Houghton Lubricants LTD, as the same may be amended by the parties thereto (the “Closing”). In no event shall this Agreement become effective prior to the Closing, and in the event the Closing does not occur, this Agreement shall be of no force and effect and shall be treated as if never executed.

10. Indemnification

The Company shall defend you and hold you harmless to the fullest extent permitted by applicable law in connection with any claim, action, suit, investigation or proceeding arising out of or relating to performance by you of services for, or action of you, director, officer or employee of the Company or any parent, subsidiary or affiliate of the Company, or of any other person or enterprise at the Company’s request. Expenses incurred by you in defending such claim, action, suit or investigation or criminal proceeding shall be paid by the Company in advance of the final disposition thereof upon the receipt by the Company of an undertaking by or on behalf of you to repay said amount unless it shall ultimately be determined that you are entitled to be indemnified hereunder; provided, however, that this shall not apply to a nonderivative action commenced by the Company against you.

11. Governing Law

The provisions of this Agreement shall be construed in accordance with the laws of the Commonwealth of Pennsylvania without reference to principles of conflicts of laws.

12. Miscellaneous

This Agreement and any Change in Control Agreement to which you are a party, constitute the entire integrated agreement concerning the subjects covered herein. In case any provision of this Agreement shall be invalid, illegal, or otherwise unenforceable, the validity, legality, and enforceability of the remaining provisions shall not thereby be affected or impaired. You may not assign any of your rights or obligations under this Agreement without Quaker’s prior written consent. Quaker may assign this Agreement in its discretion, including to any affiliate or upon a sale of assets

[Name]
[Date]
Page Seven

or equity, merger or other corporate transaction; provided that Quaker obtains the assignee's written commitment to honor the terms and conditions contained herein. This Agreement shall be governed by, and construed in accordance with, the laws of the Commonwealth of Pennsylvania without regard to any conflict of laws. This Agreement shall be binding upon you, your heirs, executors, and administrators and shall inure to the benefit of Quaker as well as its successors and assigns. In the event of any overlap in the restrictions contained herein, including Sections 4 and/or 5 above, with similar restrictions contained in any other agreement, such restrictions shall be read together so as to provide the broadest restriction possible.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day and year first above written.

ATTEST:

QUAKER CHEMICAL CORPORATION

Michael F. Barry

WITNESS:

[Name]

CHANGE IN CONTROL AGREEMENT

THIS CHANGE IN CONTROL AGREEMENT (the "Agreement"), dated September 21, 2017, is by and between QUAKER CHEMICAL CORPORATION, a Pennsylvania corporation (the "Company"), and _____ (the "Manager").

WITNESSETH THAT

WHEREAS, the Board of Directors of the Company has determined that it is in the best interests of the Company and its shareholders that the Company and its subsidiaries be able to attract, retain, and motivate highly qualified management personnel and, in particular, that they be assured of continuity of management in the event of any actual or threatened change in control of the Company; and

WHEREAS, the Board of Directors of the Company believes that the execution by the Company of change in control agreements with certain management personnel, including the Manager, is an important factor in achieving this desired end; and

WHEREAS, the effectiveness of this Agreement is contingent on the occurrence of the Closing described in Section 22 below and, upon such Closing, this Agreement shall amend and restate in full the prior Change in Control Agreement (the "Prior Agreement") between the Company and the Manager.

NOW, THEREFORE, IN CONSIDERATION of the mutual obligations and agreements contained herein and intending to be legally bound hereby, the Manager and the Company agree that the Prior Agreement is amended and restated in full, as follows:

1. Term of Agreement.

This Agreement shall become effective on and subject to the Closing, as defined below (the "Effective Date"), and shall continue in effect through December 31, 2018, provided, however, that the term of this Agreement shall automatically be extended for one additional year beyond December 31, 2018, and successive one-year periods thereafter, unless, not later than eighteen (18) months (eight (8) months with respect to the automatic extension that would otherwise begin on January 1, 2019) preceding the calendar year for which the term would otherwise automatically extend, the Company shall have given written notice to the Manager of intention not to extend this Agreement for an additional year, in which event this Agreement shall continue in effect until December 31 of the calendar year immediately preceding the calendar year for which the term would have otherwise automatically extended. Notwithstanding any such notice not to extend, if a Change in Control (as defined in Section 2) occurs during the original or any extended term of this Agreement, this Agreement shall remain in effect after a Change in Control until all obligations of the parties hereto under this Agreement shall have been satisfied.

2. Change in Control.

As used in this Agreement, a "Change in Control" of the Company shall be deemed to have occurred if:

(a) Any person (a "Person"), as such term is used in Sections 13(d) and 14(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") (other than (i) the Company and/or its wholly owned subsidiaries; (ii) any ESOP or other employee benefit plan of the Company and any trustee or other fiduciary in such capacity holding securities under such plan; (iii) any corporation owned, directly or indirectly, by the shareholders of the Company in substantially the same proportions as their ownership of stock of the Company; or (iv) any other Person who, within the one year prior to the event which would otherwise be a Change in

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Control, is an executive officer of the Company or any group of Persons of which he voluntarily is a part), is or becomes the “beneficial owner” (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of securities of the Company representing 30% or more of the combined voting power of the Company’s then outstanding securities or such lesser percentage of voting power, but not less than 15%, as determined by the members of the Board of Directors of the Company who are independent directors (as defined in the New York Stock Exchange, Inc. Listed Company Manual); provided, however, that a Change in Control shall not be deemed to have occurred under the provisions of this subsection (a) by reason of the beneficial ownership of voting securities by members of the Benoliel family (as defined below) unless and until the beneficial ownership of all members of the Benoliel family (including any other individuals or entities who or which, together with any member or members of the Benoliel family, are deemed under Sections 13(d) or 14(d) of the Exchange Act to constitute a single Person) exceeds 50% of the combined voting power of the Company’s then outstanding securities;

(b) During any two-year period after the Effective Date, Directors of the Company in office at the beginning of such period plus any new Director (other than a Director designated by a Person who has entered into an agreement with the Company to effect a transaction within the purview of subsections (a) or (c)) whose election by the Board of Directors of the Company or whose nomination for election by the Company’s shareholders was approved by a vote of at least two-thirds of the Directors then still in office who either were Directors at the beginning of the period or whose election or nomination for election was previously so approved shall cease for any reason to constitute at least a majority of the Board;

(c) The consummation of (i) any consolidation or merger of the Company in which the Company is not the continuing or surviving corporation or pursuant to which the Company’s voting common shares (the “Common Shares”) would be converted into cash, securities, and/or other property, other than a merger of the Company in which holders of Common Shares immediately prior to the merger have the same proportionate ownership of voting shares of the surviving corporation immediately after the merger as they had in the Common Shares immediately before; or (ii) any sale, lease, exchange, or other transfer (in one transaction or a series of related transactions) of all or substantially all the assets or earning power of the Company; or

(d) The Company’s shareholders or the Company’s Board of Directors shall approve the liquidation or dissolution of the Company.

As used in this Agreement, “members of the Benoliel family” shall mean Peter A. Benoliel, his wife and children and their respective spouses and children, and all trusts created by or for the benefit of any of them.

3. Entitlement to Change in Control Benefits; Certain Definitions.

The Manager shall be entitled to the benefits provided in this Agreement in the event the Manager has a Separation from Service under the circumstances described in (a) below (a “Covered Termination”), provided the Manager executes and does not revoke a Release (as defined below), if any, provided by the Company.

(a) A Covered Termination shall have occurred in the event the Manager’s employment with the Company or its affiliates is terminated within two (2) years following a Change in Control by:

- (i) The Company or its affiliates without Cause (as defined below); or
- (ii) Resignation of the Manager for Good Reason (as defined below).

The Manager shall have no rights to any payments or benefits under this Agreement in the event the Manager’s employment with the Company and its affiliates is terminated (i) as a result of death or Disability (as defined below), or (ii) by the Company or its affiliates for Cause. In the event the Manager’s employment is

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terminated for any reason prior to a Change in Control, the Manager shall have no rights to any payments or benefits under this Agreement and, after any such termination, this Agreement shall be of no further force or effect.

“Cause” shall mean (i) the Manager’s willful and material breach of the employment agreement, if any, between the Manager and the Company (after having received notice thereof and a reasonable opportunity to cure or correct) or of Company policies, (ii) dishonesty, fraud, willful malfeasance, gross negligence, or other gross misconduct, in each case relating to the performance of the Manager’s employment with the Company or its affiliates which is materially injurious to the Company, or (iii) conviction of or plea of guilty to a felony, such Cause to be determined, in each case, by a resolution approved by at least two-thirds of the Directors of the Company after having afforded the Manager a reasonable opportunity to appear before the Board of Directors of the Company and present his position.

“Code” shall mean the Internal Revenue Code of 1986, as amended, together with any applicable regulations thereunder.

“Disability” shall mean total and permanent disability as defined in the long-term disability plan maintained by the Company for employees generally or, if the Company does not maintain such a plan, the long-term disability plan most recently maintained by the Company for employees generally.

“Good Reason” shall mean any of the following actions without the Manager’s consent, other than due to the Manager’s death or Disability: (i) any reduction in the Manager’s base salary from that provided immediately before the Covered Termination or, if higher, immediately before the Change in Control; (ii) any reduction in the potential value of Manager’s bonus opportunity (including cash and noncash incentives) or increase in the goals or standards required to accrue that opportunity, as compared to the opportunity and goals or standards in effect immediately before the Change in Control; (iii) a material adverse change in the nature or scope of the Manager’s authorities, powers, functions, or duties from those in effect immediately before the Change in Control; (iv) a material reduction in the Manager’s benefits from those provided immediately before the Change in Control, disregarding any reduction under a plan or program covering employees generally that applies to all employees covered by the plan or program; or (v) the Manager being required to accept a primary employment location which is more than twenty-five (25) miles from the location at which he primarily was employed during the ninety (90) day period prior to a Change in Control; provided, however, that no Good Reason shall exist unless the Manager has first provided written notice to the Company of the event(s) constituting Good Reason and a reasonable opportunity thereafter to cure or correct.

“Payment Date” shall mean the 60th day after the Manager’s Separation from Service, subject to Section 9.

“Release” shall mean a release (in a form satisfactory to the Company) of any and all claims against the Company and all related parties with respect to all matters arising out of the Manager’s employment by the Company and its affiliates, or the termination thereof (other than claims for any entitlements under the terms of this Agreement, under any employment agreement between the Manager and the Company, or under any plans or programs of the Company under which the Manager has accrued a benefit) that the Company provides to the Manager no later than five days after the date of the Manager’s Covered Termination. Notwithstanding any provision of this Agreement to the contrary, if the Company provides a Release to the Manager, the Manager shall not be entitled to any payments or benefits under this Agreement unless the Manager executes the Release within 45 days of the later of the date he receives the Release or the date of his Covered Termination, and the Manager does not revoke the Release.

“Separation from Service” shall mean the Manager’s separation from service with the Company and its affiliates within the meaning of Treas. Reg. §1.409A-1(h) or any successor thereto.

“Specified Employee” shall mean the Manager if he is a specified employee as defined in Section 409A of the Code as of the date of his Separation from Service.

4. Severance Allowance.

(a) **Amount of Severance Allowance.** In the event of a Covered Termination, the Company shall pay or cause to be paid to the Manager in cash a severance allowance (the “Severance Allowance”) equal to 1.5 (one and one-half) times the sum of the amounts determined in accordance with the following paragraphs (i) and (ii):

- (i) An amount equivalent to the highest annualized base salary which the Manager was entitled to receive from the Company and its subsidiaries at any time during his employment prior to the Covered Termination; and
- (ii) An amount equal to the average of the aggregate annual cash amounts paid to the Manager in the Applicable Three-Year Period under all applicable annual incentive compensation plans maintained by the Company and its affiliates (other than compensation relating to relocation expense; the grant, exercise, or settlement of stock options, restricted stock or performance incentive units or the sale or other disposition of shares received upon exercise or settlement of such awards); provided, however, that (x) in determining the average amount paid under the annual incentive plan during the Applicable Three-Year Period there shall be excluded any year in which no amounts were paid to the Manager under that plan; and (y) there shall be excluded from such calculation any amounts paid to the Manager under any such incentive compensation plan as a result of the acceleration of such payments under such plan due to termination of the plan, a Change in Control, or a similar occurrence. The Applicable Three-Year Period shall be (A) if the Manager has received an annual incentive compensation plan payment in the calendar year of his Covered Termination, the calendar year in which such Covered Termination occurs and the two preceding calendar years, or (B) in any other case, the three calendar years preceding the calendar year in which the Manager’s Covered Termination occurs; provided, however, that the Applicable Three-Year Period shall be determined by substituting “Change In Control” for “Covered Termination” if such substitution results in a higher amount under this subsection (ii).

In no event shall any retention bonus or change in control or success fee be taken into account when determining the amount of the Severance Allowance hereunder.

(b) **Payment of Severance Allowance.** The Severance Allowance shall be paid to the Manager in a lump sum on the Payment Date if the applicable Change in Control is also a change in control event as defined in Treas. Reg. §1.409A-3(i)(5) (or any successor thereto). In any other case, the Severance Allowance shall be paid in eighteen monthly installments commencing on the Payment Date, each of which is equal to one eighteenth (1/18th) of the amount of the Severance Allowance determined under Section 4(a), which are treated as a right to a series of separate payments for purposes of Section 409A of the Code.

5. Outplacement and Welfare Benefits.

(a) **Outplacement.** Subject to Section 6, for a period of one year following a Covered Termination of the Manager, the Company shall make or cause to be made available to the Manager, at its expense,

outplacement counseling and other outplacement services comparable to those available for the Company's senior managers prior to the Change in Control.

(b) **Welfare Benefits.** Subject to Section 6, for a period of eighteen months following a Covered Termination of the Manager, the Manager and the Manager's dependents shall be entitled to participate in the Company's life, medical, and dental insurance plans at the Company's expense, in accordance with the terms of such plans at the time of such Covered Termination as if the Manager were still employed by the Company or its affiliates under this Agreement. If, however, life, medical, or dental insurance benefits are not paid or provided under any such plan to the Manager or his dependents because the Manager is no longer an employee of the Company or its subsidiaries, the Company itself shall, to the extent necessary, pay or otherwise provide for such benefits to the Manager and his dependents.

6. Effect of Other Employment.

In the event the Manager becomes employed (as defined below) during the period with respect to which benefits are continuing pursuant to Section 5: (a) the Manager shall notify the Company not later than the day such employment commences; and (b) the benefits provided for in Section 5 shall terminate as of the date of such employment. For the purposes of this Section 6, the Manager shall be deemed to have become "employed" by another entity or person only if the Manager becomes essentially a full-time employee of a person or an entity (not more than 30% of which is owned by the Manager and/or members of his family); and the Manager's "family" shall mean his parents, his siblings and their spouses, his children and their spouses, and the Manager's spouse and her parents and siblings. Nothing herein shall relieve the Company of its obligations for compensation or benefits accrued up to the time of termination provided for herein.

7. Other Payments and Benefits.

On the Payment Date, the Company shall pay or cause to be paid to the Manager the aggregate of: (a) the Manager's earned but unpaid base salary through the Covered Termination at the rate in effect on the date of the Covered Termination, or if higher, at the rate in effect at any time during the 90-day period preceding the Change in Control; (b) any unpaid bonus or annual incentive payable to the Manager in respect of the calendar year ending prior to the Covered Termination; (c) the pro rata portion of any and all unpaid bonuses and annual incentive awards for the calendar year in which the Covered Termination occurs, said pro rata portion to be calculated on the fractional portion (the numerator of said fraction being the number of days between January 1 and the date of the Covered Termination, and the denominator of which is 365) of the target bonuses or annual incentive awards for such calendar year; and (d) the pro rata portion of any and all awards under the Company's long term incentive plan for the performance period(s) in which the Covered Termination occurs, said pro rata portion to be calculated on the fractional portion (the numerator of said fraction being the number of days between the first day of the applicable performance period and the date of the Covered Termination, and the denominator of which is the total number of days in the applicable performance period) of the amount of the award which would have been payable had (i) the Covered Termination not occurred, and (ii) the target level of performance been achieved for the applicable performance period. The Manager shall be entitled to receive any other payments or benefits that the Manager is entitled to pursuant to the express terms of any compensation or benefit plan or arrangement of the Company or any of its affiliates; provided that: (x) the Severance Allowance (i) shall be in lieu of any severance payments to which the Manager might otherwise be entitled under the terms of any severance pay plan, policy, or arrangement maintained by the Company or the Memorandum of Employment or other employment agreement or arrangement, if any, between the Manager and the Company, and (ii) shall be credited against any severance payments to which the Manager may be entitled by statute; (y) any annual incentive described in subsection (b) or (c) shall decrease (or shall be decreased by), but not below zero, the amount of the annual incentive payable (or paid) with respect to the same calendar year under the Company's annual incentive plan (currently the 2001 Global Annual Incentive Plan); and (z) any amount described in subsection (d) shall decrease (or shall be decreased by), but not below zero, the amount of the

analogous performance award payable (or paid) with respect to the same performance period(s) under the Company's long term incentive plan(s) (currently the 2006 Long-Term Performance Incentive Plan).

8. Death After Covered Termination.

In the event the Manager dies after a Covered Termination occurs, (a) any payments due to the Manager under Section 4 and the first sentence of Section 7 and not paid prior to the Manager's death shall be made to the person or persons who may be designated by the Manager in writing or, in the event he fails to so designate, to the Manager's personal representatives, and (b) the Manager's spouse and dependents shall be eligible for the welfare benefits described in Section 5(b). Payments pursuant to subsection (a) shall be made on the later of (i) the date payment would have been made to the Manager without regard to Section 9, or (ii) the date of the Manager's death.

9. Certain Section 409A Rules.

(a) Specified Employee. Notwithstanding any provision of this Agreement to the contrary, if the Manager is a Specified Employee, any payment or benefit under this Agreement that constitutes deferred compensation subject to Section 409A of the Code and for which the payment event is Separation from Service shall not be made or provided before the date that is six months after the date of the Manager's Separation from Service. Any payment or benefit that is delayed pursuant to this Section 9 shall be made or provided on the first business day of the seventh month following the month in which the Manager's Separation from Service occurs. With respect to any cash payment delayed pursuant to this Section 9, the first payment shall include interest, at the Wall Street Journal Prime Rate published in the Wall Street Journal on the date of the Manager's Covered Termination (or the previous business day if such date is not a business day), for the period from the date the payment would have been made but for this Section 9 through the date payment is made. The provisions of this Section 9 shall apply only to the extent required to avoid the Manager's incurrence of any additional tax or interest under Section 409A of the Code.

(b) Reimbursement and In-Kind Benefits. Notwithstanding any provision of this Agreement to the contrary, with respect to in-kind benefits provided or expenses eligible for reimbursement under this Agreement which are subject to Section 409A of the Code, (i) the benefits provided or the amount of expenses eligible for reimbursement during any calendar year shall not affect the benefits provided or expenses eligible for reimbursement in any other calendar year, except as otherwise provided in Treas. Reg. §1.409A-3(i)(1)(iv)(B), and (ii) the reimbursement of an eligible expense shall be made as soon as practicable after the Manager requests such reimbursement (subject to Section 9(a)), but not later than the December 31 following the calendar year in which the expense was incurred.

(c) Interpretation and Construction. This Agreement is intended to comply with Section 409A of the Code and shall be administered, interpreted and construed in accordance therewith to avoid the imposition of additional tax under Section 409A of the Code.

(d)

10. Confidentiality and Noncompetition.

(a) Confidential Information. The Manager acknowledges that information concerning the method and conduct of the Company's (and any affiliate's) business, including, without limitation, strategic and marketing plans, budgets, corporate practices and procedures, financial statements, customer and supplier information, formulae, formulation information, application technology, manufacturing information, and laboratory test methods and all of the Company's (and any affiliate's) manuals, documents, notes, letters, records, and computer programs ("Proprietary Business Information"), are the sole and exclusive property of the Company (and/or the Company's affiliates, as the case may be) and are likely to constitute, contain or reveal trade secrets ("Trade Secrets") of the Company (and/or the Company's affiliates, as the case may be). The term "Trade Secrets" as used herein does not include Proprietary Business Information that is known or becomes

known to the public through no act or failure to act on the part of the Manager, or which can be clearly shown by written records to have been known by the Manager prior to the commencement of his employment with the Company.

- (i) The Manager agrees that at no time during or following his employment with the Company will he use, divulge, or pass on, directly or through any other individual or entity, any Trade Secrets.
- (ii) Upon termination of the Manager's employment with the Company regardless of the reason for the termination of the Manager's employment hereunder, or at any other time upon the Company's request, the Manager agrees to forthwith surrender to the Company any and all materials in his possession or control which constitute or contain any Proprietary Business Information, Company laptops, phones or other devices.

(b) Noncompetition. The Manager agrees that during his employment and for a period of one (1) year thereafter, regardless of the reason for the termination of the Manager's employment, he will not:

- (i) directly or indirectly, together or separately or with any third party, whether as an individual proprietor, partner, stockholder, officer, director, joint venturer, investor, or in any other capacity whatsoever actively engage in business or assist anyone or any firm in business as a manufacturer, seller, or distributor of specialty chemical products or chemical management services which are the same, like, similar to, or which compete with the products and services offered by the Company (or any of its affiliates);
- (ii) directly or indirectly recruit, solicit or encourage any employee of the Company (or any of its affiliates) or otherwise induce such employee to leave the employ of the Company (or any of its affiliates) or to become an employee or otherwise be associated with him or any firm, corporation, business or other entity with which he is or may become associated; or
- (iii) solicit, directly or indirectly, for himself or as agent or employee of any person, partnership, corporation, or other entity (other than for the Company), any then or former customer, supplier, or client of the Company with the intent of actively engaging in business which would cause competitive harm to the Company (or any of its affiliates).

(c) Severability. The Manager acknowledges and agrees that all of the foregoing restrictions are reasonable as to the period of time and scope. However, if any paragraph, sentence, clause, or other provision is held invalid or unenforceable by a court of competent and relevant jurisdiction, such provision shall be deemed to be modified in a manner consistent with the intent of such original provision so as to make it valid and enforceable, and this Agreement and the application of such provision to persons and circumstances other than those with respect to which it would be invalid or unenforceable shall not be affected thereby.

(d) Remedies. The Manager agrees and recognizes that in the event of a breach or threatened breach of the provisions of the restrictive covenants contained in this Section 10, the Company may suffer irreparable harm, and monetary damages may not be an adequate remedy. Therefore, if any breach occurs or is threatened, the Company shall be entitled to obtain equitable remedies, including injunctive relief in any court of applicable jurisdiction notwithstanding the provisions of Section 12. In the event of any breach of the restrictive covenant contained in this Section 10, the term of the restrictive covenant specified herein shall be extended by a period of time equal to that period beginning on the date such violation commenced and ending when the activities constituting such violation cease. Furthermore, if a court or arbitration panel determines that the Manager has

breached any of the provisions of this Section 10, the Company's obligations to pay amounts and continue the benefits under this Agreement to the Manager (and his dependents) shall immediately terminate.

(e) **Carve Outs.** The Manager acknowledges that, by this Section, he has been notified that, notwithstanding the foregoing:

- (i) He will not be held criminally or civilly liable under any federal or state trade secret law or this Agreement for the disclosure of Trade Secrets that: (A) he makes (1) in confidence to a federal, state, or local government official, either directly or indirectly, or to his attorney; and (2) solely for the purpose of reporting or investigating a suspected violation of law; or (B) he makes in a complaint or other document that is filed under seal in a lawsuit or other proceeding.
- (ii) If he files a lawsuit for retaliation by the Company for reporting a suspected violation of law, he may disclose Trade Secrets to his attorney and use the Trade Secrets in the court proceeding if he: (A) files any document containing Trade Secrets under seal and (B) does not disclose Trade Secrets, except pursuant to court order.
- (iii) Nothing in this Agreement is intended to or shall prevent, impede or interfere with the Manager's right, without prior notice to the Company, to provide information to the government, participate in a government investigation, file a court or administrative complaint, testify in proceedings regarding the Company's past or future conduct, or engage in any future activities protected under any statute administered by any government agency.

11. Set-Off Mitigation.

Except as provided in Section 6, the Company's obligation to make the payments provided for in this Agreement and otherwise to perform its obligations hereunder shall not be affected by any set-off, counterclaim, recoupment, defense, or other claim, right, or action which the Company may have against the Manager or others. In no event shall the Manager be obligated to seek other employment or take any other action by way of mitigation of the amounts payable to the Manager under any of the provisions of this Agreement.

12. Arbitration: Costs and Expenses of Enforcement.

(a) **Arbitration.** Except as otherwise provided in Sections 10(d) and 13, any controversy or claim arising out of or relating to this Agreement or the breach thereof which cannot promptly be resolved by the parties shall be promptly submitted to and settled exclusively by arbitration in the City of Philadelphia, Pennsylvania, in accordance with the laws of the Commonwealth of Pennsylvania by three arbitrators, one of whom shall be appointed by the Company, one by the Manager, and the third of whom shall be appointed by the first two arbitrators. The arbitration shall be conducted in accordance with the rules of the American Arbitration Association, except with respect to the selection of arbitrators which shall be as provided in this Section 12. Judgment upon the award rendered by the arbitrators may be entered in any court having jurisdiction thereof.

(b) **Costs and Expenses.** In the event that it shall be necessary or desirable for the Manager to retain legal counsel and/or incur other costs and expenses in connection with the enforcement of any and all of his rights under this Agreement at any time during his lifetime, the Company shall pay (or the Manager shall be entitled to recover from the Company, as the case may be) his reasonable attorneys' fees and costs and expenses in connection with the enforcement of his said rights (including those incurred in or related to any arbitration proceedings provided for in subsection (a) and the enforcement of any arbitration award in court), regardless of

the final outcome unless Manager's assertion of claims are found by a court or arbitrator to be frivolous or without merit.

13. Limitation on Payment Obligation.

- (a) Definitions. For purposes of this Section 13, all terms capitalized but not otherwise defined herein shall have the meanings as set forth in Section 280G of the Code. In addition:
- (i) the term "Parachute Payment" shall mean a payment described in Section 280G(b)(2)(A) or Section 280G(b)(2)(B) of the Code (including, but not limited to, any stock option rights, stock grants, and other cash and noncash compensation amounts that are treated as payments under either such section) and not excluded under Section 280G(b)(4)(A) or Section 280G(b)(6) of the Code;
 - (ii) the term "Reasonable Compensation" shall mean reasonable compensation for prior personal services as defined in Section 280G(b)(4)(B) of the Code and subject to the requirement that any such reasonable compensation must be established by clear and convincing evidence; and
 - (iii) the portion of the "Base Amount" and the amount of "Reasonable Compensation" allocable to any "Parachute Payment" shall be determined in accordance with Section 280G(b)(3) and (4) of the Code.

(b) Limitation. Notwithstanding any other provision of this Agreement, Parachute Payments to be made to or for the benefit of the Manager but for this subsection (b), whether pursuant to this Agreement or otherwise, shall be reduced if and to the extent necessary so that the aggregate Present Value of all such Parachute Payments shall be at least one dollar (\$1.00) less than the greater of (i) three times the Manager's Base Amount and (ii) the aggregate Reasonable Compensation allocable to such Parachute Payments. Any reduction in Parachute Payments caused by reason of this subsection (b) shall be applied in the manner least economically detrimental to the Manager. In the event reduction of two or more types of payments would be economically equivalent, the reduction shall be applied pro-rata to such types of payments.

This subsection (b) shall be interpreted and applied to limit the amounts otherwise payable to the Manager under this Agreement or otherwise only to the extent required to avoid any material risk of the imposition of excise taxes on the Manager under Section 4999 of the Code or the disallowance of a deduction to the Company under Section 280G(a) of the Code. In the making of any such interpretation and application, the Manager shall be presumed to be a disqualified individual for purposes of applying the limitations set forth in this subsection (b) without regard to whether or not the Manager meets the definition of disqualified individual set forth in Section 280G(c) of the Code. In the event that the Manager and the Company are unable to agree as to the application of this subsection (b), the Company's independent auditors shall select independent tax counsel to determine the amount of such limits. Such selection of tax counsel shall be subject to the Manager's consent, provided that the Manager shall not unreasonably withhold his consent. The determination of such tax counsel under this Section 13 shall be final and binding upon the Manager and the Company.

(c) Illegal Payments. Notwithstanding any other provision of this Agreement, no payment shall be made hereunder to or for the benefit of the Manager if and to the extent that such payments are determined to be illegal.

14. Notices.

Any notices, requests, demands, and other communications provided for by this Agreement shall be sufficient if in writing, and if hand delivered or if sent by registered or certified mail, if to the Manager, at the

last address he had filed in writing with the Company or if to the Company, at its principal executive offices. Notices, requests, etc. shall be effective when actually received by the addressee or at such address.

15. Withholding

Notwithstanding any provision of this Agreement to the contrary, the Company may, to the extent required by law, withhold applicable Federal, state and local income and other taxes from any payments due to the Manager hereunder.

16. Assignment and Benefit

(a) This Agreement is personal to the Manager and shall not be assignable by the Manager, by operation of law, or otherwise without the prior written consent of the Company otherwise than by will or the laws of descent and distribution. This Agreement shall inure to the benefit of and be enforceable by the Manager's heirs and legal representatives.

(b) This Agreement shall inure to the benefit of and be binding upon the Company and its successors and assigns, including, without limitation, any subsidiary of the Company to which the Company may assign any of its rights hereunder; provided, however, that no assignment of this Agreement by the Company, by operation of law, or otherwise shall relieve it of its obligations hereunder except an assignment of this Agreement to, and its assumption by, a successor pursuant to subsection (c).

(c) The Company shall require any successor (whether direct or indirect, by purchase, merger, consolidation, operation of law, or otherwise) to all or substantially all of the business and/or assets of the Company to assume expressly and agree to perform this Agreement in the same manner and to the same extent that the Company would be required to perform it if no such succession had taken place, but, irrespective of any such assignment or assumption, this Agreement shall inure to the benefit of and be binding upon such a successor. As used in this Agreement, "Company" shall mean the Company as hereinbefore defined and any successor to its business and/or assets as aforesaid.

17. Governing Law

The provisions of this Agreement shall be construed in accordance with the laws of the Commonwealth of Pennsylvania without reference to principles of conflicts of laws.

18. Entire Agreement; Amendment

(a) This Agreement supersedes the Change in Control Agreement entered into between the Manager and the Company on [date], which agreement shall be null and void as of the Effective Date. Except for the change in control provisions set forth in the Company's annual incentive plan and long term incentive plans, and any Memorandum of Employment or other employment agreement to which the Manager is a party, this Agreement represents the entire agreement and understanding of the parties with respect to the subject matter hereof. The Manager understands and acknowledges that the Company's severance plan, annual incentive plan and long term incentive plans are hereby amended with respect to the Manager to avoid duplication of benefits, as provided in Section 7. In the event of any overlap in the restrictions contained herein, including Section 10 above, with similar restrictions contained in any other agreement (including any Memorandum of Employment or other employment agreement), such restrictions shall be read together so as to provide the broadest restriction possible.

(b) The Company reserves the right to unilaterally amend this Agreement without the consent of the Manager to the extent the Compensation/Management Development Committee of the Company's Board of Directors (in its sole discretion) determines is necessary or appropriate to avoid the additional tax under Section

19. No Waiver

The failure to insist upon strict compliance with any provision of this Agreement by any party shall not be deemed to be a waiver of any future noncompliance with such provision or of noncompliance with any other provision.

20. Severability

In the event that any provision or portion of this Agreement shall be determined to be invalid or unenforceable for any reason, the remaining provisions of this Agreement shall be unaffected thereby and shall remain in full force and effect.

21. Indemnification

The Company shall defend and hold the Manager harmless to the fullest extent permitted by applicable law in connection with any claim, action, suit, investigation or proceeding arising out of or relating to performance by the Manager of services for, or action of the Manager as a director, officer or employee of the Company or any parent, subsidiary or affiliate of the Company, or of any other person or enterprise at the Company's request. Expenses incurred by the Manager in defending such a claim, action, suit or investigation or criminal proceeding shall be paid by the Company in advance of the final disposition thereof upon the receipt by the Company of an undertaking by or on behalf of the Manager to repay said amount unless it shall ultimately be determined that the Manager is entitled to be indemnified hereunder; provided, however, that this shall not apply to a nonderivative action commenced by the Company against the Manager.

22. Contingency

This Agreement is in all respects contingent on and subject to the closing of the transaction contemplated in the April 4, 2017 Share Purchase Agreement by and among Global Houghton LTD., Quaker Chemical Corporation, Gulf Houghton Lubricants LTD., the Other Sellers Parties Thereto, and Gulf Houghton Lubricants LTD, as the same may be amended by the parties thereto (the "Closing"). In no event shall this Agreement become effective prior to the Closing, and in the event the Closing does not occur, this Agreement shall be of no force and effect and shall be treated if never executed.

IN WITNESS WHEREOF, the Manager has hereunto set his hand and, pursuant to the authorization from its Board of Directors, the Company has caused these presents to be executed in its name and on its behalf and attested by its Secretary or Assistant Secretary, all as of the day and year first above written.

MANAGER

Name

QUAKER CHEMICAL CORPORATION

By: _____

Title: _____

ATTEST:

CERTIFICATION OF CHIEF EXECUTIVE OFFICER OF THE COMPANY PURSUANT TO RULE 13a-14(a) OF THE SECURITIES EXCHANGE ACT OF 1934

I, Michael F. Barry, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Quaker Chemical Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 12, 2019

/s/ Michael F. Barry
Michael F. Barry
Chief Executive Officer

CERTIFICATION OF CHIEF FINANCIAL OFFICER OF THE COMPANY PURSUANT TO RULE 13a-14(a) OF THE SECURITIES EXCHANGE ACT OF 1934

I, Mary Dean Hall, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Quaker Chemical Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 12, 2019

/s/ Mary Dean Hall
Mary Dean Hall
Chief Financial Officer

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350

The undersigned hereby certifies that the Form 10-Q Quarterly Report of Quaker Chemical Corporation (the "Company") for the quarterly period ended September 30, 2019 filed with the Securities and Exchange Commission (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: November 12, 2019

/s/ Michael F. Barry

Michael F. Barry
Chief Executive Officer of Quaker Chemical Corporation

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350

The undersigned hereby certifies that the Form 10-Q Quarterly Report of Quaker Chemical Corporation (the "Company") for the quarterly period ended September 30, 2019 filed with the Securities and Exchange Commission (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 and that the information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: November 12, 2019

/s/ Mary Dean Hall
Mary Dean Hall
Chief Financial Officer of Quaker Chemical Corporation
